Bedminster Township

Introduction

Located in Somerset County in New Jersey, Bedminster Township covers about 26.4 square miles. With a population of 8,272 (2020 United States Census), Bedminster Township consists of 21.7% of urban land uses by area. Of that urban land use, approximately 39.9% 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 44.5% of Bedminster Township.

Bedminster Township contains portions of nine subwatersheds (Table 1). There are approximately 106.4 miles of rivers and streams within the municipality; these include Axle Brook and its tributaries, Chambers Brook and its tributaries, Herzog Brook and its tributaries, Hoopstick Brook and its tributaries, Lamington River and its tributaries, Middle Brook and its tributaries, Mine Brook, Muddy Run and its tributaries, North Branch Raritan River and its tributaries, Peapack Brook and its tributaries, Quail Brook, and several uncoded tributaries. Bedminster Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Bedminster Township

Subwatershed	HUC14
Pottersville tributary (Lamington River)	02030105050050
Lamington River (Halls Bridge Road-Herzog Brook)	02030105050070
Lamington River (Herzog Brook-Pottersville gage)	02030105050130
Raritan River North Branch (Peapack Brook to McVickers Brook)	02030105060040
Peapack Brook (below Gladstone Brook)	02030105060060
Raritan River North Branch (including Mine Brook to Peapack Brook)	02030105060070
Middle Brook (North Branch Raritan River)	02030105060080
Raritan River North Branch (Lamington River to Mine Brook)	02030105060090

Raritan River North Branch (Route 28 to Lamington River)	02030105070010

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Bedminster Township. 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 Bedminster Township's existing stormwater infrastructure were provided by the township and were manipulated, if necessary, for the specific purposes of this report.

Analysis by Municipality

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

The Q-Farms in Bedminster Township 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 Bedminster Township 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 5,668.6 acres of agricultural land use in Bedminster Township, of which, 5,212.0 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 90 Q-Farms and a portion of one Q-Farm in the study area portion of Bedminster Township, totaling 3,840.3 acres. Within the 90 Q-Farms and portion of one Q-Farm, there are approximately 1,004.3 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Bedminster Township are presented in Table 8.

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. Eight HUC14s are included in the study area (02030105050050, 02030105050070, 02030105050130, 02030105060040, 02030105060060, 02030105060070, 02030105060080, 02030105060090). Within these eight HUC14s, there are 192.6 acres of buildings and 408.4 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 Bedminster Township, approximately 12.0 acres of rooftop runoff would be managed with 2.41 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Bedminster Township, approximately 40.8 acres of roadway would be managed, or 11.2 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 Bedminster Township are shown in Figure 10 and presented in Table 9. 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 Watershed Restoration and Protection Plan study area (see Figure 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. Nine of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 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 six classifications that apply to the streams in Bedminster Township. Figure 13 depicts the water quality classifications of surface waters throughout Bedminster Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

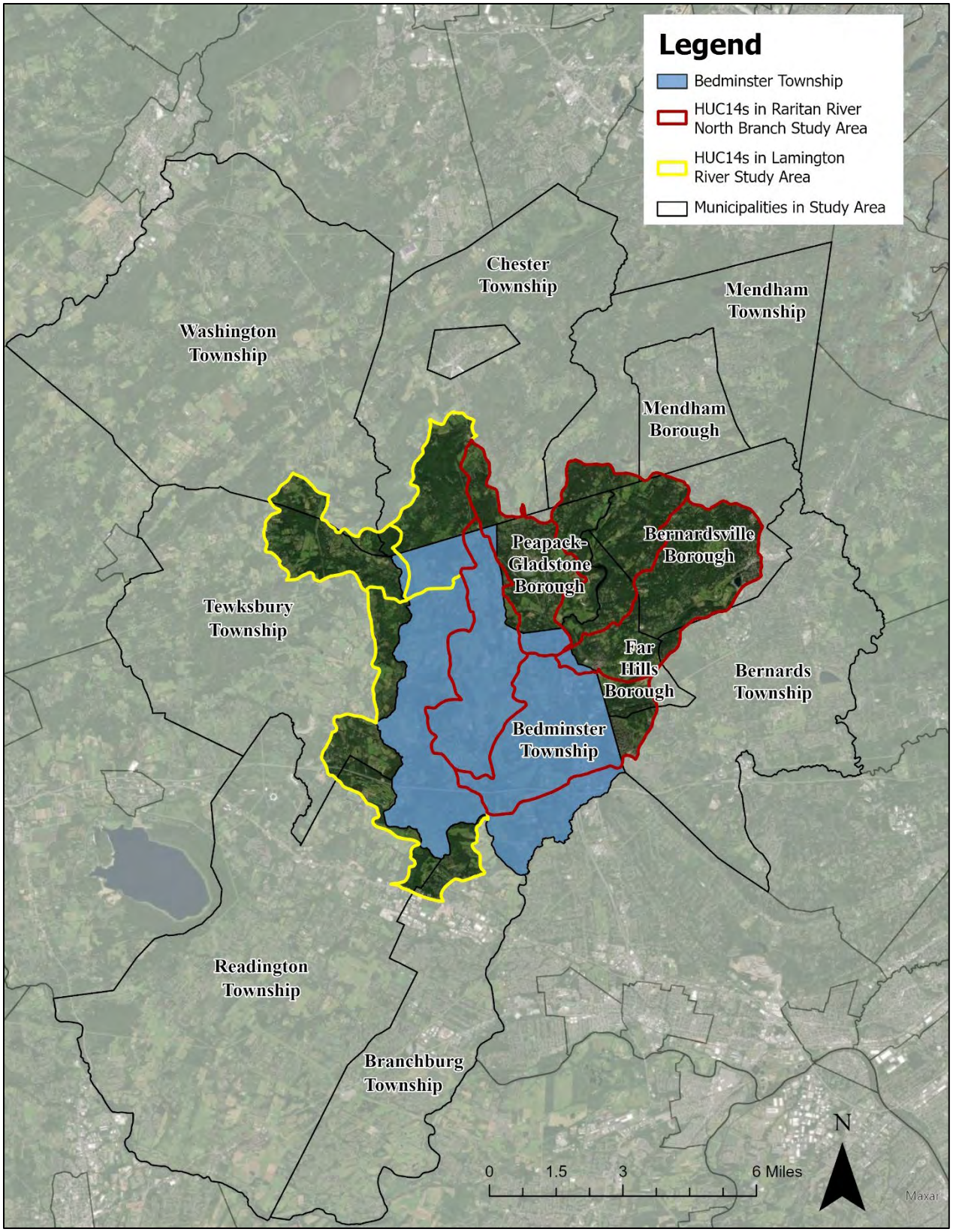


Figure 1: Municipalities in the Study Area

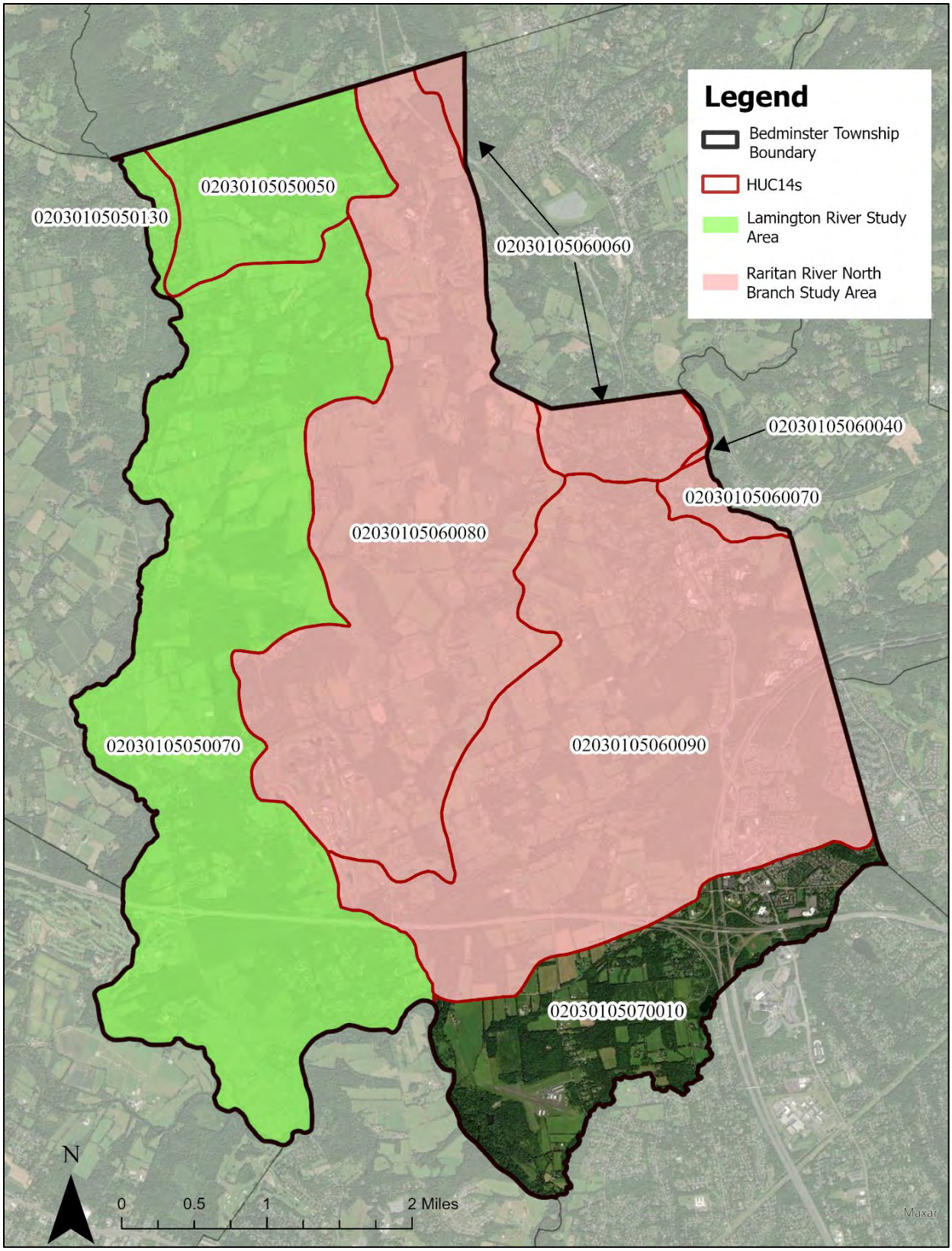


Figure 2: Portions of nine HUC14s are in Bedminster Township

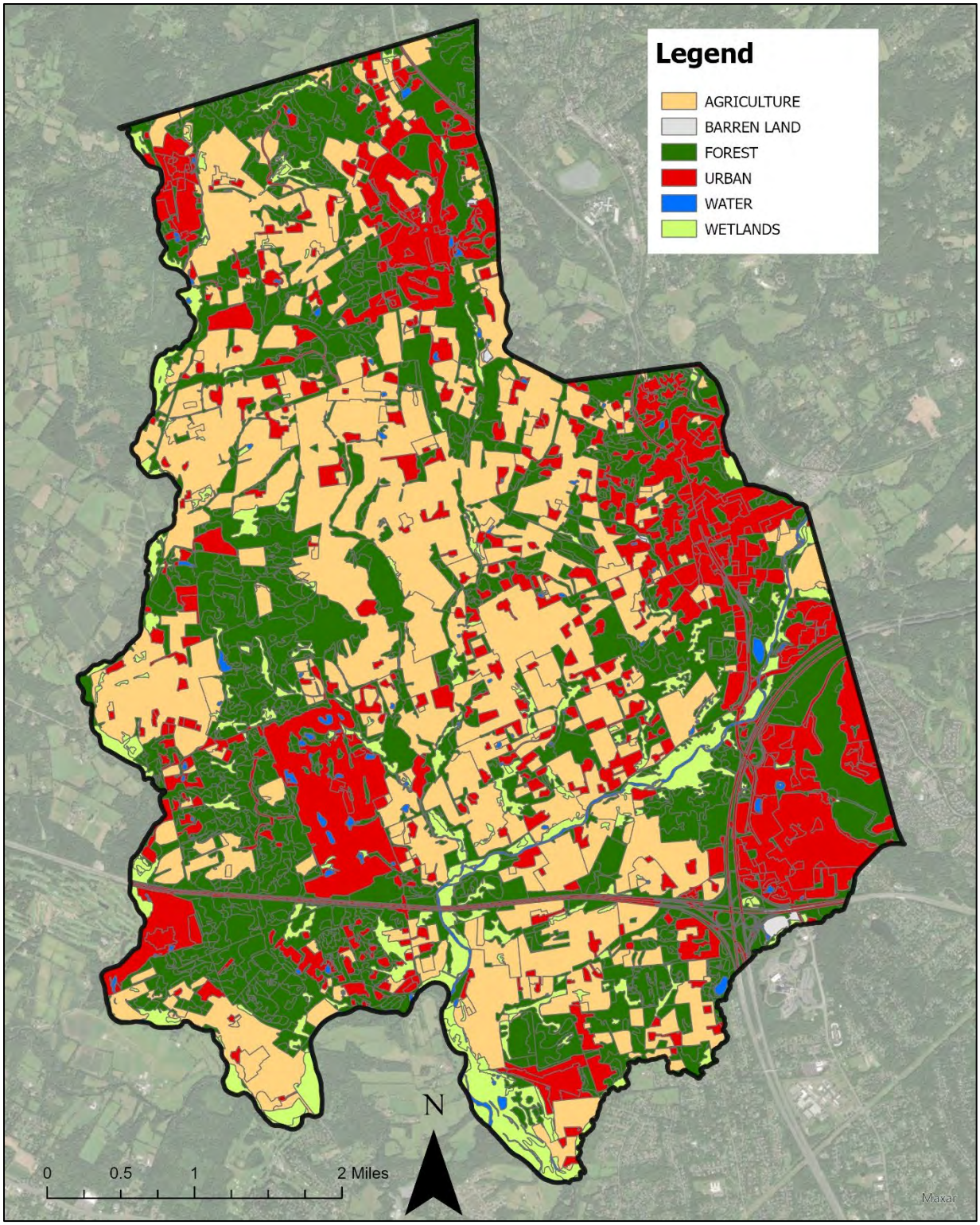


Figure 3: Land Use in Bedminster Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Bedminster Township

Land Use	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105050050				
Agriculture	315.8	410.5	3,158.1	94,741.8
Barren Land	0.0	0.0	0.0	0.0
Forest	426.8	42.7	1,280.3	17,070.8
Urban	120.4	168.6	1,806.1	16,856.9
Water	4.8	0.5	14.5	192.7
Wetlands	32.2	3.2	96.7	1,289.4
TOTAL =	**900.0**	**625.5**	**6,355.7**	**130,151.6**
02030105050070				
Agriculture	1,667.1	2,167.2	16,671.1	500,133.4
Barren Land	0.0	0.0	0.0	0.0
Forest	2,101.8	210.2	6,305.5	84,072.8
Urban	665.7	932.0	9,986.2	93,204.4
Water	70.6	7.1	211.8	2,824.5
Wetlands	312.4	31.2	937.2	12,495.5
TOTAL =	**4,817.6**	**3,347.7**	**34,111.8**	**692,730.6**
02030105050130				
Agriculture	8.2	10.7	82.3	2,470.2
Barren Land	0.0	0.0	0.0	0.0
Forest	25.7	2.6	77.2	1,029.9
Urban	67.9	95.1	1,018.6	9,506.8
Water	4.2	0.4	12.6	167.7
Wetlands	10.7	1.1	32.2	429.5
TOTAL =	**116.7**	**109.9**	**1,222.9**	**13,604.1**
02030105060040				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	5.2	0.5	15.5	207.3
Urban	6.0	8.4	89.6	836.1
Water	1.7	0.2	5.1	68.6
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**12.9**	**9.1**	**110.2**	**1,112.0**
02030105060060				
Agriculture	68.6	89.2	685.8	20,573.7
Barren Land	0.9	0.4	4.5	53.4
Forest	246.6	24.7	739.9	9,865.9
Urban	118.5	165.9	1,778.0	16,594.6
Water	3.7	0.4	11.1	147.9
Wetlands	3.1	0.3	9.2	123.2
TOTAL =	**441.4**	**280.9**	**3,228.5**	**47,358.7**

02030105060070				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	49.3	4.9	147.8	1,970.7
Urban	74.0	103.7	1,110.7	10,366.3
Water	3.3	0.3	10.0	133.0
Wetlands	8.9	0.9	26.6	354.3
TOTAL =	**135.5**	**109.8**	**1,295.1**	**12,824.3**
02030105060080				
Agriculture	1,781.4	2,315.8	17,814.0	534,420.0
Barren Land	5.1	2.5	25.3	303.1
Forest	1,281.2	128.1	3,843.7	51,249.7
Urban	899.9	1,259.9	13,499.0	125,990.3
Water	31.2	3.1	93.5	1,247.3
Wetlands	95.4	9.5	286.2	3,816.3
TOTAL =	**4,094.2**	**3,718.9**	**35,561.7**	**717,026.7**
02030105060090				
Agriculture	1,370.9	1,782.2	13,709.3	411,278.6
Barren Land	1.9	1.0	9.7	116.0
Forest	1,500.3	150.0	4,500.9	60,011.6
Urban	1,264.9	1,770.9	18,973.6	177,087.3
Water	67.3	6.7	201.9	2,692.4
Wetlands	346.6	34.7	1,039.7	13,863.2
TOTAL =	**4,551.9**	**3,745.5**	**38,435.1**	**665,049.1**
02030105070010				
Agriculture	456.6	593.6	4,565.9	136,978.4
Barren Land	15.9	7.9	79.3	951.3
Forest	599.7	60.0	1,799.2	23,989.8
Urban	452.7	633.7	6,790.0	63,373.7
Water	37.2	3.7	111.7	1,488.8
Wetlands	242.9	24.3	728.7	9,715.4
TOTAL =	**1,805.0**	**1,323.2**	**14,074.8**	**236,497.4**
All HUCs				
Agriculture	5,668.6	7,369.2	56,686.5	1,700,596.1
Barren Land	23.8	11.8	118.8	1,423.8
Forest	6,236.6	623.7	18,710.0	249,468.5
Urban	3,670.0	5,138.2	55,051.8	513,816.4
Water	224.0	22.4	672.2	8,962.9
Wetlands	1,052.2	105.2	3,156.5	42,086.8
TOTAL =	**16,875.2**	**13,270.5**	**134,395.8**	**2,516,354.5**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Bedminster Township 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 Bedminster Township. Based upon the NJDEP impervious surface data, Bedminster Township has impervious cover totaling 8.2%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Bedminster Township 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, Bedminster Township's impervious cover percentage would suggest that its waterways are primarily sensitive and most likely preventing degradation of the state's surface water quality standards.

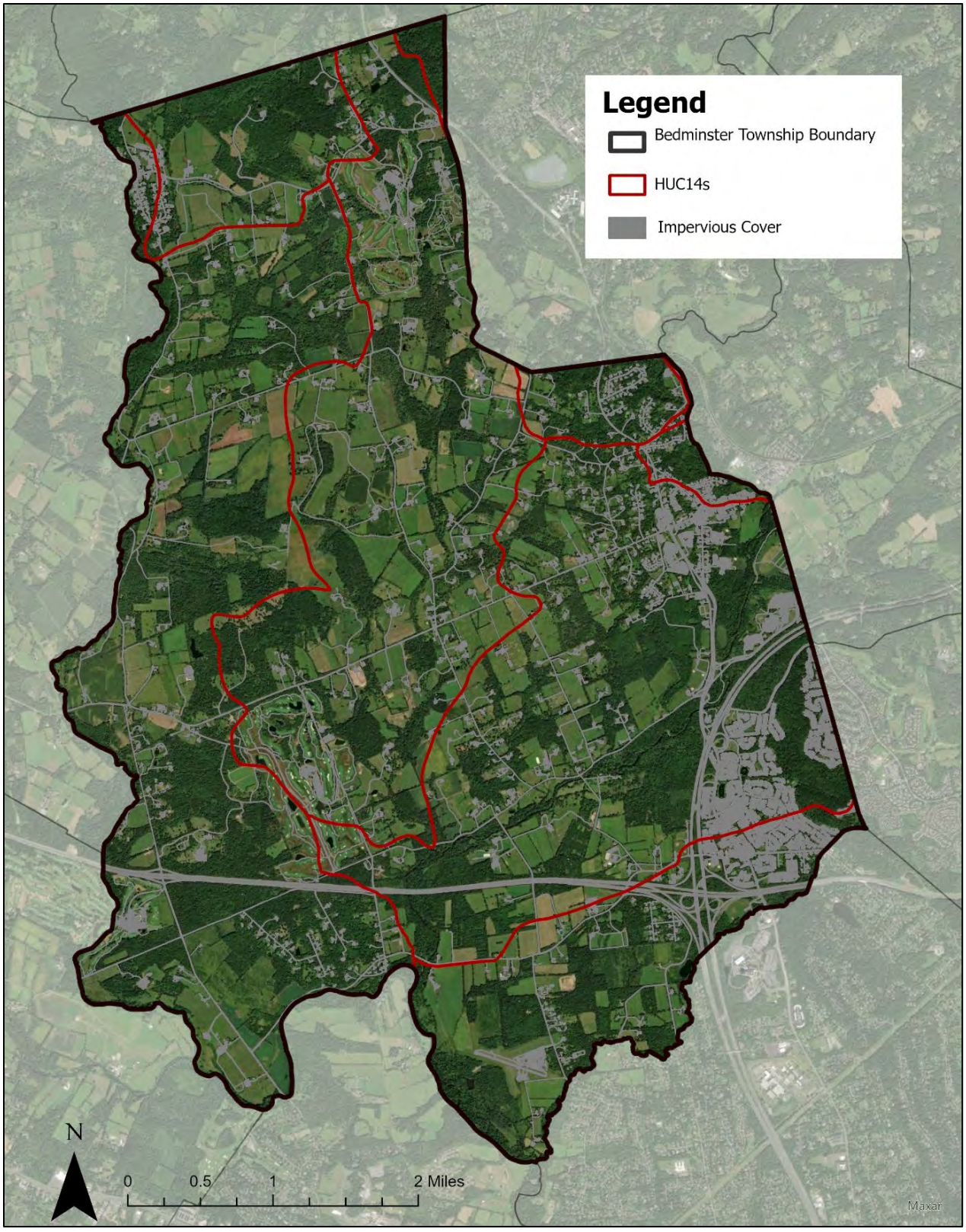


Figure 4: Impervious Cover in Bedminster Township

Table 3: Impervious Cover Analysis by HUC14 for Bedminster Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105050050		
Building	5.98	
Other	23.81	
Road	13.70	
TOTAL =	**43.5**	**4.8%**
02030105050070		
Building	21.88	
Other	109.25	
Road	88.75	
TOTAL =	**219.9**	**4.6%**
02030105050130		
Building	3.56	
Other	11.67	
Road	5.63	
TOTAL =	**20.9**	**17.9%**
02030105060040		
Building	0.35	
Other	0.54	
Road	1.14	
TOTAL =	**2.0**	**15.7%**
02030105060060		
Building	6.64	
Other	16.75	
Road	12.05	
TOTAL =	**35.4**	**8.0%**
02030105060070		
Building	5.48	
Other	12.08	
Road	8.28	
TOTAL =	**25.8**	**19.1%**
02030105060080		
Building	26.42	
Other	138.41	
Road	51.14	
TOTAL =	**216.0**	**5.3%**
02030105060090		
Building	122.30	
Other	223.44	
Road	227.68	
TOTAL =	**573.4**	**12.6%**
02030105070010		

Building	42.32	
Other	90.14	
Road	106.69	
TOTAL =	**239.2**	**13.2%**
All HUCs		
Building	234.93	
Other	626.09	
Road	515.06	
TOTAL =	**1,376.1**	**8.2%**

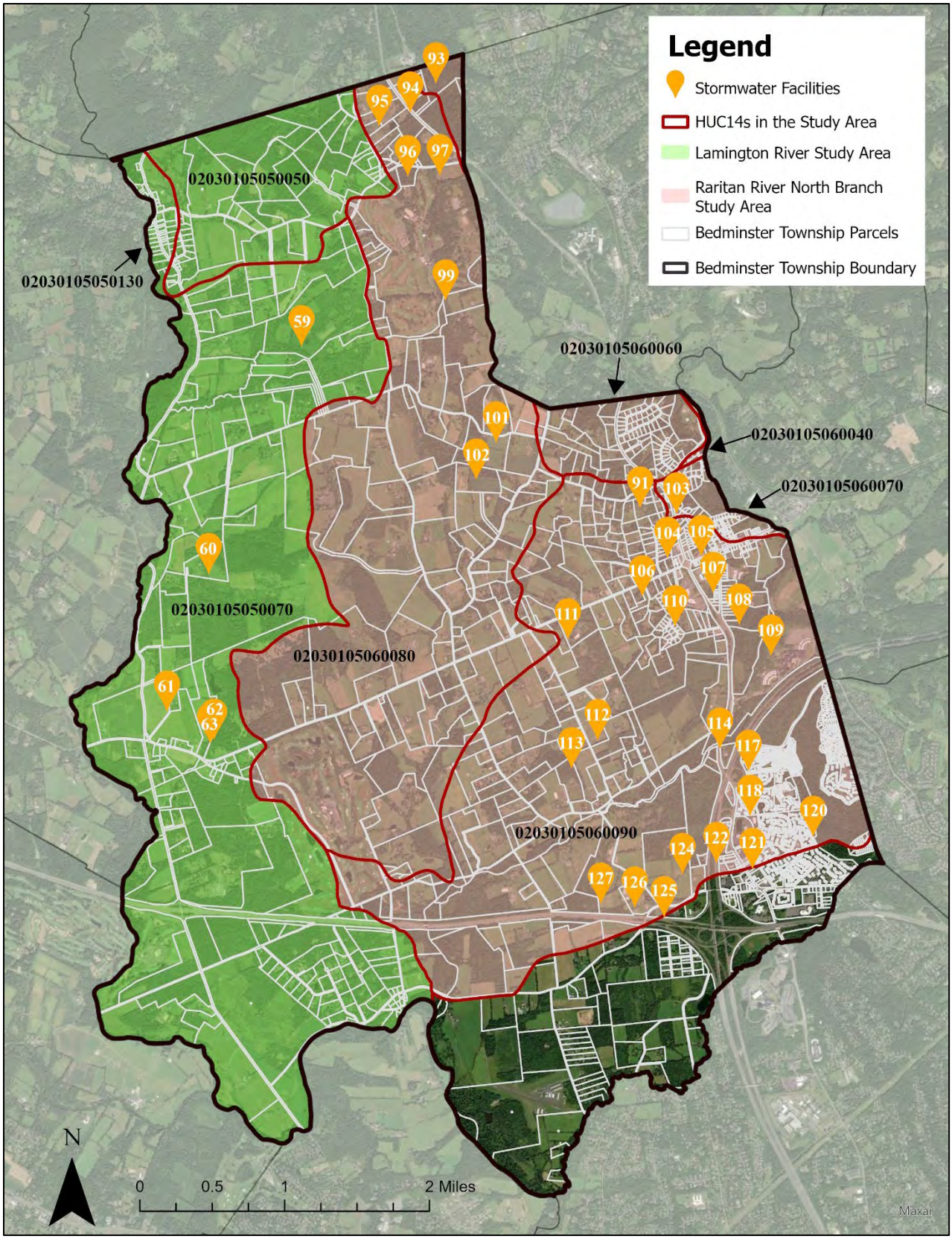


Figure 5: Stormwater Facilities in the Study Area of Bedminster Township

Table 4: Location of Stormwater Facilities in the Study Area of Bedminster Township

Lamington River Study Area		
ID	**Address**	**Type**
59	2121 Larger Cross Road	N
60	620 Black River Road	N
61	100 Black River Road	N
62	555 Lamington Road	N
63	555 Lamington Road	R
Raritan River North Branch Study Area		
ID	**Address**	**Type**
91	1691 US Highway 206	D
93	14 Old Farm Lane	D
94	3546 US Highway 206	D
95	3545 Route 206	D
96	1150 Pottersville Rd	N
97	Pottersville Rd	N
99	61 Fowler Rd	R
101	7 Columbia Tpke	N
102	420 Spook Hollow Rd	N
103	1641 US Highway 206	D
104	1590 US Highway 206	D
105	18 Steeple Chase Ct	N
106	2345 Lamington Rd	D
107	223 Somerville Rd	D
108	1 Miller Lane	D
109	900 Rt 206	D
110	98 Clucas Brook Rd	D
111	1888 Lamington Rd	N
112	320 Cedar Ridge Rd	D
113	307 Cedar Ridge Rd	D
114	US Highway 202 206	N
117	96 Birchwood Rd	D
118	50 Wescott Rd	D
120	99 Brightwood Ln	N
121	17 Mountain Ct	D
122	20 Pluckemin Way	D
124	359 US Highway 206	D
125	I-78 West	N
126	155A Klines Mill Rd	I
127	155 Klines Mill Rd	D

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

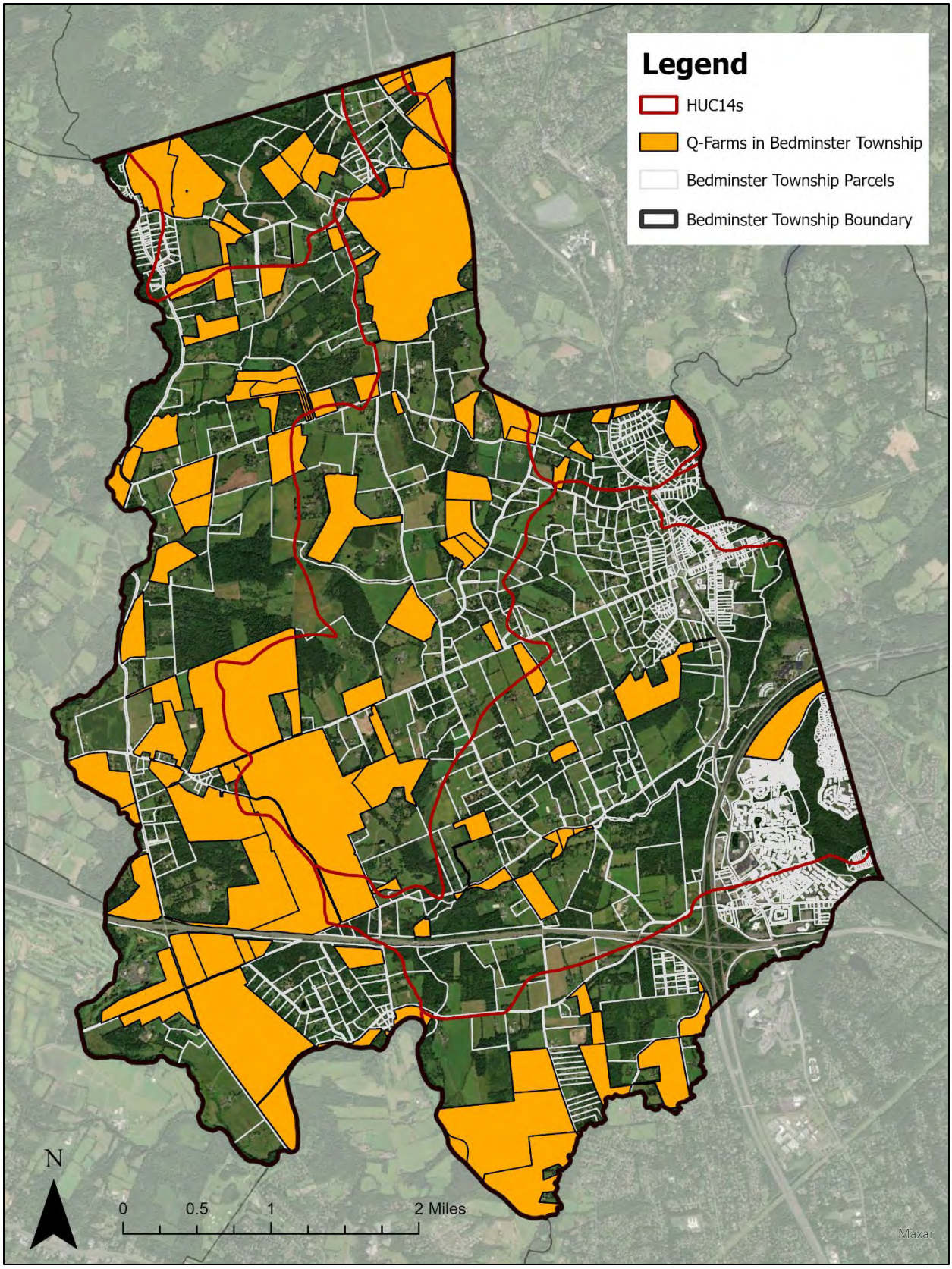


Figure 6: Q-Farm Parcels in Bedminster Township

Table 5: Q-Farm Parcels in Bedminster Township

Block	Lot	Q-Code	Prop Class	Location
2	1	QFARM	3B	N Side Pottersville Road
2	5	QFARM	3B	Pottersville Road
2	5.03	QFARM	3B	Pottersville Road
2	8.03	QFARM	3B	Windsor Lane
2	8.04	QFARM	3B	Windsor Lane
2	8.05	QFARM	3B	Windsor Lane
5	8	QFARM	3B	Pottersville Road
6	1.03	QFARM	3B	3584 E Side Rt 206
*6	1.04	QFARM	3B	3630 E Side Sh 206
6	2	QFARM	3B	3476 E Side Sh 206
6	3	QFARM	3B	3350 E Side Sh 206
7	15	QFARM	3B	Black River Road
8	15	QFARM	3B	Pottersville Road
8	16	QFARM	3B	1800 Black River Road
8	17.08	QFARM	3B	Pottersville Road
8	18	QFARM	3B	Larger Cross Road
8	23.01	QFARM	3B	Long Lane
8	23.03	QFARM	3B	805 Long Lane
8	24.03	QFARM	15C	Black River Road
8	24.09	QFARM	3B	615 Long Lane
8	24.11	QFARM	3B	505 Long Lane
8	24.12	QFARM	3B	Black River Road
8	24.13	QFARM	3B	Black River Road
8	24.15	QFARM	3B	605 Long Lane
8	24.16	QFARM	3B	625 Long Lane
9	1	QFARM	3B	Pottersville Road
9	1.04	QFARM	3B	960 Pottersville Road
9	4	QFARM	3B	Larger Cross Road
9	8	QFARM	3B	Spook Hollow Road
9	10	QFARM	3B	Spook Hollow Road
9	10.01	QFARM	3B	Spook Hollow Road
10	1	QFARM	3B	Black River Road
12	1.06	QFARM	3B	655 Lamington Road
12	1.08	QFARM	3B	Long Lane
12	1.1	QFARM	3B	200 Black River Road
12	1.12	QFARM	3B	Black River Road
12	1.14	QFARM	3B	600 Black River Road
12	1.16	QFARM	3B	Long Lane
12	1.17	QFARM	3B	Long Lane
12	3.06	QFARM	3B	Larger Cross Road
12	3.08	QFARM	3B	Long Lane

12	11.01	QFARM	3B	875 Lamington Road
12	13.01	QFARM	3B	Larger Cross Road
12	13.02	QFARM	3B	Lamington Road
13	2	QFARM	3B	1500 Larger Cross Road
13	9	QFARM	3B	Holland Road
13	9.01	QFARM	3B	Holland Road
13	12.01	QFARM	3B	Holland Road
13	12.02	QFARM	3B	Holland Road
14	5	QFARM	3B	Route 206
14	6.01	QFARM	3B	2121 Route 206
14	8	QFARM	3B	Holland Road
14	11	QFARM		Old Dutch Rd W & White Oak Ln
15	25	QFARM	3B	Route 206
*19	2	QFARM	15F	151 Peapack Road
20	2	QFARM	15F	100 Peapack Road
21	11.03	QFARM	3B	1635 Lamington Road
37	1.01	QFARM	3B	Rattlesnake Bridge Road
37	2	QFARM	3B	Rattlesnake Bridge Road
37	4	QFARM	3B	Rattlesnake Bridge Road
37.01	2	QFARM	15C	Rattlesnake Bridge Road
38	4	QFARM	3B	Lamington Road
38	8	QFARM	3B	Cowperthwaite Road
38	8.01	QFARM	3B	1000 Rattlesnake Bridge
38	13	QFARM	3B	Cowperthwaite Road
38.01	1	QFARM	15C	Rattlesnake Brdge Road
38.01	2	QFARM	15C	Rattlesnake Brdge Road
38.01	3.02	QFARM	15C	River Road
38.01	3.03	QFARM	15C	River Road
39	7	QFARM	3B	Lamington Road
39	10	QFARM	3B	Lamington Road
39	12	QFARM	3B	Elizabeth Lane
39	16	QFARM	3B	Lamington Road
39	26.01	QFARM	3B	3 Elizabeth Lane
39	29.01	QFARM	3B	River Road
40	4	QFARM	3B	Cedar Ridge Road
40	8.02	QFARM	3B	325 Cedar Ridge Road
41	26	QFARM	15C	Thosmor Road
43.01	1	QFARM	15C	Schley Mountain Road
44	1	QFARM	15C	River Road
45	1	QFARM	15F	Rattlesnake Bridge Road
45.05	12	QFARM	3B	Cowperthwaite Road
46	1	QFARM	15F	100 Rattlesnake Bridge Rd
46	3	QFARM	3B	Burnt Mills Road
48	3	QFARM	3B	River Road & Bunn Road

49	3	QFARM	3B	Burnt Mills Road
50	3	QFARM	3B	River Road
51	2	QFARM	3B	So Side River Road
51	2.1	QFARM	3B	River Road
51	3	QFARM	3B	So Side River Road
52	1.01	QFARM	3B	Bunn Road
60	1	QFARM	3B	Airport Road
61	5	QFARM	3B	Airport Road
61	6	QFARM	3B	Airport Road
61	7	QFARM	15C	Airport Road
62	3	QFARM	3B	Burnt Mills Road
62	9	QFARM	3B	Airport Road
62	13	QFARM	3B	Meadow Road
62	27	QFARM	15C	Airport Road
63	1.01	QFARM	3B	Country Club Road
69	4	QFARM	3B	Country Club Road
71.02	1	QFARM	3B	Country Club Road

*Only a portion of the Q-Farm is within the Bedminster Township boundary

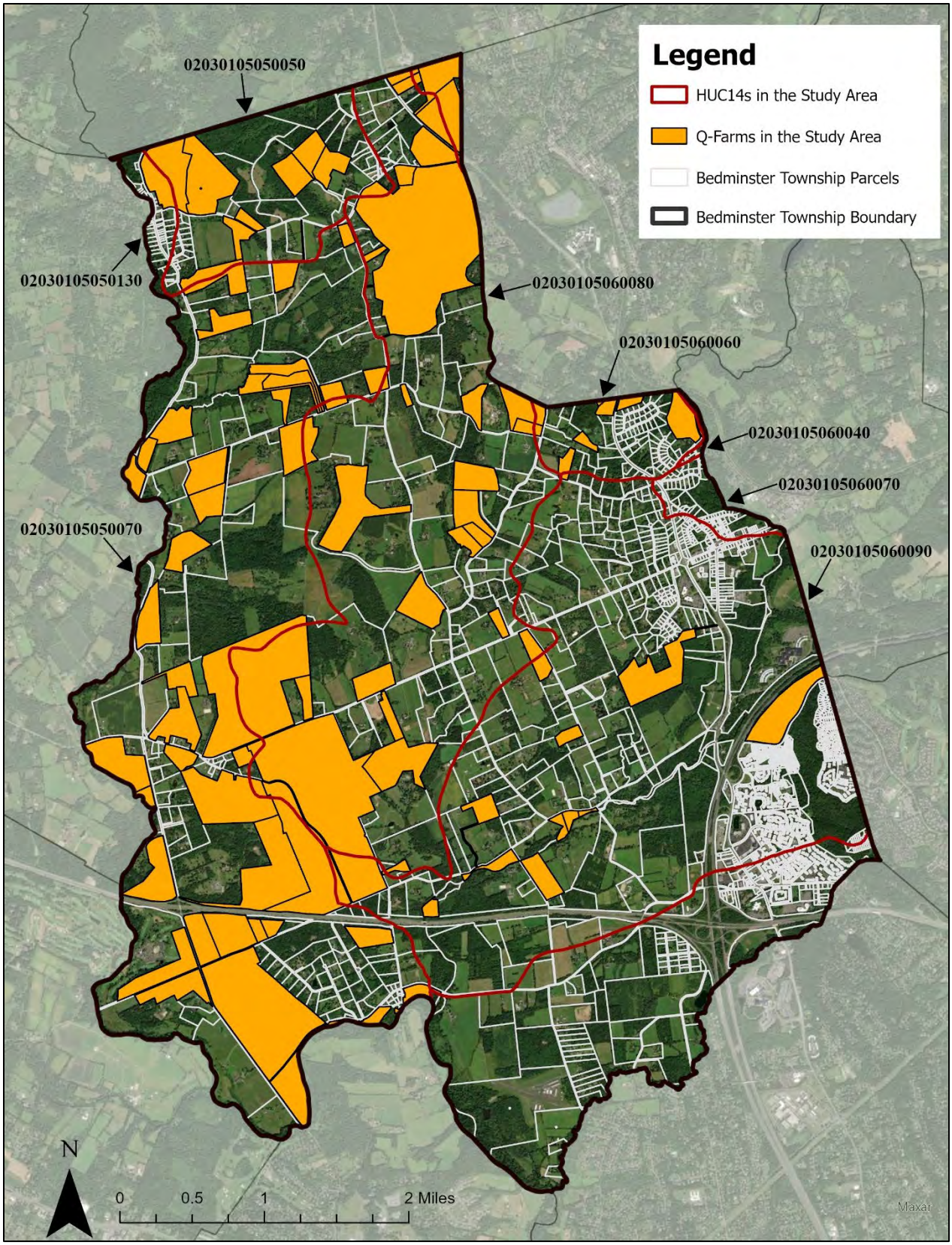


Figure 7: Q-Farm Parcels in the Study Area of Bedminster Township

Table 6: Q-Farm Parcels in the Study Area of Bedminster Township

Block	Lot	Q-Code	Prop Class	Location
2	1	QFARM	3B	N Side Pottersville Road
2	5	QFARM	3B	Pottersville Road
2	5.03	QFARM	3B	Pottersville Road
2	8.03	QFARM	3B	Windsor Lane
2	8.04	QFARM	3B	Windsor Lane
2	8.05	QFARM	3B	Windsor Lane
5	8	QFARM	3B	Pottersville Road
6	1.03	QFARM	3B	3584 E Side Rt 206
6	1.04	QFARM	3B	3630 E Side Sh 206
6	2	QFARM	3B	3476 E Side Sh 206
6	3	QFARM	3B	3350 E Side Sh 206
7	15	QFARM	3B	Black River Road
8	15	QFARM	3B	Pottersville Road
8	16	QFARM	3B	1800 Black River Road
8	17.08	QFARM	3B	Pottersville Road
8	18	QFARM	3B	Larger Cross Road
8	23.01	QFARM	3B	Long Lane
8	23.03	QFARM	3B	805 Long Lane
8	24.03	QFARM	15C	Black River Road
8	24.09	QFARM	3B	615 Long Lane
8	24.11	QFARM	3B	505 Long Lane
8	24.12	QFARM	3B	Black River Road
8	24.13	QFARM	3B	Black River Road
8	24.15	QFARM	3B	605 Long Lane
8	24.16	QFARM	3B	625 Long Lane
9	1	QFARM	3B	Pottersville Road
9	1.04	QFARM	3B	960 Pottersville Road
9	4	QFARM	3B	Larger Cross Road
9	8	QFARM	3B	Spook Hollow Road
9	10	QFARM	3B	Spook Hollow Road
9	10.01	QFARM	3B	Spook Hollow Road
10	1	QFARM	3B	Black River Road
12	1.06	QFARM	3B	655 Lamington Road
12	1.08	QFARM	3B	Long Lane
12	1.1	QFARM	3B	200 Black River Road
12	1.12	QFARM	3B	Black River Road
12	1.14	QFARM	3B	600 Black River Road
12	1.16	QFARM	3B	Long Lane
12	1.17	QFARM	3B	Long Lane
12	3.06	QFARM	3B	Larger Cross Road
12	3.08	QFARM	3B	Long Lane

12	11.01	QFARM	3B	875 Lamington Road
12	13.01	QFARM	3B	Larger Cross Road
12	13.02	QFARM	3B	Lamington Road
13	2	QFARM	3B	1500 Larger Cross Road
13	9	QFARM	3B	Holland Road
13	9.01	QFARM	3B	Holland Road
13	12.01	QFARM	3B	Holland Road
13	12.02	QFARM	3B	Holland Road
14	5	QFARM	3B	Route 206
14	6.01	QFARM	3B	2121 Route 206
14	8	QFARM	3B	Holland Road
14	11	QFARM		Old Dutch Rd W & White Oak Ln
15	25	QFARM	3B	Route 206
19	2	QFARM	15F	151 Peapack Road
20	2	QFARM	15F	100 Peapack Road
21	11.03	QFARM	3B	1635 Lamington Road
37	1.01	QFARM	3B	Rattlesnake Bridge Road
37	2	QFARM	3B	Rattlesnake Bridge Road
37	4	QFARM	3B	Rattlesnake Bridge Road
37.01	2	QFARM	15C	Rattlesnake Bridge Road
38	4	QFARM	3B	Lamington Road
38	8	QFARM	3B	Cowperthwaite Road
38	8.01	QFARM	3B	1000 Rattlesnake Bridge
38	13	QFARM	3B	Cowperthwaite Road
38.01	1	QFARM	15C	Rattlesnake Brdge Road
38.01	2	QFARM	15C	Rattlesnake Brdge Road
38.01	3.02	QFARM	15C	River Road
38.01	3.03	QFARM	15C	River Road
39	7	QFARM	3B	Lamington Road
39	10	QFARM	3B	Lamington Road
39	12	QFARM	3B	Elizabeth Lane
39	16	QFARM	3B	Lamington Road
39	26.01	QFARM	3B	3 Elizabeth Lane
39	29.01	QFARM	3B	River Road
40	4	QFARM	3B	Cedar Ridge Road
40	8.02	QFARM	3B	325 Cedar Ridge Road
41	26	QFARM	15C	Thosmor Road
43.01	1	QFARM	15C	Schley Mountain Road
44	1	QFARM	15C	River Road
45	1	QFARM	15F	Rattlesnake Bridge Road
45.05	12	QFARM	3B	Cowperthwaite Road
46	1	QFARM	15F	100 Rattlesnake Bridge Rd
46	3	QFARM	3B	Burnt Mills Road
48	3	QFARM	3B	River Road & Bunn Road

*49	3	QFARM	3B	Burnt Mills Road
50	3	QFARM	3B	River Road
51	2	QFARM	3B	SO Side River Road
51	2.1	QFARM	3B	River Road
51	3	QFARM	3B	SO Side River Road
52	1.01	QFARM	3B	Bunn Road

*Only a portion of the Q-Farm is within the study area

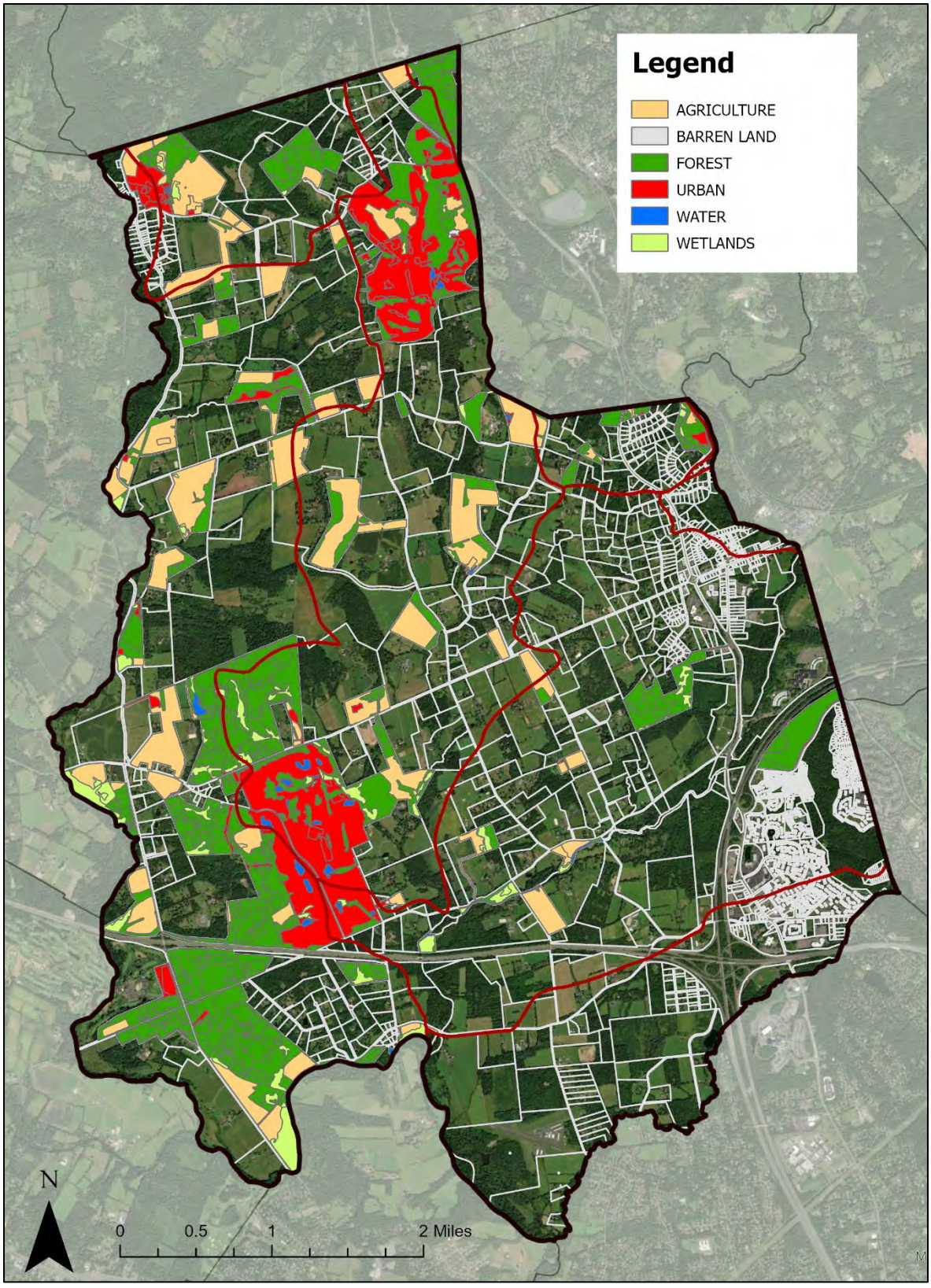


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Bedminster Township

Table 7: Land Use on Q-Farms in the Study Area of Bedminster Township

Land Use	Area (acres)
Agriculture	1,004.3
Barren Land	2.6
Forest	1,812.1
Urban	774.1
Water	53.5
Wetlands	193.7
Total:	**3,840.3**

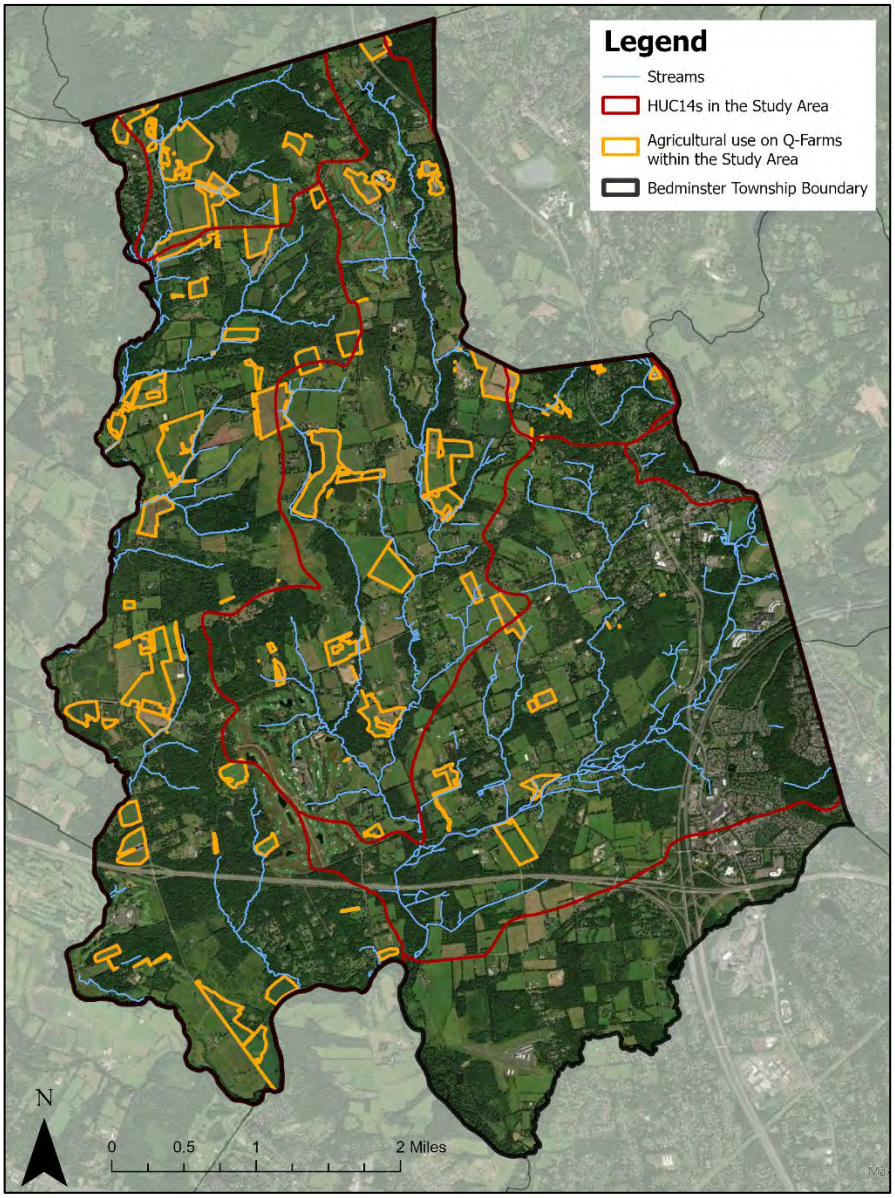


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Bedminster Township

Table 8: Recommendations for Specific Farms in the Study Area of Bedminster Township

North Branch Raritan River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
51	2.1	QFARM						X
52	1.01	QFARM	X					
Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
8	16	QFARM				X		
8	24.12	QFARM	X					
12	1.14	QFARM	X					
12	1.16	QFARM	X					
12	1.17	QFARM	X					
37	1.01	QFARM	X					
38	4	QFARM	X	X				
46	1	QFARM	X					

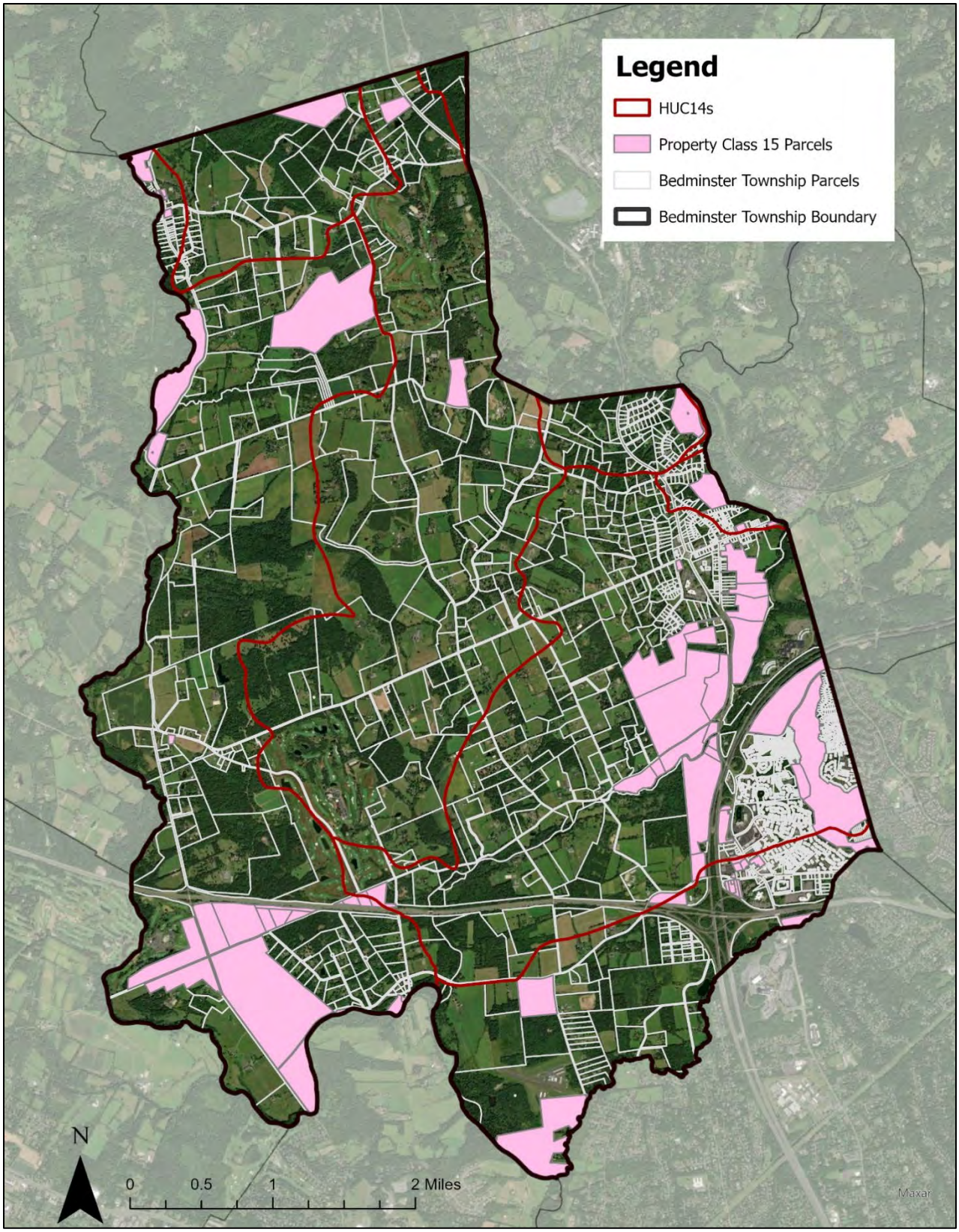


Figure 10: Property Class 15 Parcels in Bedminster Township

Table 9: Property Class 15 Parcels in Bedminster Township

Block	Lot	Prop Class	Location	Facility Type
36	1	15A	Somerville Road	School
2	1	15B	Pottersville Road	Schools
8	20	15B	2121 Larger Cross Road	Educ/Science/Office
38	3	15B	300 Lamington Road	Schools
61	4	15B	1130 Burnt Mills Road	School For Autism
62.01	1	15B	1810 Burnt Mills Road	School For Autism
5	8	15C	1150 Pottersville Road	School
7	22	15C	Black River Road	Vacant Land
8	24.03	15C	Black River Road	Pony Farm
8	24.03	15C	1100 Black River Road	Pony Farm
14	15	15C	Old Dutch Road	Highway R/W
17	7	15C	Route 206	Right of Way
18	21.01	15C	Old Stonehouse Road	Drainage
19	1	15C	West Side Peapack Road	Vacant Land
20	1	15C	East Side Peapack Road	Drainage
23	1	15C	White Oaks Road	Vacant Land
26	8	15C	Deer Haven Road	Park
36	14	15C	Miller Lane	Sewer/Polic/Municpa
36	19	15C	Somerville Road	Municipal Land
37.01	2	15C	Rattlesnake Bridge Road	Farm
38.01	1	15C	Rattlesnake Brdge Road	Farm
38.01	2	15C	Rattlesnake Brdge Road	Farm
38.01	3.01	15C	River Road	Vacant Land
38.01	3.02	15C	River Road	Farm
38.01	3.03	15C	River Road	Farm
41	26	15C	Thosmor Road	Vacant Land
41	30.01	15C	Route 206	Vacant Land
41	34	15C	3055 River Road	Jacobus Vanderveer
41	34.01	15C	3055 River Road	Farm
42	1.01	15C	Route 206	Vacant Land
43.01	1	15C	Schley Mountain Road	Vacant Land
44	1	15C	River Road	Vacant Land
46	4	15C	Milnor Road	Water Shed
53	1	15C	River Road	Park
53	1.02	15C	River Road	Vacant Land
53	2	15C	River Road	Vacant Land
54	5	15C	Burnt Mills Road	Vacant Land
54	10	15C	Burnt Mills Road	Green Acres
59	1	15C	Schley Mountain Road	Vacant Land
59	1.102	15C	Ann Obrien Archeological	Archeological Dig
61	7	15C	81 Airport Road	Farmpreservation
71	3	15C	2000 Burnt Mills Road	Vacant Land
71	4	15C	2020 Burnt Mills Road	Schoolhouse Parcel
71	4.01	15C	Burnt Mills Road	Vacant Land
71	5	15C	2032 Burnt Mills Road	Vacant Land

71	6	15C	2042 Burnt Mills Road	Vacant Land
5	1.04	15D	3545 Route 206	Church
8.01	1	15D	2090 Black River Road	Church
32	4	15D	355 Main Street	Parsonage
32	5	15D	375 Main Street	Church
57	6.01	15D	Burnt Mills Road	Cancer Support Cnj
57	11	15D	285 Route 202/206	Church;Medical Minst
57	12	15D	279 Route 202/206	Church
57	12.01	15D	279 Route 202/206	Schools
1	1	15F	Hacklebarney Road	Park
1	8	15F	Hacklebarney Road	Vacant Land
2	2	15F	28 Hacklebarney Road	Recreation Cntr
2	3	15F	8 Hacklebarney Road	Volunteer Fire Co.
2	7	15F	Bedminster Grove Road	Agricultural Reserva
9	7	15F	Spook Hollow Road	Farm
*19	2	15F	151 Peapack Road	Farm
19	2	15F	151 Peapack Road	Farm
20	2	15F	100 Peapack Road	Farm
20	2	15F	100 Peapack Road	Farm
35	14	15F	500 Main Street	Rescue Squad
38.01	3.04	15F	River Road	Right of Way
41	16.01	15F	2336 Lamington Road	Library
45	1	15F	500 Rattlesnake Bridge Rd	Farm
45	1	15F	Rattlesnake Bridge Road	Farm
45.01	1	15F	405 River Road	Right of Way
45.01	2	15F	River Road	Right of Way
45.01	3	15F	River Road	Right of Way
45.01	4	15F	River Road	Right of Way
46	1	15F	100 Rattlesnake Bridge Rd	Farm
53	2.01	15F	River Road & Route 206	Right of Way
54	1	15F	Route 206	Right of Way
54	2	15F	725 Route 206	House
54.01	1	15F	Route 206	Right of Way
55.01	2	15F	455-457 Route 206	Maintenance Yard
58	7	15F	286 Route 202/206	Senior Cit. Complex
59.06	9627	15F	27 Cambridge Road	Disabled Veteran
59.1	3345	15F	45 Sage Court	Disabled Veteran
59.23	81107	15F	107 Cortland Lane	Disabled Veteran
61	7	15F	81 Airport Road	Farm
72.01	1	15F	25 Route 206	Recreation Center

*Only a portion of the parcel is within the Bedminster Township boundary

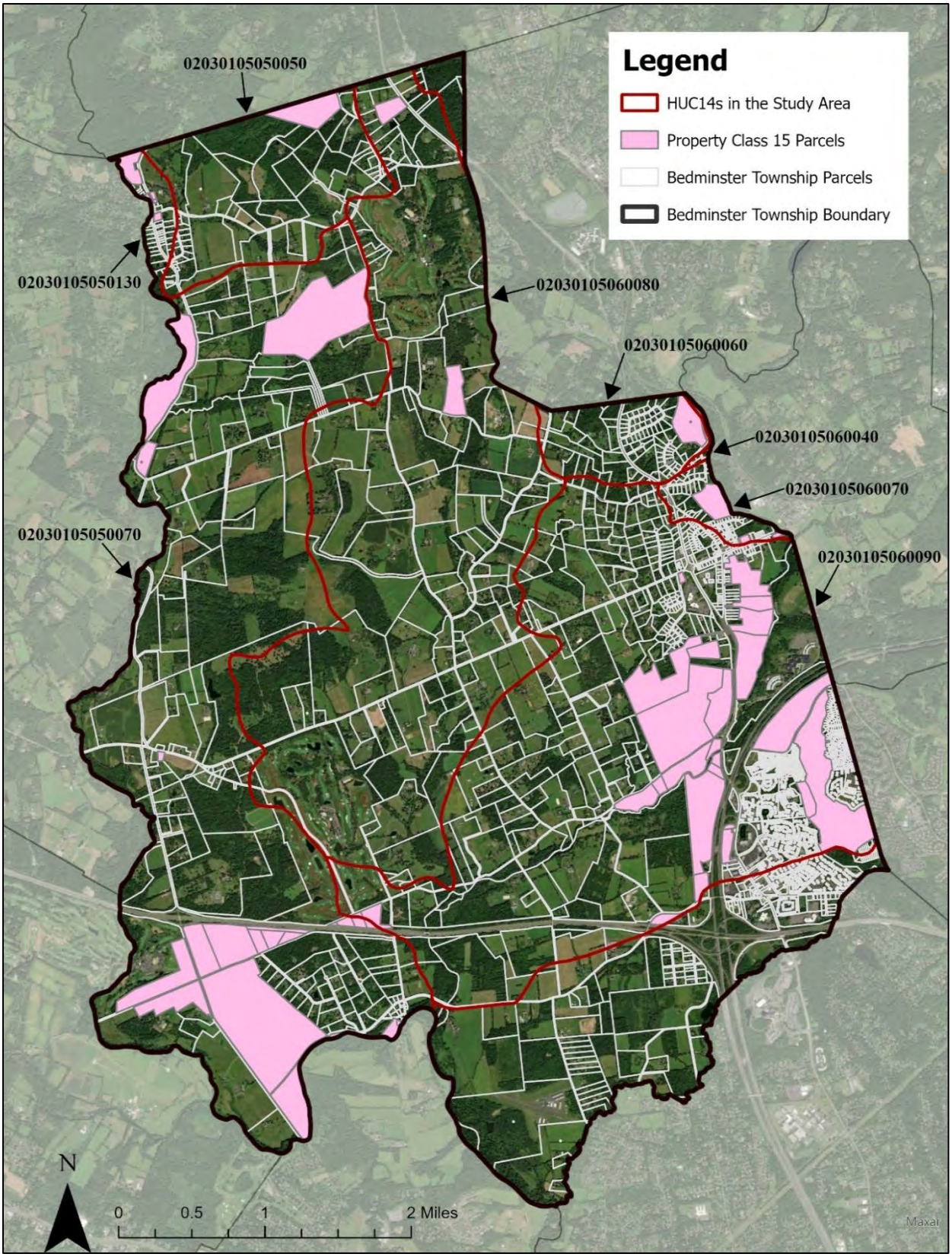


Figure 11: Property Class 15 Parcels in the Study Area of Bedminster Township

Table 10: Property Class 15 Parcels in the Study Area of Bedminster Township

Block	Lot	Prop Class	Location	Facility Type
***36**	**1**	**15A**	**Somerville Road**	**School**
2	1	15B	Pottersville Road	Schools
8	20	15B	2121 Larger Cross Road	Educ/Science/Office
38	3	15B	300 Lamington Road	Schools
61[1]	4	15B	1130 Burnt Mills Road	School For Autism
***62.01[1]**	**1**	**15B**	**1810 Burnt Mills Road**	**School for Autism**
5	8	15C	1150 Pottersville Road	School
7	22	15C	Black River Road	Vacant Land
8	24.03	15C	Black River Road	Pony Farm
8	24.03	15C	1100 Black River Road	Pony Farm
14	15	15C	Old Dutch Road	Highway R/W
17	7	15C	Route 206	Right of Way
18	21.01	15C	Old Stonehouse Road	Drainage
19	1	15C	West Side Peapack Road	Vacant Land
20	1	15C	East Side Peapack Road	Drainage
23	1	15C	White Oaks Road	Vacant Land
26	8	15C	Deer Haven Road	Park
***36**	**14**	**15C**	**Miller Lane**	**Sewer/Police/Municipal**
***36**	**19**	**15C**	**Somerville Road**	**Municipal Land**
37.01	2	15C	Rattlesnake Bridge Road	Farm
38.01	1	15C	Rattlesnake Brdge Road	Farm
38.01	2	15C	Rattlesnake Brdge Road	Farm
38.01	3.01	15C	River Road	Vacant Land
38.01	3.02	15C	River Road	Farm
38.01	3.03	15C	River Road	Farm
41	26	15C	Thosmor Road	Vacant Land
41	30.01	15C	Route 206	Vacant Land
41	34	15C	3055 River Road	Jacobus Vanderveer
41	34.01	15C	3055 River Road	Farm
42	1.01	15C	Route 206	Vacant Land
43.01	1	15C	Schley Mountain Road	Vacant Land
44	1	15C	River Road	Vacant Land
46	4	15C	Milnor Road	Water Shed
53	1	15C	River Road	Park
53	1.02	15C	River Road	Vacant Land
53	2	15C	River Road	Vacant Land
***54[1]**	**5**	**15C**	**Burnt Mills Road**	**Vacant Land**
54	10	15C	Burnt Mills Road	Green Acres
59[1]	1	15C	Schley Mountain Road	Vacant Land
59	1.102	15C	Ann Obrien Archeological	Archeological Dig
***5**	**1.04**	**15D**	**3545 Route 206**	**Church**
8.01	1	15D	2090 Black River Road	Church
32	4	15D	355 Main Street	Parsonage
***32**	**5**	**15D**	**375 Main Street**	**Church**
57[1]	11	15D	285 Route 202/206	Church;Medical Minst
1	1	15F	Hacklebarney Road	Park

1	8	15F	Hacklebarney Road	Vacant Land
2	2	15F	28 Hacklebarney Road	Recreation Cntr
***2**	**3**	**15F**	**8 Hacklebarney Road**	**Volunteer Fire Co.**
2	7	15F	Bedminster Grove Road	Agricultural Reserva
9	7	15F	Spook Hollow Road	Farm
19	2	15F	151 Peapack Road	Farm
19	2	15F	151 Peapack Road	Farm
20	2	15F	100 Peapack Road	Farm
20	2	15F	100 Peapack Road	Farm
35	14	15F	500 Main Street	Rescue Squad
38.01	3.04	15F	River Road	Right of Way
***41**	**16.01**	**15F**	**2336 Lamington Road**	**Library**
45	1	15F	500 Rattlesnake Bridge Rd	Farm
45	1	15F	Rattlesnake Bridge Road	Farm
45.01	1	15F	405 River Road	Right of Way
45.01	2	15F	River Road	Right of Way
45.01	3	15F	River Road	Right of Way
45.01	4	15F	River Road	Right of Way
46	1	15F	100 Rattlesnake Bridge Rd	Farm
53	2.01	15F	River Road & Route 206	Right of Way
54	1	15F	Route 206	Right of Way
54	2	15F	725 Route 206	House
54.01	1	15F	Route 206	Right of Way
55.01	2	15F	455-457 Route 206	Maintenance Yard
59.1	3345	15F	45 Sage Court	Disabled Veteran
59.23	81107	15F	107 Cortland Lane	Disabled Veteran

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

[1]Only a portion of the parcel is within the study area

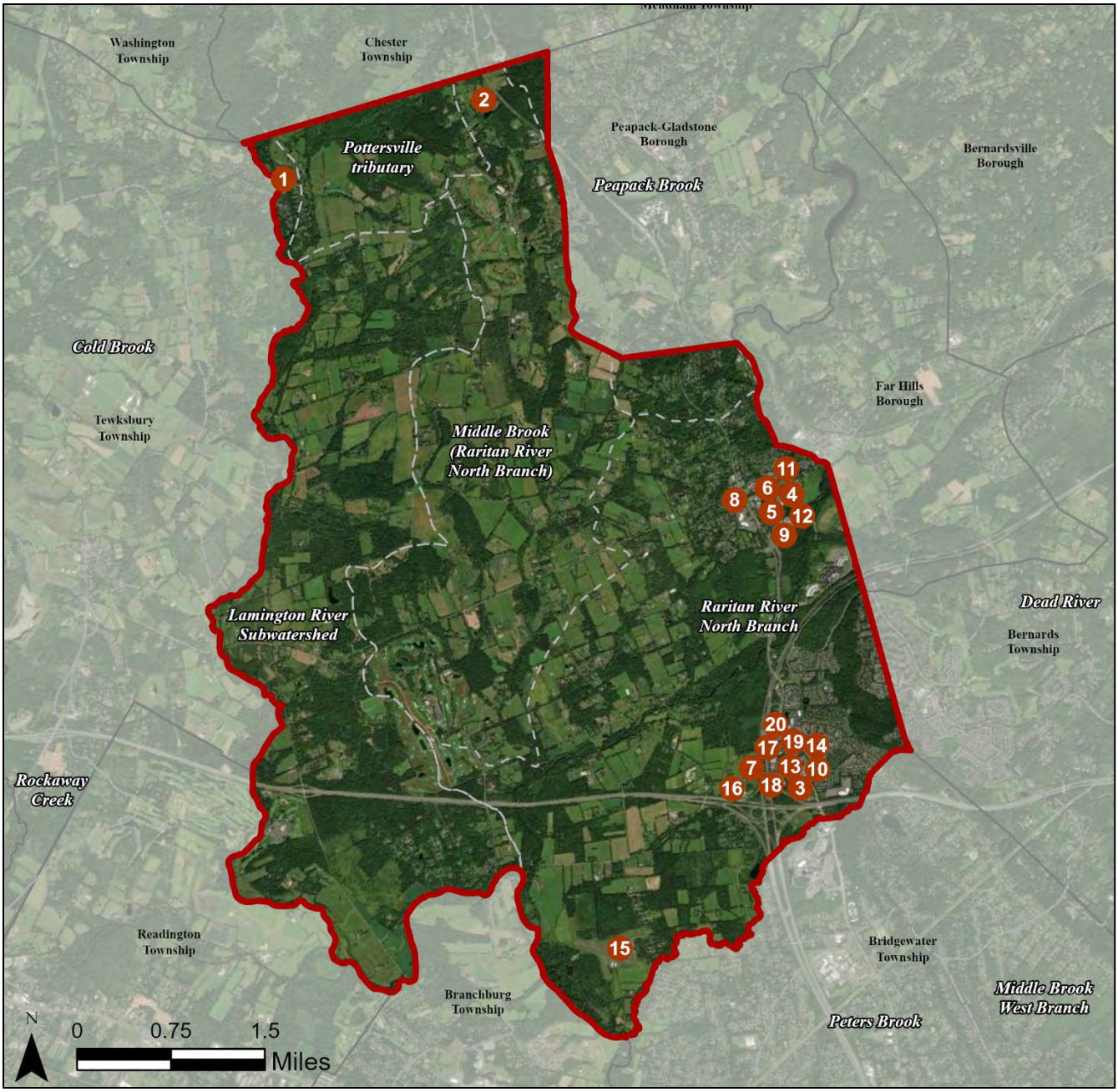


Figure 12: Sites with Green Infrastructure Opportunities in Bedminster Township

POTTERSVILLE VOLUNTEER FIRE COMPANY

RAP ID: 1

Subwatershed: Lamington River

HUC14 ID: 02030105050130

Site Area: 16,327 sq. ft.

Address: 8 Hacklebarney Road
Pottersville, NJ 07979

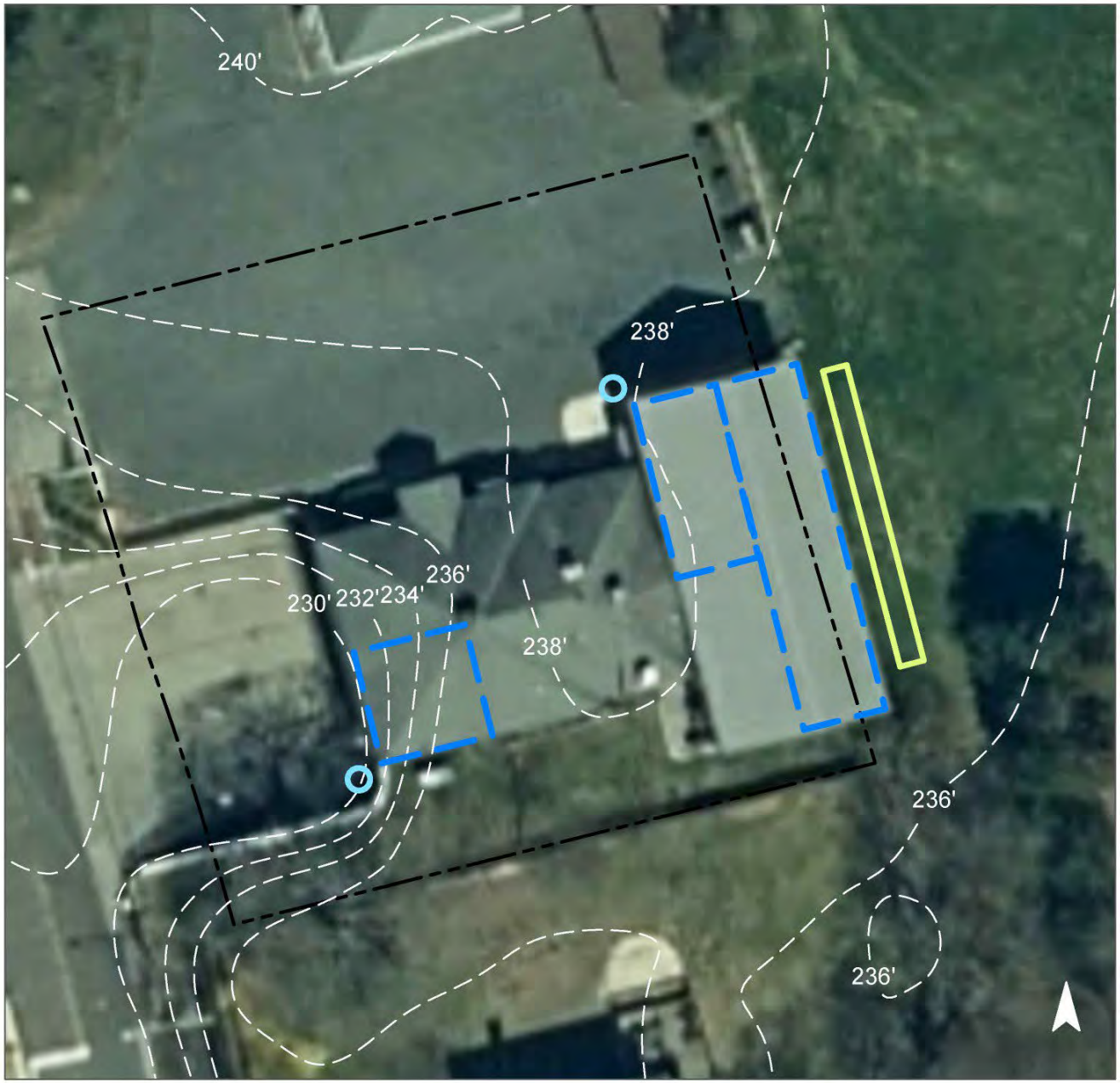
Block and Lot: Block 2, Lot 3

A rain garden can be installed in the grass area to the east of the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This would require downspout disconnections. Cisterns can be installed to the northeast and southwest of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing vehicles. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure. An underdrain would be required.

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"
94	15,311	0.7	7.7	70.3	0.012	0.47

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	1,155	0.034	6	2,240	0.08	290	$2,900
Rainwater harvesting	1,085	0.031	4	850	N/A	850 (gal)	$2,550

GREEN INFRASTRUCTURE RECOMMENDATIONS



Pottersville Volunteer Fire Company

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

0 15' 30'

RESURGENT CHURCH

RAP ID: 2

Subwatershed: Middle Brook (Raritan River North Branch)

HUC14 ID: 02030105060080

Site Area: 645,494 sq. ft.

Address: 3545 US-206
Far Hills, NJ 07931

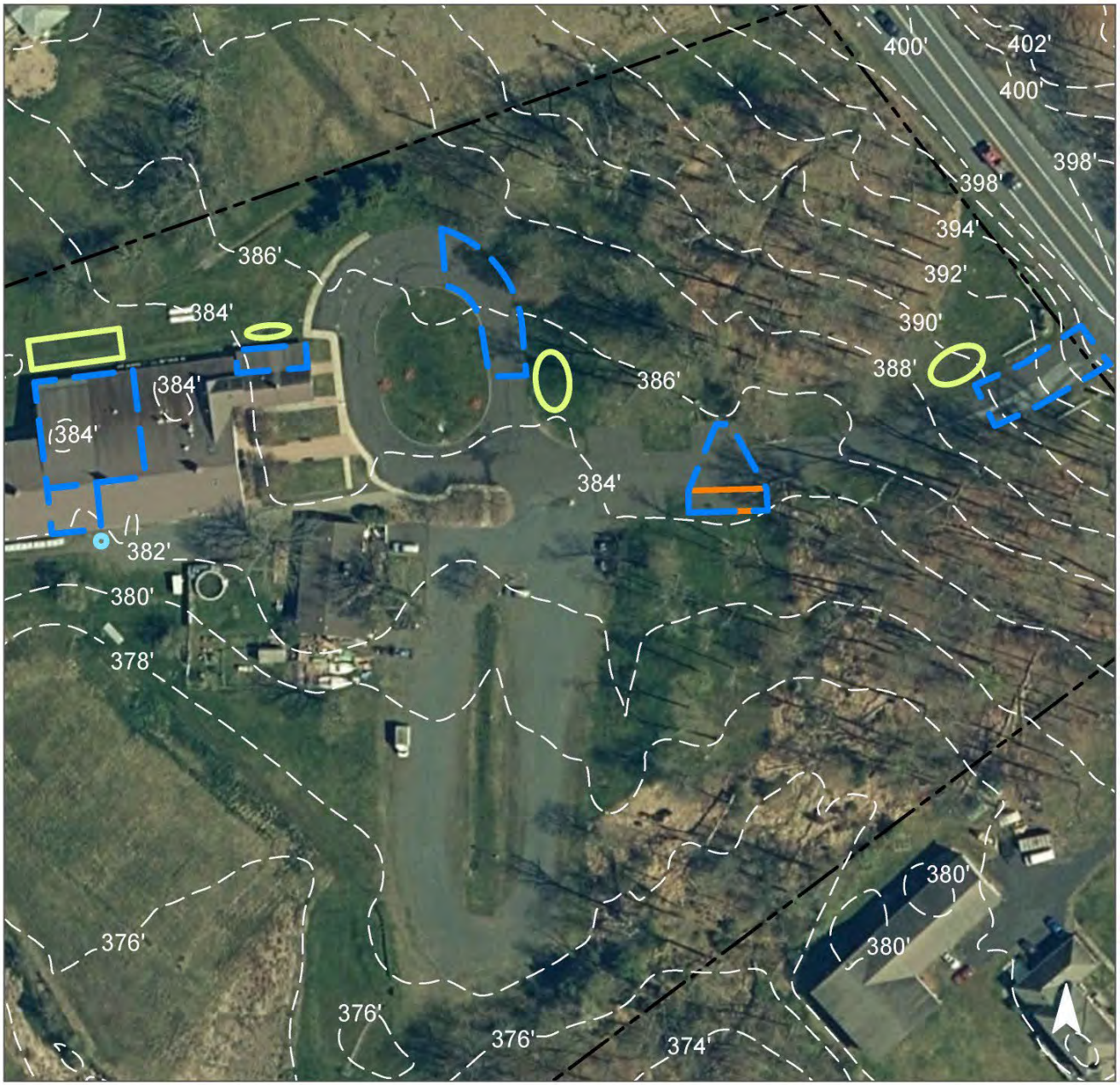
Block and Lot: Block 5, Lot 1.04

Multiple rain gardens can be installed in grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops and driveway. This may require downspout disconnections, curb cuts, and trench drains. The existing eastern parking spaces can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the driveway. A cistern can be installed to the south of the church building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden 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"
15	94,649	4.6	47.8	434.6	0.074	2.89

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	10,365	0.301	46	20,080	0.75	2,595	$25,950
Pervious pavement	2,030	0.059	10	3,930	0.15	740	$18,500
Rainwater harvesting	975	0.028	4	800	N/A	800 (gal)	$2,400

GREEN INFRASTRUCTURE RECOMMENDATIONS



Resurgent Church

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

0 50' 100'

ANNIE'S DELI

RAP ID: 3

Subwatershed: Raritan River North Branch

Site Area: 14,130 sq. ft.

Address: 2095 Burnt Mills Road
Bedminster, NJ 07921

Block and Lot: Block 57, Lot 19

Parking spaces located in the south section of the parking lot can be replaced with pervious pavement to capture and infiltrate stormwater. Downspouts at Annie's Deli can be disconnected and directed into downspout planter boxes to capture and filter rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
85	12,012	0.6	6.1	55.1	0.009	0.33

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	0.226	38	16,570	0.73	1,440	$36,000
Planter boxes	n/a	2	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Annie's Deli

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

0 15' 30'

BEDMINSTER PUBLIC SCHOOL

RAP ID: 4

Subwatershed: Raritan River North Branch

Site Area: 1,345,130 sq. ft.

Address: 234 Somerville Road
Bedminster, NJ 07921

Block and Lot: Block 36, Lot 1

Pervious pavement can be installed in the front parking lot of the building to capture storm water runoff from the parking lot. A preliminary soil assessment suggests that the soil is suitable for green infrastructure implementations.

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"
19	251,990	12.1	127.3	1,157.0	0.196	6.91

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
Pervious pavement	0.636	107	46,690	2.06	4,300	$107,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bedminster Public School

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

0 50' 100'

BEDMINSTER TOWNSHIP MUNICIPAL COURT

RAP ID: 5

Subwatershed: Raritan River North Branch

Site Area: 802,900 sq. ft.

Address: 55 Miller Lane
Bedminster, NJ 07921

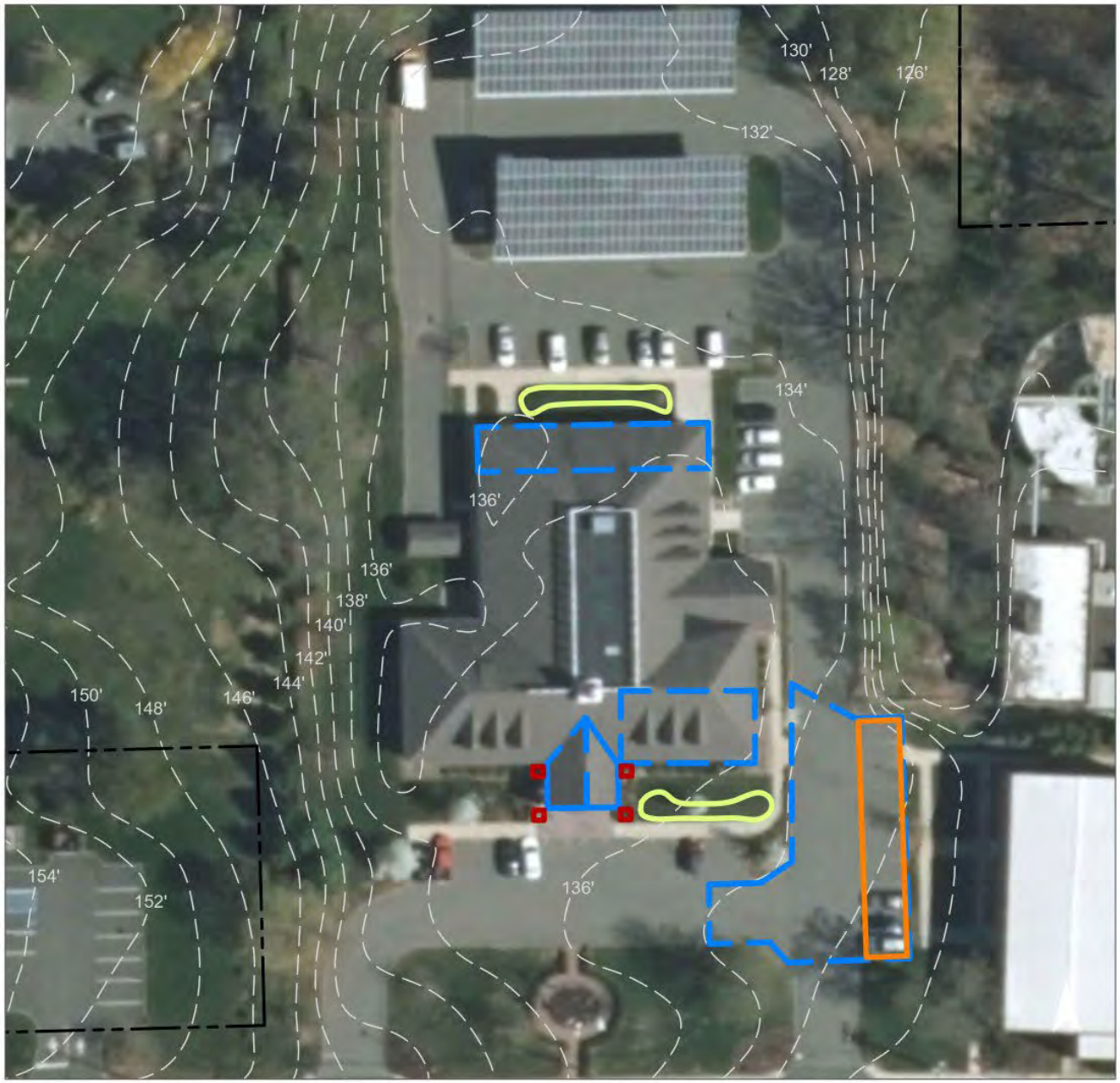
Block and Lot: Block 36, Lots 10,11,12,14

Bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff on the north and south of the building. Pervious pavement can be installed in the southeast corner of the parking lot to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
25	203,380	9.8	102.7	933.8	0.158	5.58

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	0.081	14	5,955	0.26	795	$3,975
Pervious pavement	0.138	23	10,115	0.45	1,710	$42,750
Planter boxes	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bedminster Municipal Court

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

0 30' 60'

BEDMINSTER USPS

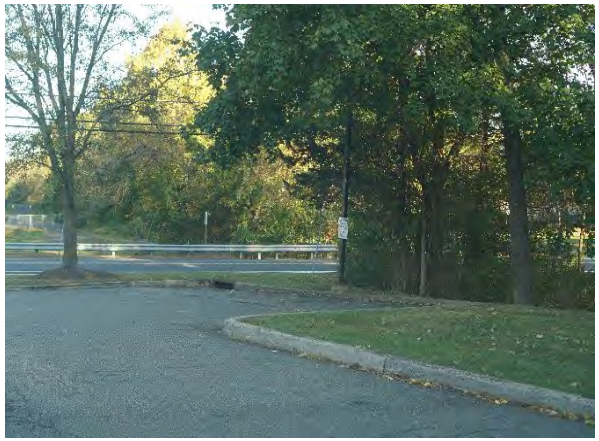
RAP ID: 6

Subwatershed: Raritan River North Branch

Site Area: 29,710 sq. ft.

Address: 251 Somerville Road
Bedminster, NJ 07921

Block and Lot: Block 33, Lot 11

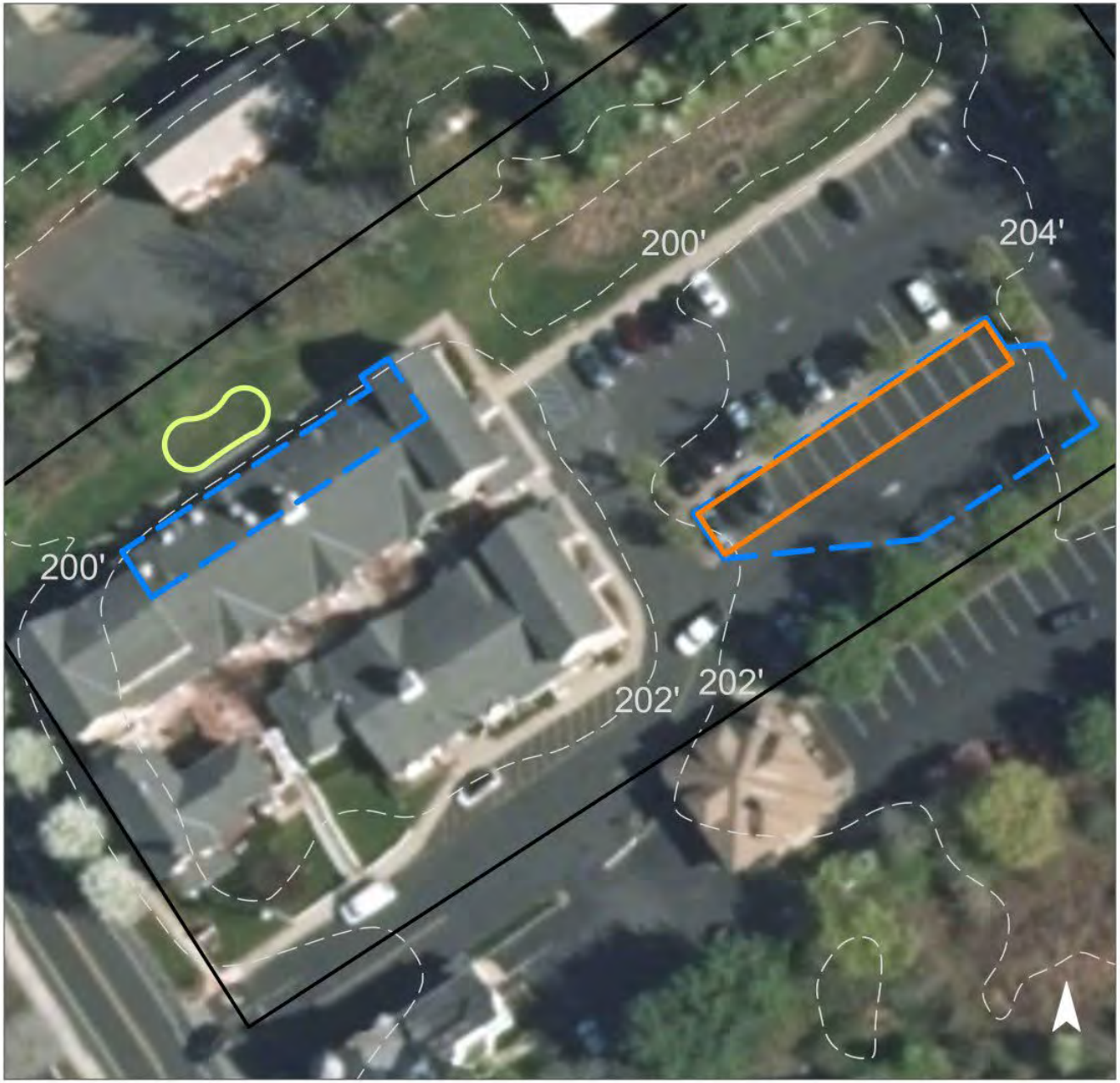


A rain garden can be installed east of the building to capture runoff from the building's roof. Additionally, pervious pavement can be installed in the parking lot to capture stormwater before it reaches the drain. A preliminary soil assessment suggests that more soil testing would be required before 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"
83	24,750	1.2	12.5	113.6	0.019	0.68

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	0.052	9	3,785	0.17	500	$1,875
Pervious pavement	0.132	22	9,709	0.43	2,070	$51,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bedminster USPS

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

0 25' 50'

BURNT MILLS PARK

RAP ID: 7

Subwatershed: Raritan River North Branch

Site Area: 483,140 sq. ft.

Address: 1850 Burnt Mills Road
Bedminster, NJ 07921

Block and Lot: Block 54, Lot 5

Bioretention systems can be installed to capture, treat, and infiltrate parking lot and rooftop runoff. Potential locations are in the northeast corner of the parking lot and the easternmost side of the structure shown in the above right image. Pervious pavement can be installed in the southwest corner of the parking lot to manage 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"
10	47,790	2.3	24.1	219.4	0.037	1.31

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	0.183	31	13,405	0.59	1,805	$9,025
Pervious pavement	0.193	32	14,175	0.62	1,300	$32,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Burnt Mills Park

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

0 25' 50'

CLARENCE DILLON PUBLIC LIBRARY

RAP ID: 8

Subwatershed: Raritan River North Branch

Site Area: 70,850 sq. ft.

Address: 2336 Lamington Road
Bedminster, NJ 07921

Block and Lot: Block 41, Lot 16.01

A rain garden can be installed on the eastern island in the parking lot to capture stormwater runoff from the impervious surface. 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"
72	51,040	2.5	25.8	234.4	0.040	1.40

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	0.143	24	10,520	0.46	560	$2,810

GREEN INFRASTRUCTURE RECOMMENDATIONS

Clarence Dillon Public Library

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

0 25' 50'

FAR HILLS-BEDMINSTER FIRE DEPARTMENT

RAP ID: 9

Subwatershed: Raritan River North Branch

Site Area: 1,088,910 sq. ft.

Address: 1 Miller Lane
Bedminster, NJ 07921

Block and Lot: Block 36, Lot 19

A cistern can be installed in the southwest corner of the building to allow roof runoff to be reused. A bioretention system can be installed at the northeast corner of the building to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed in the parking spaces behind and south of the building to filter and 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"
4	48,960	2.4	24.7	224.8	0.038	1.34

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.250	42	18,300	0.81	2,300	$11,500
Pervious pavement	0.127	21	15,580	0.69	1,500	$37,500
Rainwater harvesting	0.091	15	3,000	0.29	3,000 (gal)	$6,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Far Hills-Bedminster Fire Department

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

0 30' 60'

FRESH MARKET

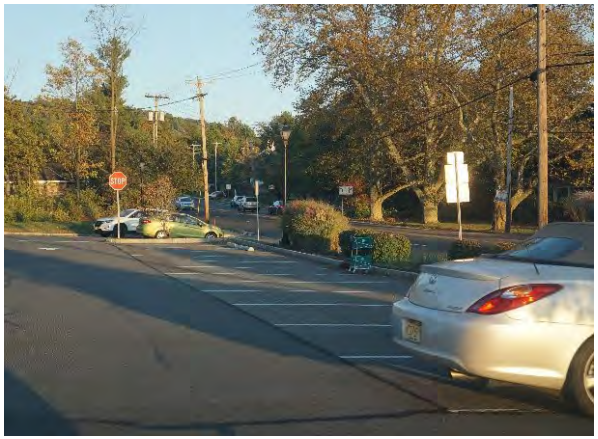
RAP ID: 10

Subwatershed: Raritan River North Branch

Site Area: 139,930 sq. ft.

Address: 75 Washington Valley Road
Bedminster, NJ 07921

Block and Lot: Block 58, Lot 13, 14



Pervious pavement can be installed within the parking lot to capture stormwater runoff from the impervious surfaces that surround the area. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
95	132,810	6.4	67.1	609.8	0.103	3.64

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	1.039	174	76,235	3.36	8,170	$204,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Fresh Market

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

0 50' 100'

GRACE CHAPEL

RAP ID: 11

Subwatershed: Raritan River North Branch

HUC14 ID: 02030105060070

Site Area: 95,467 sq. ft.

Address: 375 Main Street
Bedminster, NJ 07921

Block and Lot: Block 32, Lot 5

Multiple rain gardens can be installed in grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops and driveway. This will require downspout disconnections. The existing northern, eastern, and western parking spaces can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the driveway and parking lot. A cistern can be installed to the north of the church building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 49"
65	61,662	3.0	31.1	283.1	0.048	1.88

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	7,085	0.206	30	13,720	0.52	1,770	$17,700
Pervious pavement	16,675	0.484	72	32,290	1.21	5,140	$128,500
Rainwater harvesting	735	0.021	4	600	N/A	600 (gal)	$1,800

GREEN INFRASTRUCTURE RECOMMENDATIONS

Grace Chapel

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

0 30' 60'

MILLER LANE PARK

RAP ID: 12

Subwatershed: Raritan River North Branch

Site Area: 617,490 sq. ft.

Address: 75 Miller Lane
Bedminster, NJ 07921

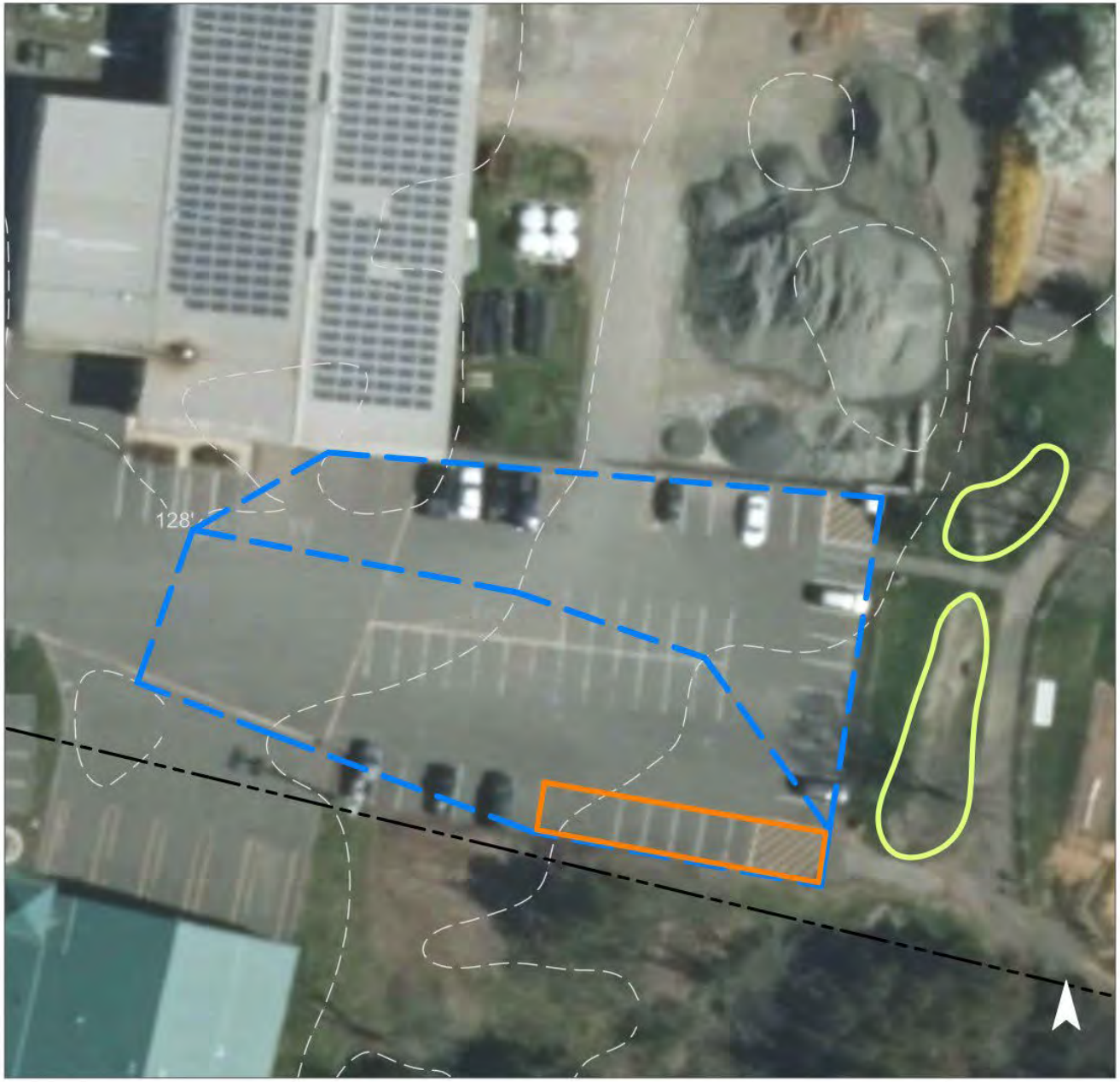
Block and Lot: Block 36, Lot 14

Connected bioretention systems can be installed on the eastern edge of the parking lot to capture, treat, and infiltrate runoff. The systems can be linked by pipes (already installed) shown in the above image. Pervious pavement can be installed in the parking spaces on the southern edge of the parking lot to filter and 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"
22	133,840	6.5	67.6	614.5	0.104	3.67

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.273	46	19,995	0.88	2,640	$13,200
Pervious pavement	0.361	60	26,472	1.17	1,740	$43,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Miller Lane Park

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

0 25' 50'

OASIS DAY SPA

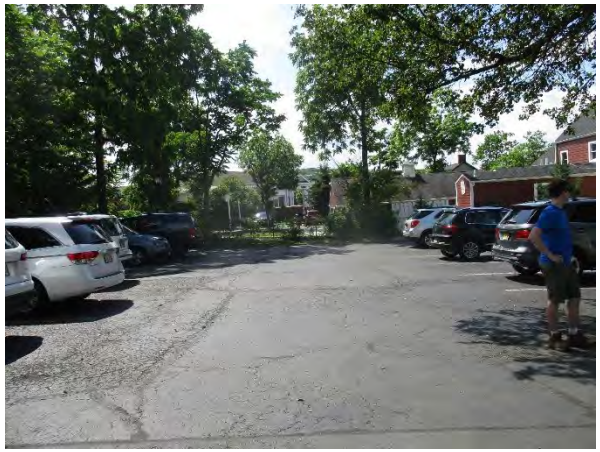
RAP ID: 13

Subwatershed: Raritan River North Branch

Site Area: 10,890 sq. ft.

Address: 274 US Highway 202/206 North
Pluckemin, NJ 07978

Block and Lot: Block 58, Lots 9 and 10

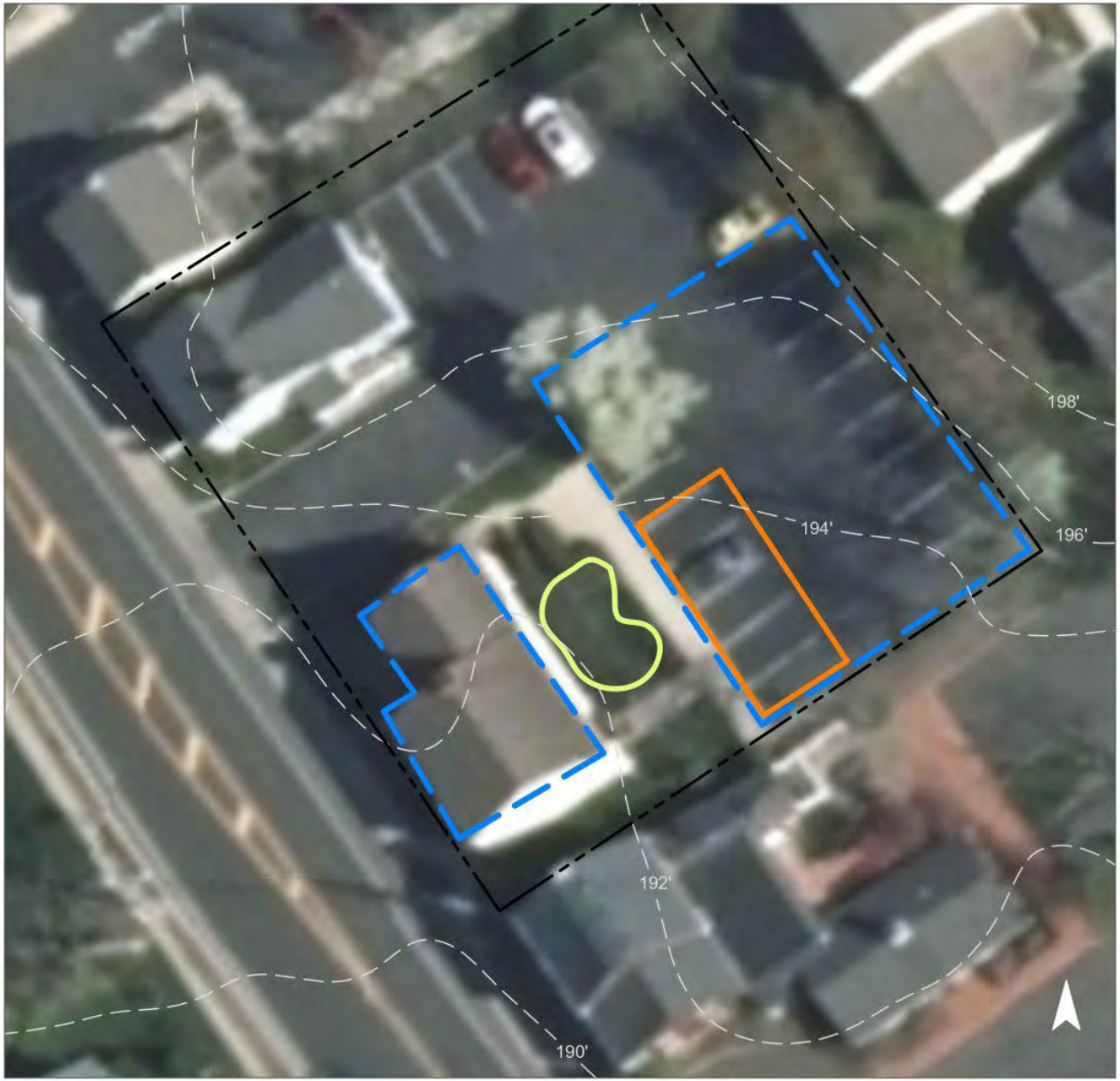


A bioretention system can be installed northeast of the building, adjacent to the parking lot, to capture, treat, and infiltrate rooftop runoff. The potential site location is shown in the above left image. Pervious pavement can be installed on the southwest side of the parking lot, adjacent to the sidewalk, to capture, filter, and 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"
85	9,250	0.4	4.7	42.5	0.007	0.25

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.036	6	2,655	0.12	360	$1,800
Pervious pavement	0.130	22	9,462	0.42	880	$22,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oasis Day Spa

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

0 15' 30'

PLUCKEMIN USPS

RAP ID: 14

Subwatershed: Raritan River North Branch

Site Area: 81,890 sq. ft.

Address: 318 US Highway 206
Pluckemin, NJ 07921

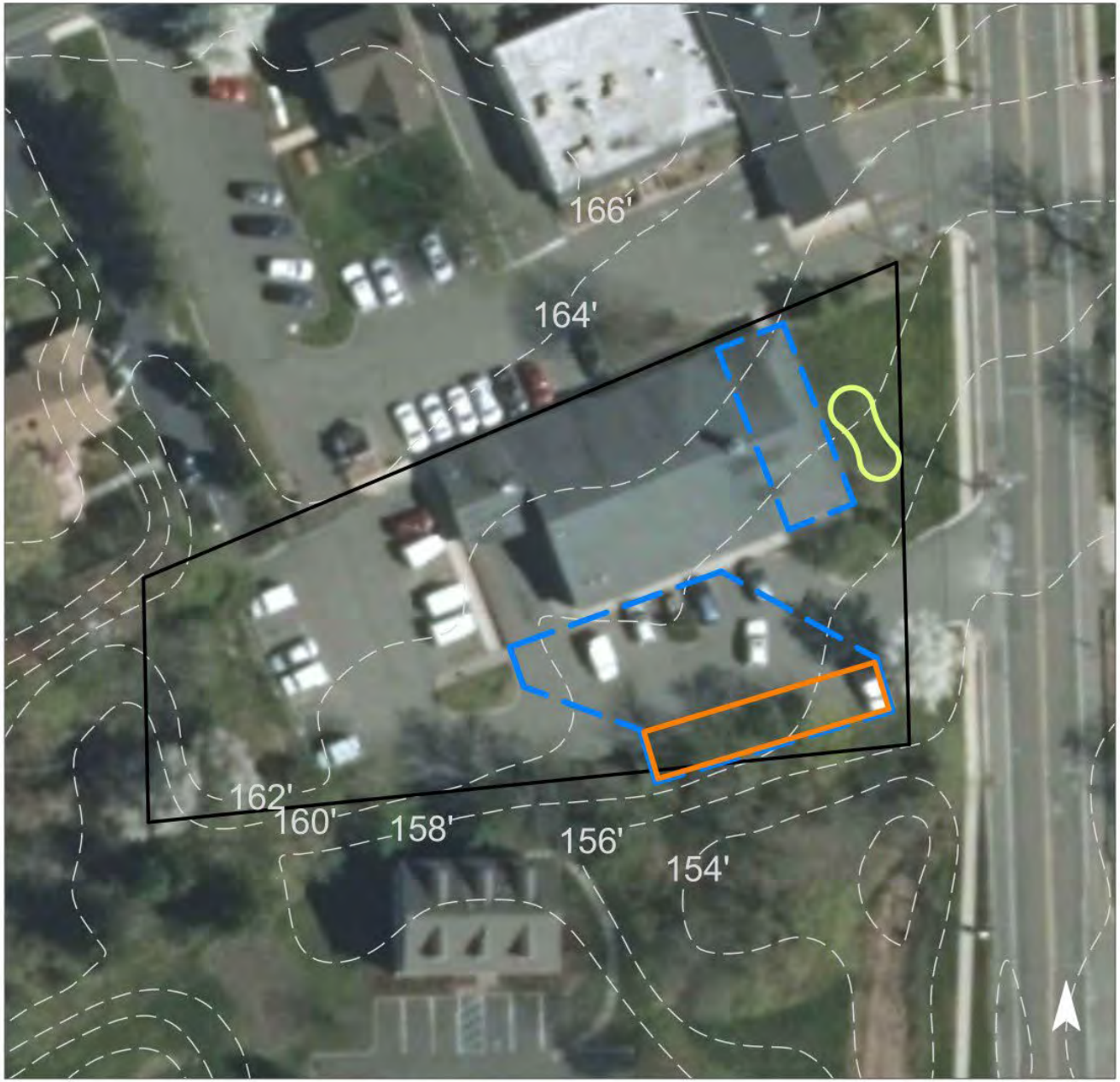
Block and Lot: Block 58, Lot 2

A rain garden can be installed north of the building to capture, treat, and infiltrate stormwater runoff from the rooftop of the building. Additionally, pervious pavement can be installed in the northeast parking lot to capture stormwater 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"
100	81,890	3.9	41.4	376.0	0.064	2.25

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.038	6	2,798	0.12	360	$1,800
Pervious pavement	0.126	21	9,260	0.41	1,460	$36,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Pluckemin USPS

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

0 25' 50'

SOMERSET AIRPORT

RAP ID: 15

Subwatershed: Raritan River North Branch

Site Area: 8,831,920 sq. ft.

Address: 150 Airport Road
Bedminster, NJ 07921

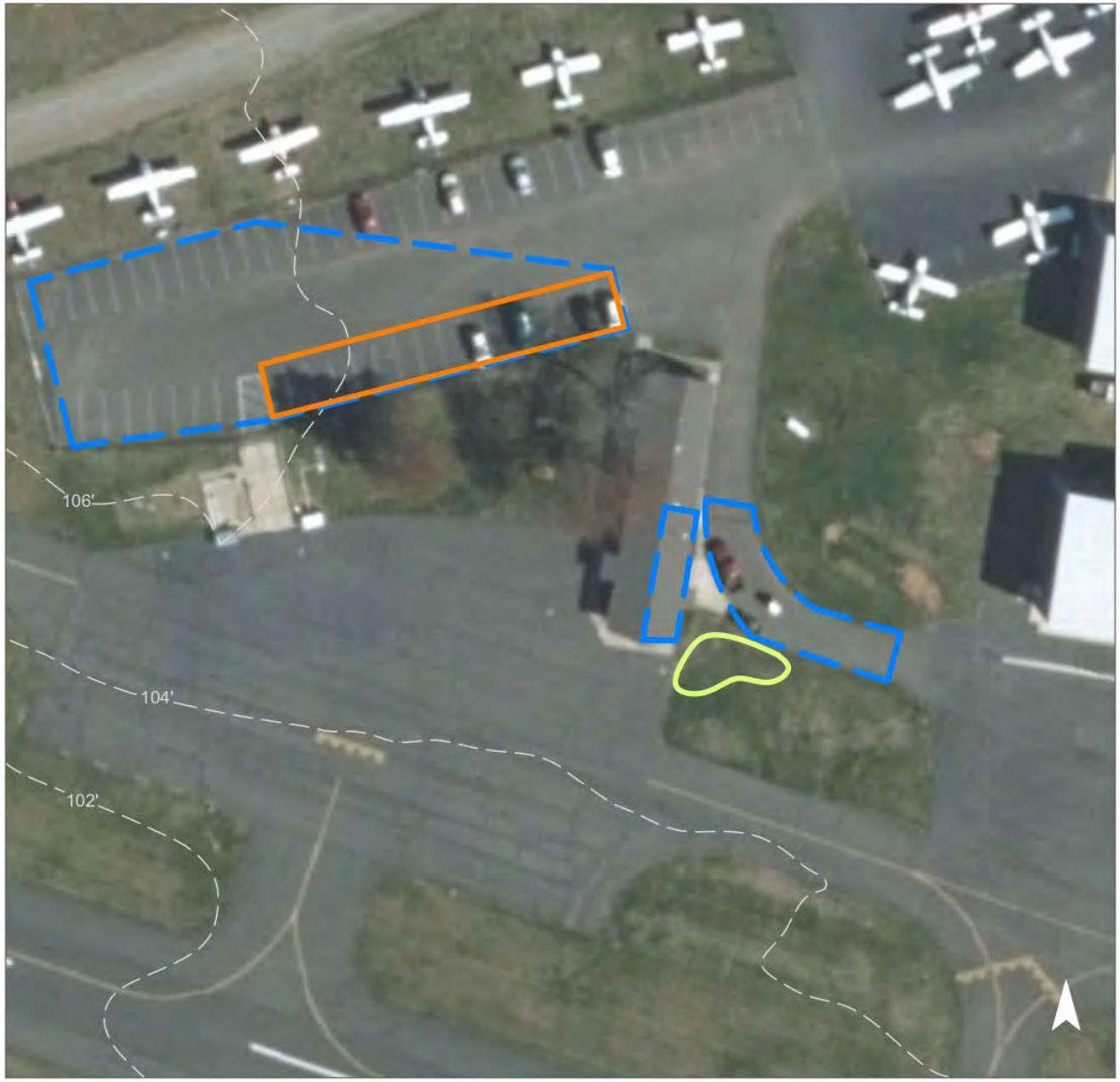
Block and Lot: Block 61, Lot 6

A bioretention system can be installed in the turfgrass located at the southeast corner of the building (shown in the above left image) to capture, treat, and infiltrate rooftop and pavement runoff. Parking spaces can be replaced with pervious pavement to filter and infiltrate stormwater runoff from the parking lot located north of the building shown. 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"
11	953,870	46.0	481.8	4,379.6	0.743	26.16

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	0.070	12	5,161	0.23	675	$1,800
Pervious pavement	0.130	22	9,462	0.42	880	$22,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerset Airport

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

0 30' 60'

SOMERSET HILLS LEARNING INSTITUTE

RAP ID: 16

Subwatershed: Raritan River North Branch

Site Area: 538,250 sq. ft.

Address: 1810 Burnt Mills Road
Bedminster, NJ 07921

Block and Lot: Block 62.01, Lot 1

Bioretention systems can be installed at the northeast corner of the school (just beyond the corner of the sidewalk seen) and in the center of the courtyard to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed at the western edge of the parking lot to manage 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"
11	60,808	2.9	30.7	279.2	0.047	1.67

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.143	24	10,517	0.46	1,300	$6,500
Pervious pavement	0.243	41	177,840	0.79	2,015	$50,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

Somerset Hills Learning Institute

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

0 30' 60'

SORDONI CONSTRUCTION COMPANY

RAP ID: 17

Subwatershed: Raritan River North Branch

Site Area: 107,690 sq. ft.

Address: 1 Pluckemin Way
Bedminster, NJ 07921

Block and Lot: Block 57, Lot 7

A bioretention system can be installed north of the road in front of the building to manage pavement runoff. Parking spaces north of the building can be replaced with pervious pavement to capture and infiltrate 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"
77	83,420	4.0	42.1	383.0	0.065	2.29

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	0.100	17	7,323	0.32	960	$4,800
Pervious pavement	0.214	36	15,738	0.69	1,620	$40,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Sordoni Construction Co

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

0 20' 40'

THE CENTER FOR CONTEMPORARY ART

RAP ID: 18

Subwatershed: Raritan River North Branch

Site Area: 17,700 sq. ft.

Address: 2020 Burnt Mills Road
Bedminster, NJ 07921

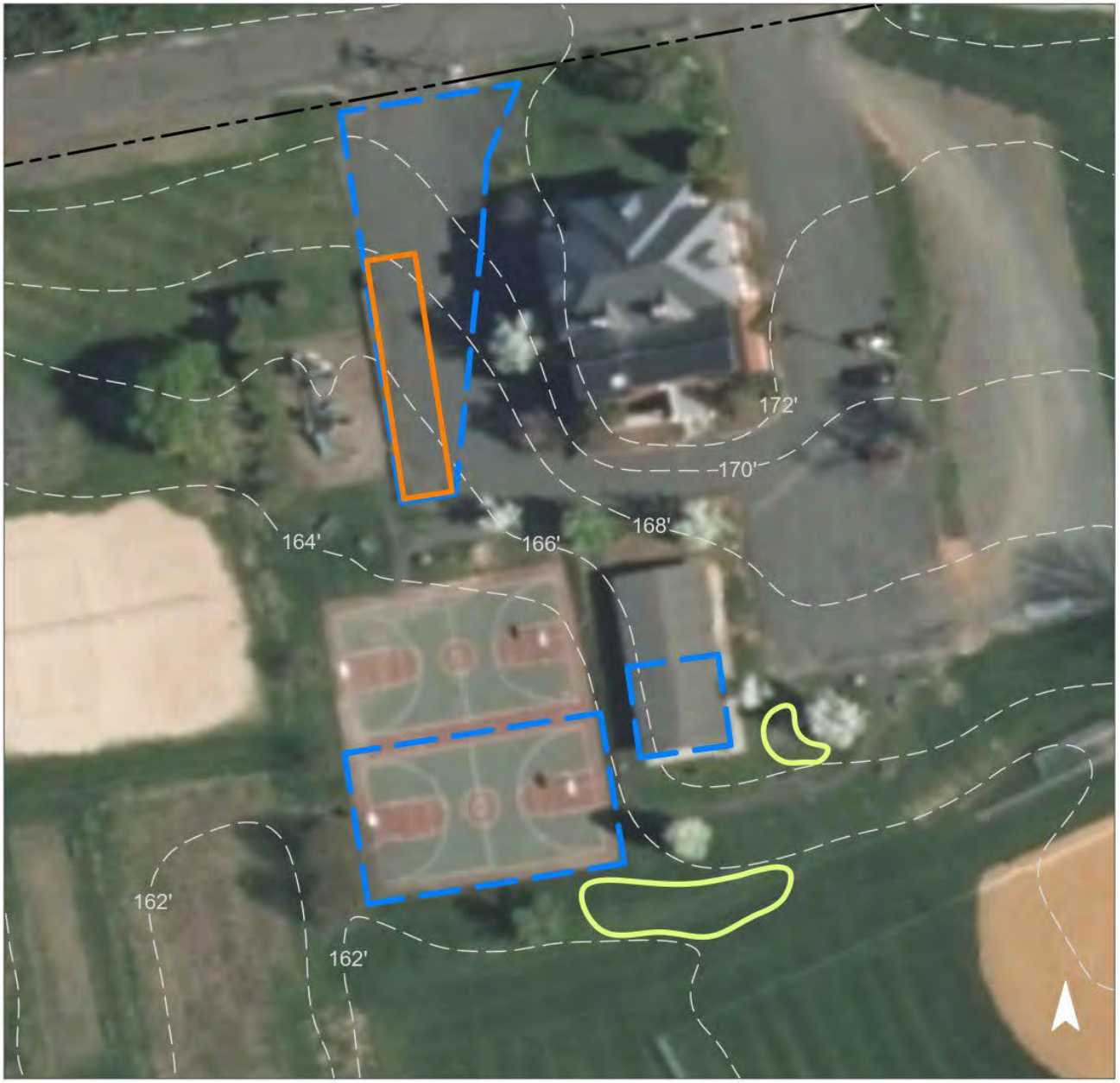
Block and Lot: Block 71, Lot 4

Bioretention systems can be installed southeast of the southernmost building and southeast of the tennis court to capture, treat, and infiltrate rooftop, tennis court, and parking lot runoff. Parking spaces located to the west of the northernmost building can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
59	10,480	0.5	5.3	48.0	0.008	0.29

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	0.134	22	9,844	0.43	1,290	$6,450
Pervious pavement	0.120	20	8,811	0.39	1,460	$36,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Center for Contemporary Art

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

0 25' 50'

THE HILLS VILLAGE CENTER

RAP ID: 19

Subwatershed: Raritan River North Branch

Site Area: 535,740 sq. ft.

Address: 402 Route 206 North
Bedminster, NJ 07921

Block and Lot: Block 59.27, Lot 11.1

A bioretention system can be installed on the northwestern side of Pancheros Mexican Grill to capture, treat, and infiltrate rooftop runoff from Pancheros Mexican Grill located in the Hills Village Center. Pervious pavement can be installed in various locations on the northern side of the parking lot to filter and 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"
84	448,910	21.6	226.7	2,061.1	0.35	12.31

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	0.079	13	5,782	0.25	735	$3,675
Pervious pavement	0.703	118	51,560	2.27	4,925	$123,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

The Hills Village Center

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

0 50' 100'

THE PLUCKEMIN INN

RAP ID: 20

Subwatershed: Raritan River North Branch

Site Area: 66,940 sq. ft.

Address: 359 US Highway 206
Bedminster, NJ 07921

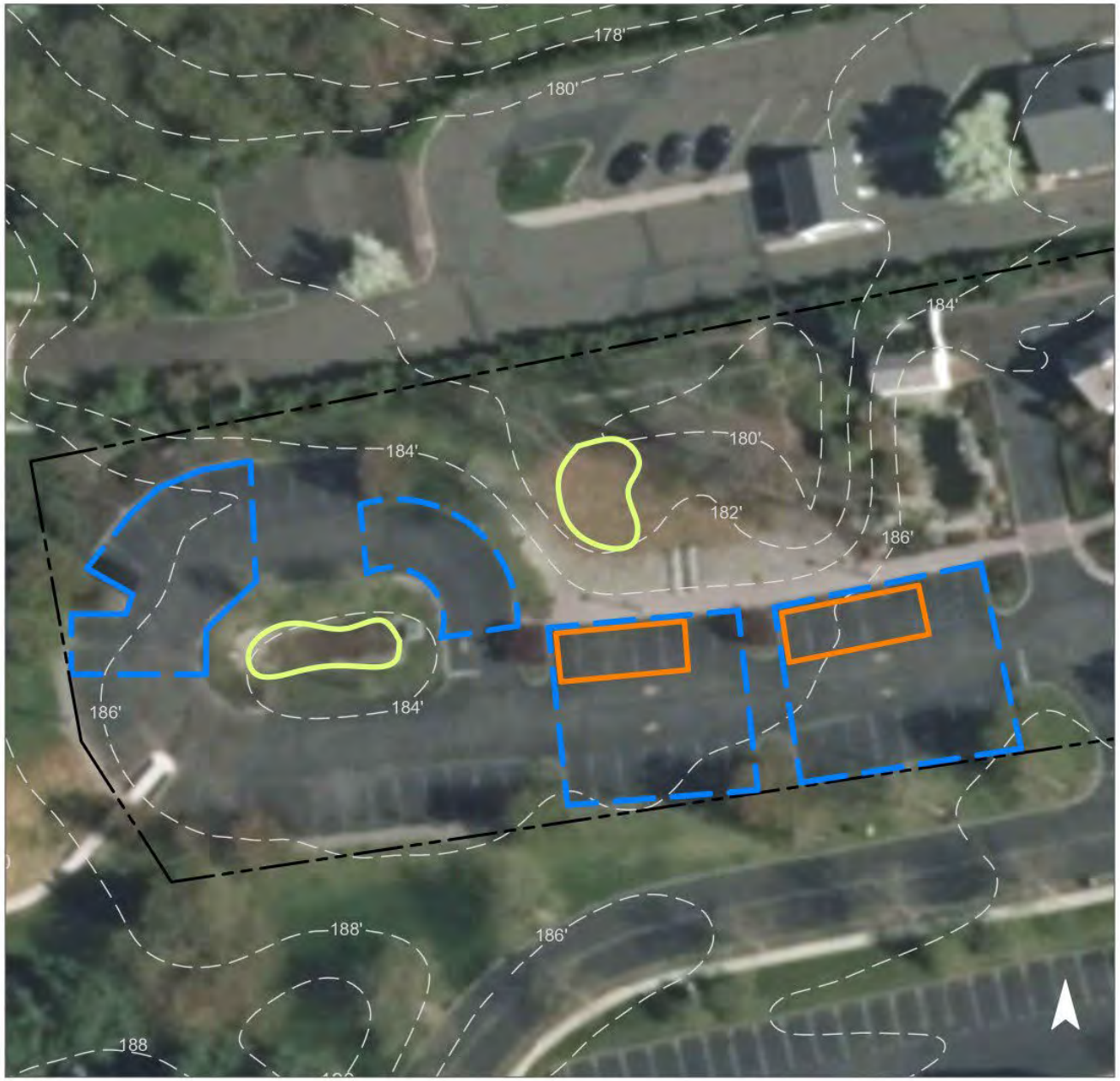
Block and Lot: Block 57, Lot 3

The detention basin in the center of the parking lot can be retrofitted to act as a bioretention system to capture, treat, and infiltrate parking lot runoff. An additional bioretention system can be installed north of the parking lot to capture, treat, and infiltrate additional parking lot runoff. Pervious pavement can be installed in the parking spaces in the northeastern side 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"
70	46,870	2.3	23.7	215.2	0.037	1.29

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	0.109	18	8,011	0.35	1,430	$7,150
Pervious pavement	0.208	35	15,244	0.67	1,435	$35,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Pluckemin Inn

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

0 25' 50'

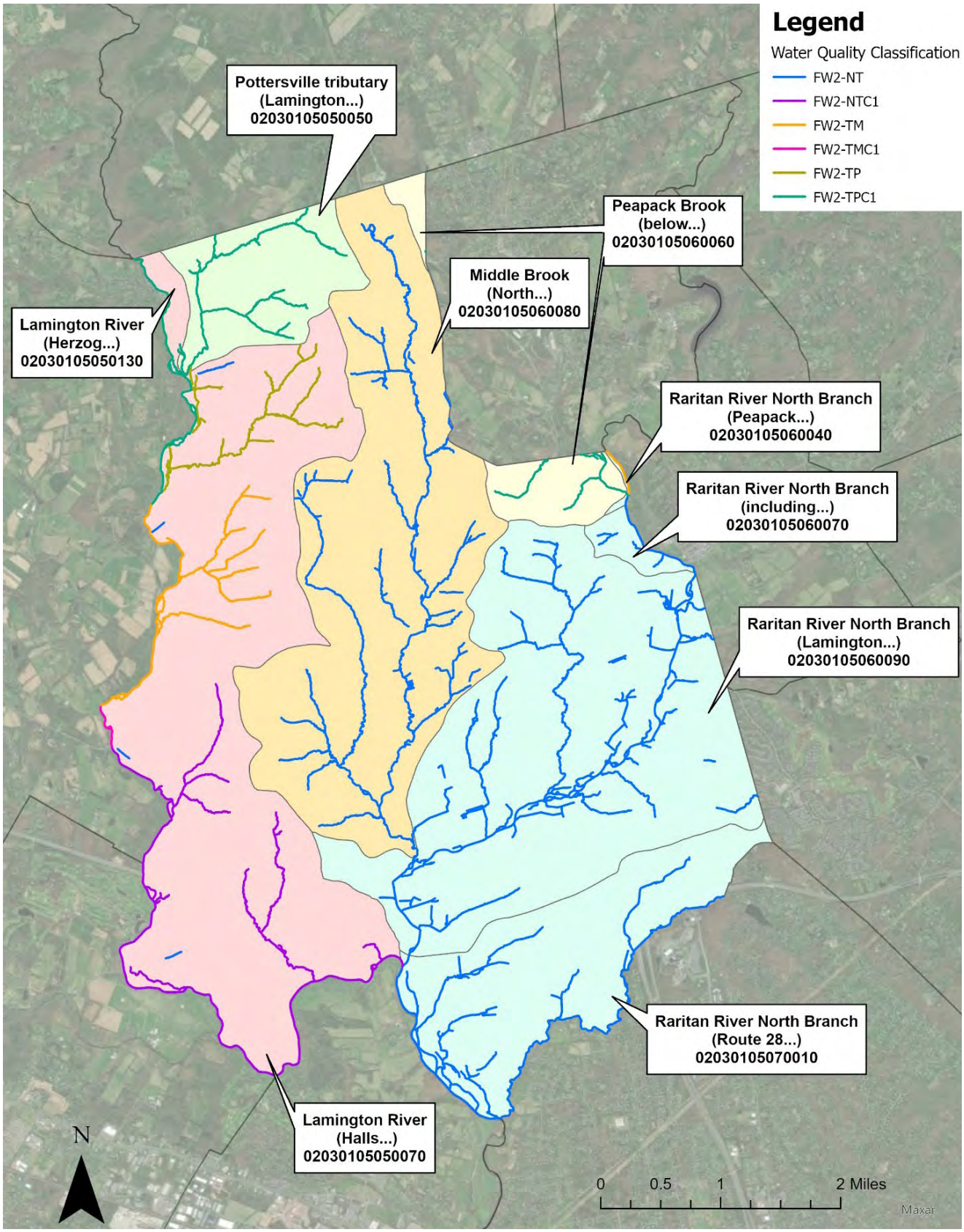


Figure 13. Water Quality Classification of Surface Waters in Bedminster Township

Table 11. Water Quality Classification of Surface Waters in Bedminster Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	67.6	63.6 %
Freshwater 2, non-trout, Category One	FW2-NTC1	13.0	12.2%
Freshwater 2, trout production, Category One	FW2-TPC1	11.0	10.4%
Freshwater 2, trout maintenance	FW2-TM	7.9	7.5%
Freshwater 2, trout production	FW2-TP	6.4	6.0%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	0.4	0.4%

Branchburg Township

Introduction

Located in Somerset County in New Jersey, Branchburg Township covers about 20.3 square miles. With a population of 14,940 (2020 United States Census), Branchburg Township consists of 53.0% of urban land uses by area. Of that urban land use, approximately 44.0% 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 29.7% of Branchburg Township.

Branchburg Township contains portions of eight subwatersheds (Table 1). There are approximately 72.9 miles of rivers and streams within the municipality; these include Chambers Brook and its tributaries, Holland Brook and its tributaries, Lamington River and its tributaries, North Branch Raritan River and its tributaries, Pleasant Run and its tributaries, South Branch Raritan River and its tributaries, and an uncoded tributary. Branchburg Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Branchburg Township

Subwatershed	HUC14
Raritan River South Branch (Pleasant Run-Three Bridges)	02030105040010
Pleasant Run	02030105040020
Holland Brook	02030105040030
Raritan River South Branch (North Branch to Pleasant Run)	02030105040040
Lamington River (Halls Bridge Road-Herzog Brook)	02030105050070
Raritan River North Branch (Route 28 to Lamington River)	02030105070010
Chambers Brook	02030105070020
Raritan River North Branch (below Route 28)	02030105070030

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Branchburg Township. 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 Branchburg Township'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 Branchburg Township in relation to the study area. Figure 2 shows the portions of the eight HUC14s in Branchburg Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Branchburg Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Branchburg Township and is presented in Table 2. Figure 4 shows the impervious cover in Branchburg Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Branchburg Township 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". Only a detention basin and a naturalized detention basin were identified in Branchburg Township within the study area.

The Q-Farms in Branchburg Township 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 Branchburg Township 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 2,218.7 acres of agricultural land use in Branchburg Township, of which, 160.7 acres lie within the study area for this Watershed Restoration and Protection Plan. There

are five Q-Farms in the study area portion of Branchburg Township, totaling 227.9 acres. Within the five Q-Farms, there are approximately 94.8 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Bedminster Township are presented in Table 8.

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 (02030105050070). Within this HUC14, there are 16.2 acres of buildings and 26.9 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 Branchburg Township, approximately 1.0 acres of rooftop runoff would be managed with 0.20 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Branchburg Township, approximately 2.7 acres of roadway would be managed, or 0.7 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 Branchburg Township are shown in Figure 10 and presented in Table 9. 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 Watershed Restoration and Protection Plan study area (see Figure 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. No sites that can be retrofitted with green infrastructure were identified within the study area. Figure 12 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 two classifications that apply to the streams in Branchburg Township. Figure 13 depicts the water quality classifications of surface waters throughout Branchburg Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

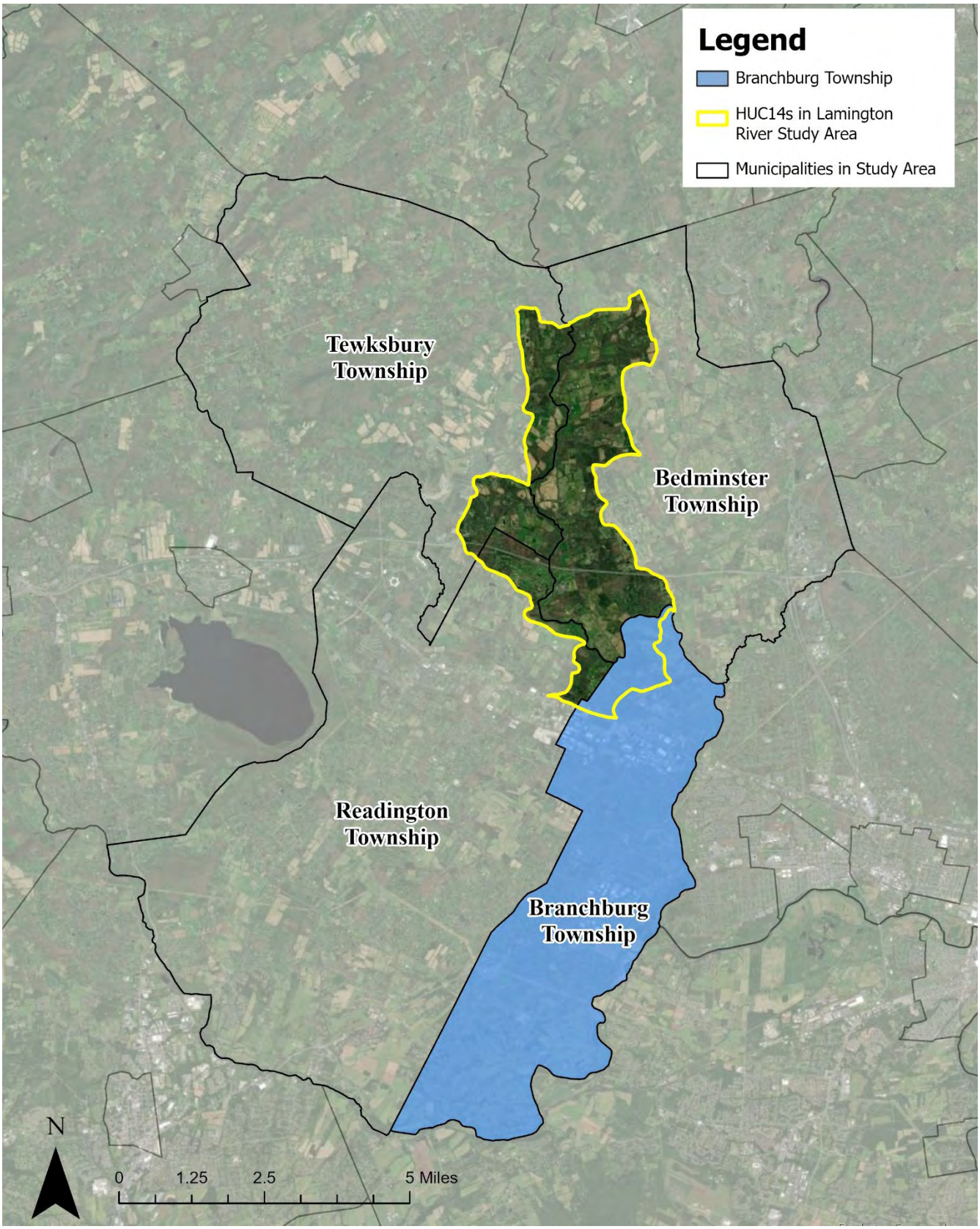


Figure 1: Municipalities in the Study Area

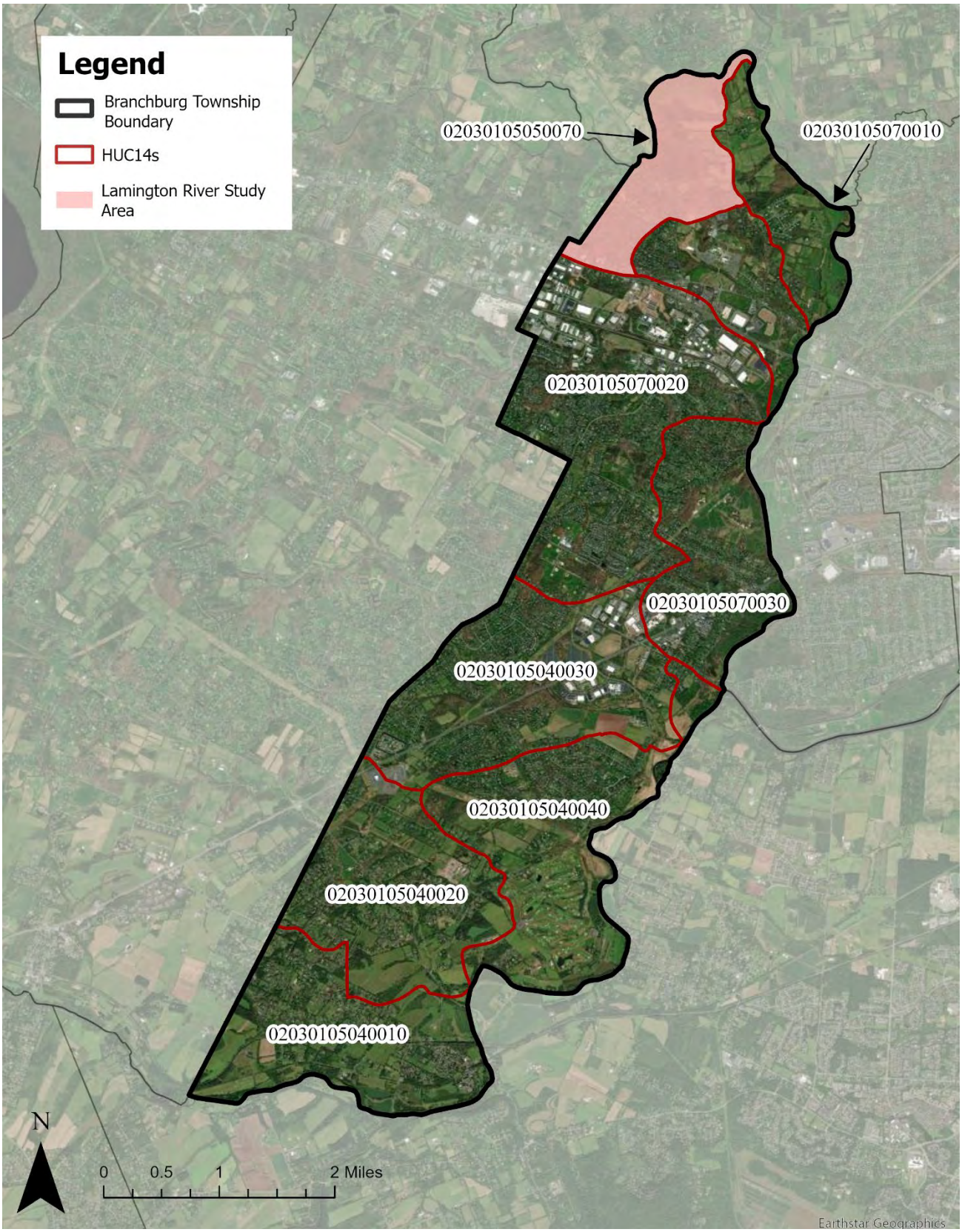


Figure 2: Portions of eight HUC14s are in Branchburg Township

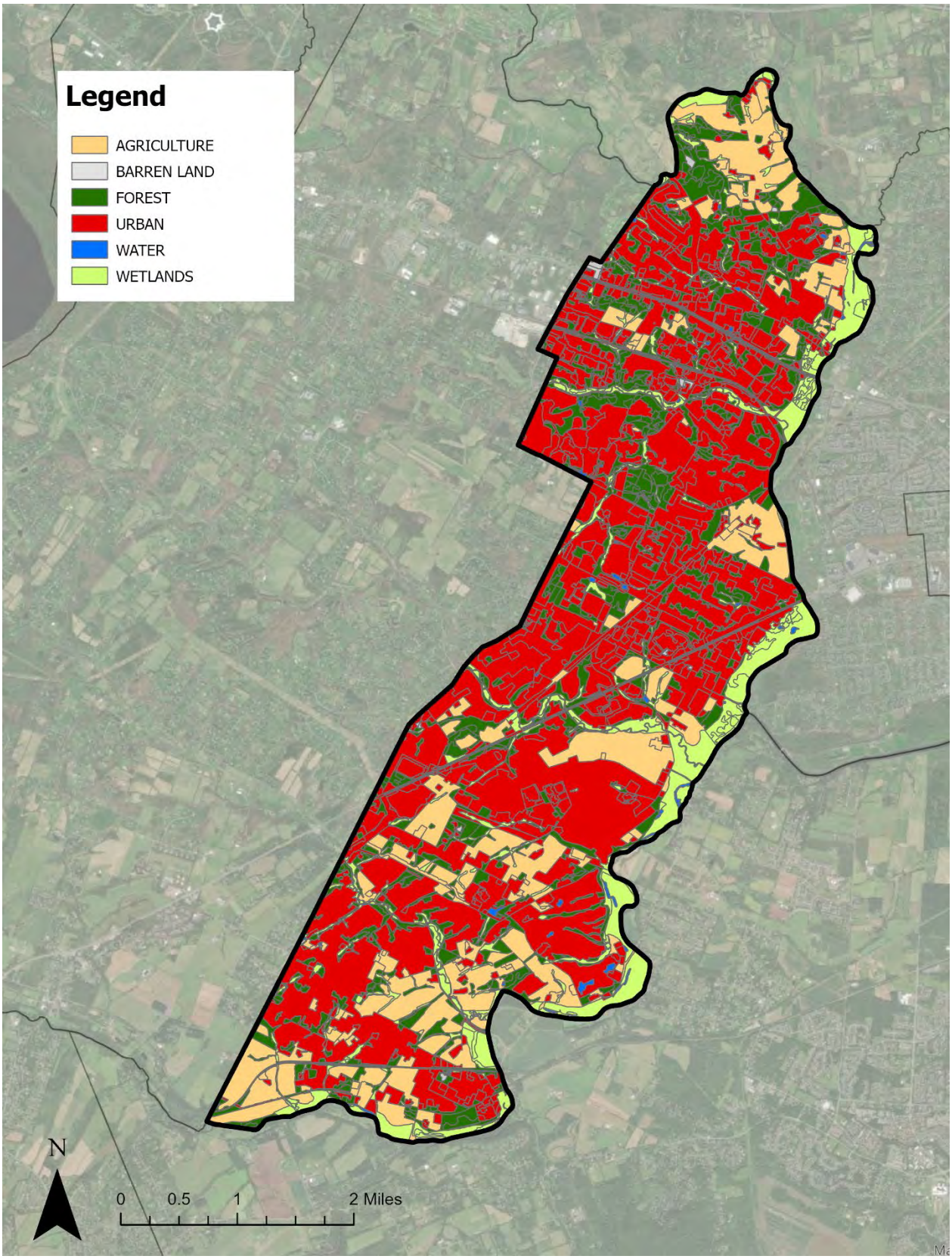


Figure 3: Land Use in Branchburg Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Branchburg Township

Land Use	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105040010				
Agriculture	454.6	591.0	4,546.1	136,382.5
Barren Land	1.6	0.8	8.2	98.6
Forest	250.5	25.1	751.6	10,021.3
Urban	650.1	910.1	9,751.5	91,014.1
Water	35.6	3.6	106.7	1,422.7
Wetlands	167.3	16.7	501.8	6,690.1
TOTAL =	**1,559.7**	**1,547.3**	**15,665.9**	**245,629.3**
02030105040020				
Agriculture	421.3	547.6	4,212.7	126,379.8
Barren Land	0.9	0.4	4.5	53.8
Forest	274.5	27.4	823.5	10,979.7
Urban	776.0	1,086.4	11,639.5	108,635.2
Water	15.6	1.6	46.8	623.5
Wetlands	101.4	10.1	304.1	4,054.4
TOTAL =	**1,589.6**	**1,673.6**	**17,031.0**	**250,726.5**
02030105040030				
Agriculture	322.0	418.6	3,220.3	96,608.5
Barren Land	2.2	1.1	11.0	131.9
Forest	238.4	23.8	715.1	9,535.0
Urban	1,222.4	1,711.4	18,336.0	171,136.3
Water	16.6	1.7	49.8	664.3
Wetlands	141.1	14.1	423.4	5,644.9
TOTAL =	**1,942.7**	**2,170.7**	**22,755.6**	**283,720.9**
02030105040040				
Agriculture	318.5	414.1	3,185.0	95,550.0
Barren Land	1.0	0.5	5.2	62.9
Forest	215.5	21.6	646.6	8,621.4
Urban	921.6	1,290.2	13,823.5	129,018.9
Water	66.8	6.7	200.5	2,673.7
Wetlands	309.3	30.9	927.8	12,370.4
TOTAL =	**1,832.7**	**1,763.9**	**18,788.6**	**248,297.3**
02030105050070				
Agriculture	160.7	208.9	1,607.1	48,214.5
Barren Land	12.7	6.4	63.7	764.9
Forest	262.1	26.2	786.4	10,484.9
Urban	284.7	398.6	4,270.4	39,857.4
Water	13.6	1.4	40.8	544.6
Wetlands	68.2	6.8	204.5	2,726.9
TOTAL =	**802.1**	**648.3**	**6,973.1**	**102,593.2**

02030105070010				
Agriculture	276.1	359.0	2,761.3	82,838.8
Barren Land	1.2	0.6	5.8	69.1
Forest	120.4	12.0	361.1	4,814.5
Urban	110.5	154.7	1,657.5	15,469.6
Water	32.5	3.3	97.6	1,301.7
Wetlands	126.1	12.6	378.3	5,044.5
TOTAL =	**666.8**	**542.1**	**5,261.6**	**109,538.3**
02030105070020				
Agriculture	73.8	95.9	737.8	22,133.8
Barren Land	3.5	1.8	17.6	211.6
Forest	632.8	63.3	1,898.5	25,313.4
Urban	1,704.2	2,385.9	25,563.6	238,593.9
Water	20.3	2.0	60.8	810.9
Wetlands	130.4	13.0	391.1	5,214.3
TOTAL =	**2,565.0**	**2,562.0**	**28,669.5**	**292,277.9**
02030105070030				
Agriculture	191.7	249.2	1,916.7	57,501.1
Barren Land	0.8	0.4	4.1	49.2
Forest	349.7	35.0	1,049.1	13,988.0
Urban	1,205.5	1,687.7	18,082.6	168,770.7
Water	34.3	3.4	103.0	1,373.7
Wetlands	229.2	22.9	687.6	9,167.7
TOTAL =	**2,011.2**	**1,998.6**	**21,843.1**	**250,850.6**
All HUCs				
Agriculture	2,218.7	2,884.3	22,187.0	665,609.1
Barren Land	24.0	12.0	120.2	1,441.9
Forest	2,344.0	234.4	7,031.9	93,758.3
Urban	6,875.0	9,625.0	103,124.6	962,496.4
Water	235.4	23.5	706.1	9,415.1
Wetlands	1,272.8	127.3	3,818.5	50,913.3
TOTAL =	**12,969.9**	**12,906.5**	**136,988.2**	**1,783,634.0**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Branchburg Township 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 Branchburg Township. Based upon the NJDEP impervious surface data, Branchburg Township has impervious cover totaling 16.8%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Branchburg Township 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, Branchburg Township'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.

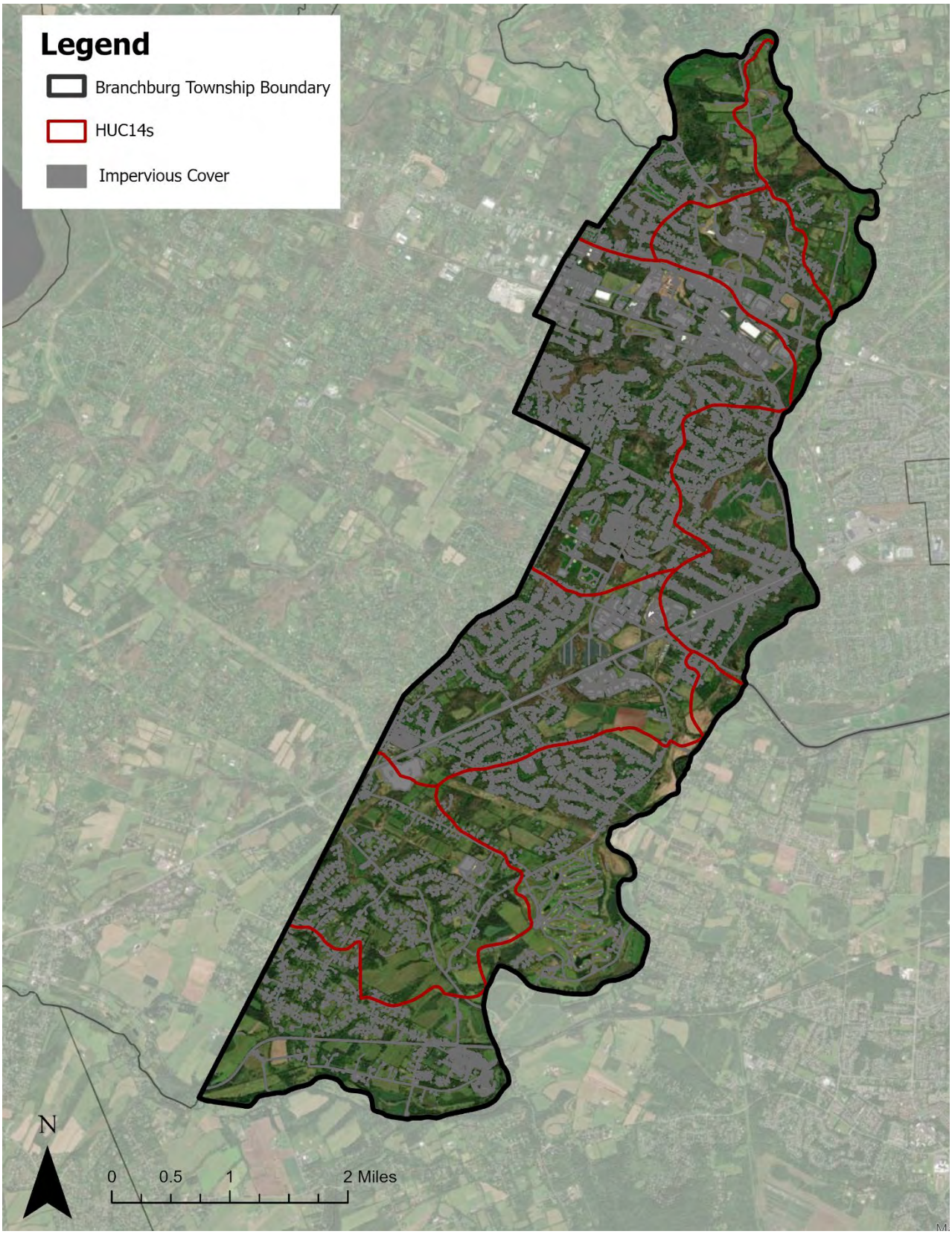


Figure 4: Impervious Cover in Branchburg Township

Table 3: Impervious Cover Analysis by HUC14 for Branchburg Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105040010		
Building	26.86	
Other	80.27	
Road	48.49	
TOTAL =	**155.6**	**10.0%**
02030105040020		
Building	24.54	
Other	94.81	
Road	57.90	
TOTAL =	**177.3**	**11.2%**
02030105040030		
Building	85.64	
Other	196.21	
Road	132.51	
TOTAL =	**414.4**	**21.3%**
02030105040040		
Building	35.25	
Other	90.49	
Road	57.18	
TOTAL =	**182.9**	**10.0%**
02030105050070		
Building	16.22	
Other	43.32	
Road	26.90	
TOTAL =	**86.5**	**10.8%**
02030105070010		
Building	4.52	
Other	7.98	
Road	9.49	
TOTAL =	**22.0**	**3.3%**
02030105070020		
Building	189.87	
Other	351.34	
Road	165.86	
TOTAL =	**707.1**	**27.6%**
02030105070030		
Building	89.09	
Other	214.67	
Road	129.73	
TOTAL =	**433.5**	**21.6%**
All HUCs		

Building	472.02	
Other	1079.10	
Road	628.06	
TOTAL =	**2,179.2**	**16.8%**

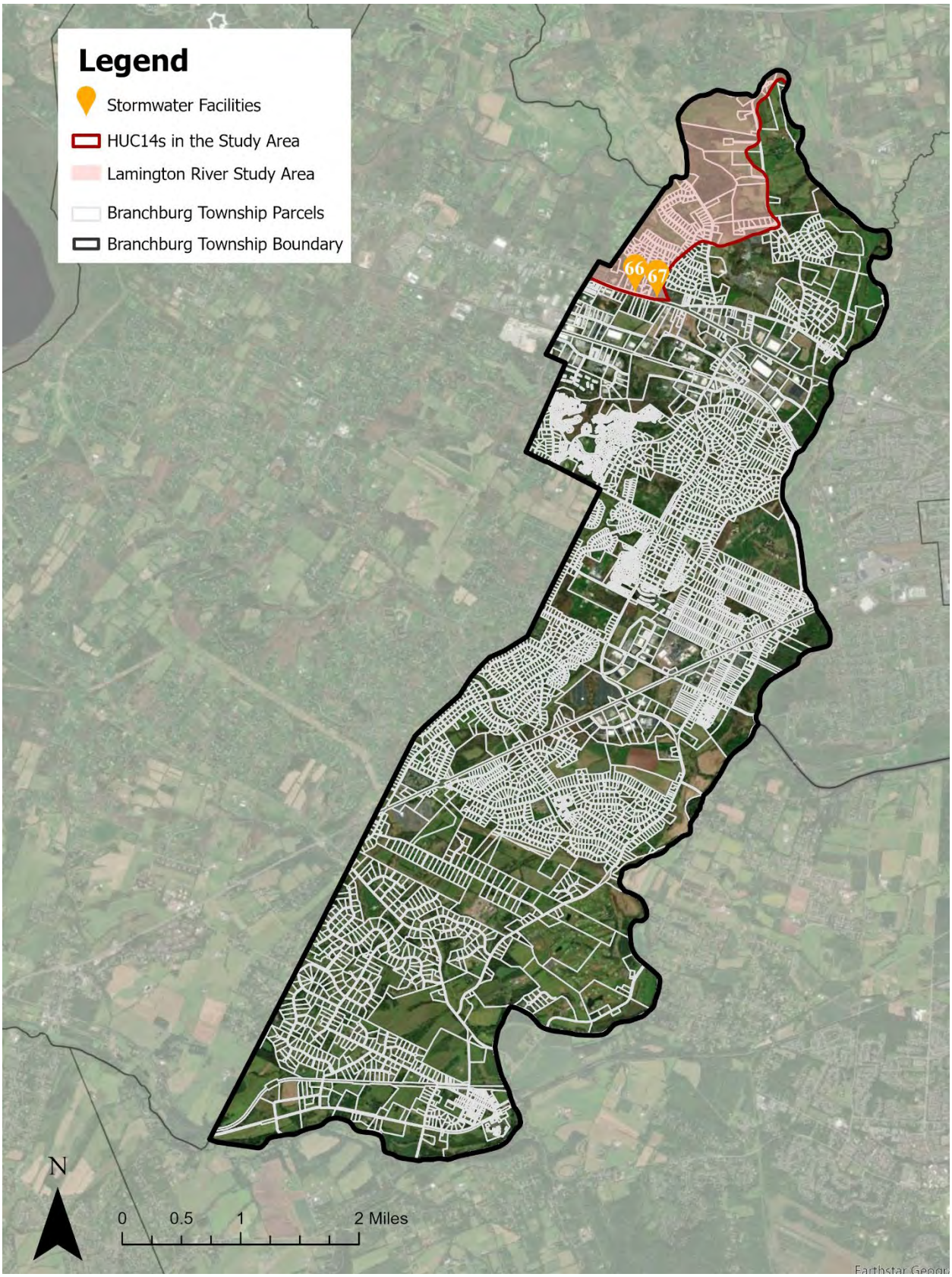


Figure 5: Stormwater Facilities in the Study Area of Branchburg Township

Table 4: Location of Stormwater Facilities in the Study Area of Branchburg Township

Lamington River Study Area		
ID	**Address**	**Type**
66	3380 Rt 22	N
67	3322 US-22	D

"D" = Detention, "N" = Naturalized

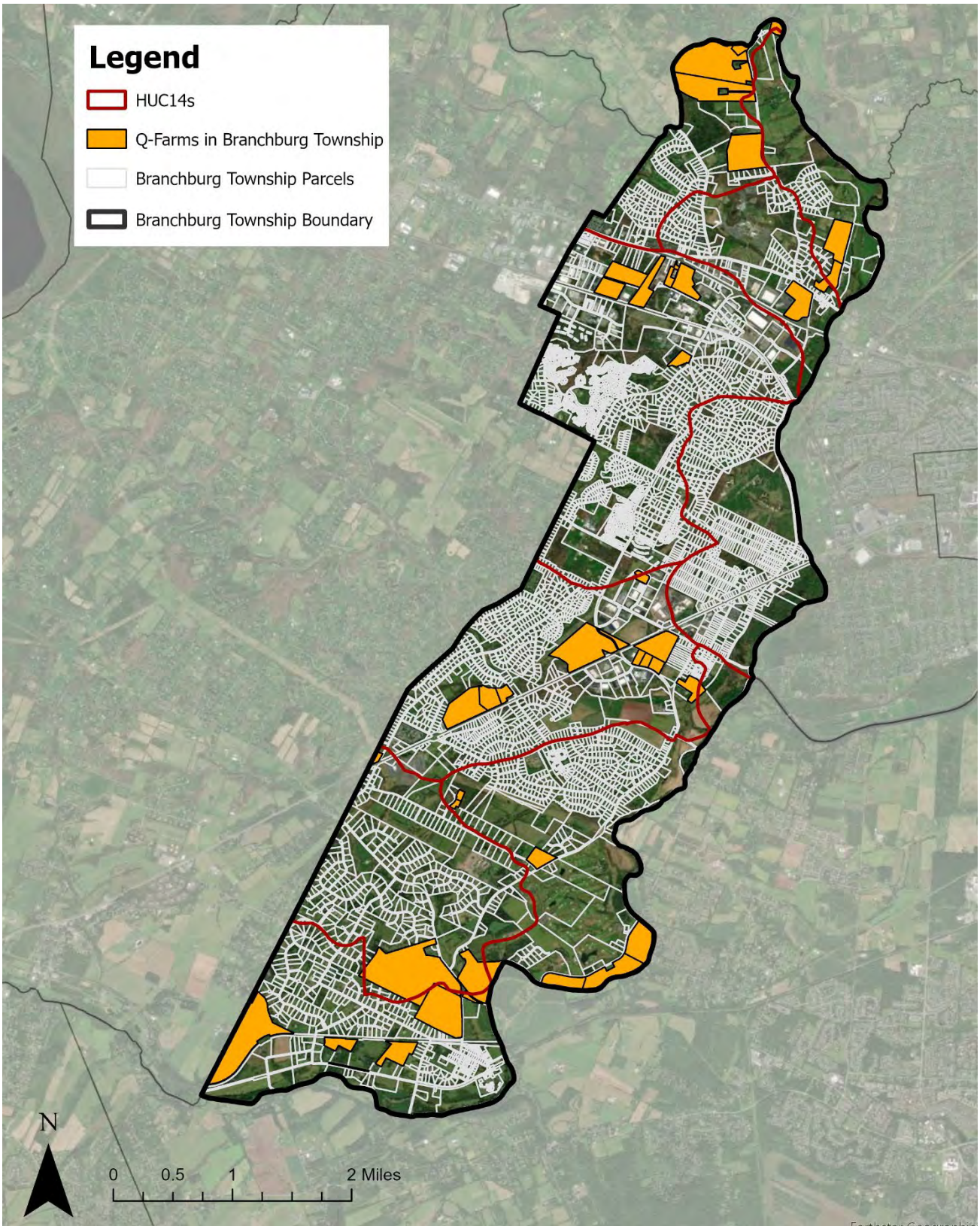


Figure 6: Q-Farm Parcels in Branchburg Township

Table 5: Q-Farm Parcels in Branchburg Township

Block	Lot	Q-Code	Prop Class	Location
1	2	QFARM	3B	490 Burnt Mill Rd-Off
3	3	QFARM	3B	391 Burnt Mill Rd
3	4	QFARM	3B	371 Burnt Mill Rd
3	6	QFARM	3B	363 Burnt Mill Rd
3	9	QFARM	3B	301 Burnt Mill Rd
4	2	QFARM	3B	Vanderveer Ave
4	13	QFARM		Vanderveer Ave
7	4	QFARM	3B	3020 Rt 22
9	15	QFARM	3B	Meister Ave
9	16	QFARM		Us Hwy 22
9	21	QFARM		Us Hwy 22
9	24	QFARM		Us Hwy 22
9.01	2	QFARM		Meister Ave
13.01	3	QFARM		Woodfern Rd
17	5	QFARM		Readington Road
58.01	4	QFARM	3B	255 Evans Way
61	14	QFARM	3B	1200 Route 202
61.04	2	QFARM	3B	1150 Route 202
67	2	QFARM	3B	2049 South Branch Rd
68.05	1	QFARM		Old York Rd
68.05	3	QFARM		Chubb Way
68.05	4	QFARM		Chubb Way
68.05	5	QFARM		Chubb Way
70	18	QFARM	3B	1324-1344 Rt 202
70	24	QFARM	3B	1300-1312 Rt 202/Holl Brk
70	24.01	QFARM	3B	1314-1322 Rt 202
73.01	2	QFARM	3B	1390 Rt 202
76	30.05	QFARM		Acorn Lane
76	30.06	QFARM		Acorn Lane
76	36	QFARM	3B	600-608 Case Rd
77	36.04	QFARM	3B	2365 South Branch Rd
77.02	36.05	QFARM	3B	458 Pleasant Run Rd
78	1	QFARM	3B	1000-1030 Opie Rd
78	2.01	QFARM	3B	1044-1056 Opie Rd
78	3	QFARM	3B	1058-1090 Opie Rd
81	7	QFARM	3B	Pleasant Run Rd
81	22	QFARM	3B	267-469 Pleasant Run Rd
82.01	23	QFARM	3B	Rear Of W0odfern Rd
88	4	QFARM		Woodfern Rd
88	7	QFARM	3B	Woodfern Rd

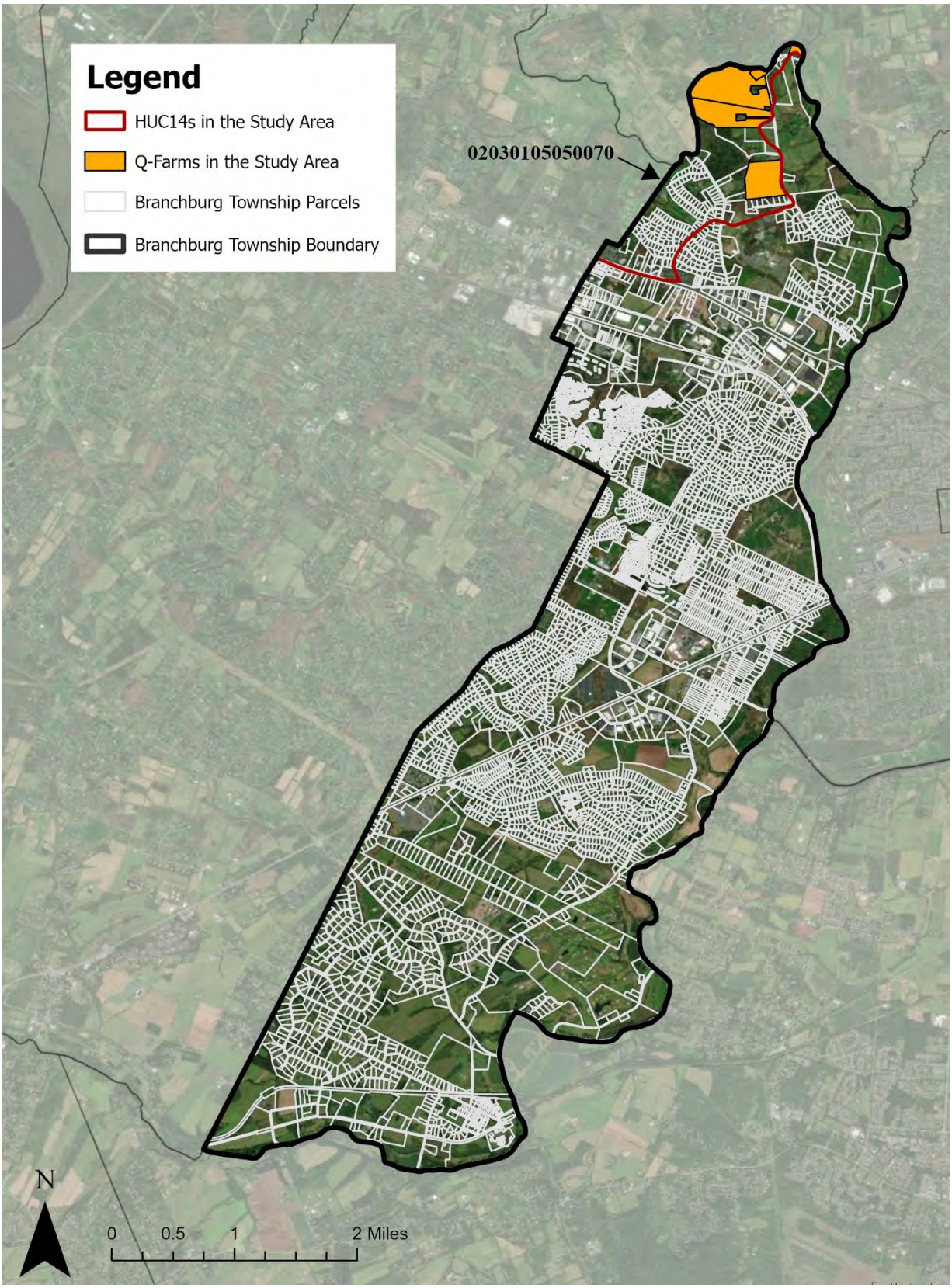


Figure 7: Q-Farm Parcels in the Study Area of Branchburg Township

Table 6: Q-Farm Parcels in the Study Area of Branchburg Township

Block	Lot	Q-Code	Prop Class	Location
1	2	QFARM	3B	490 Burnt Mill Rd-off
3	3	QFARM	3B	391 Burnt Mill Rd
3	4	QFARM	3B	371 Burnt Mill Rd
3	6	QFARM	3B	363 Burnt Mill Rd
3	9	QFARM	3B	301 Burnt Mill Rd

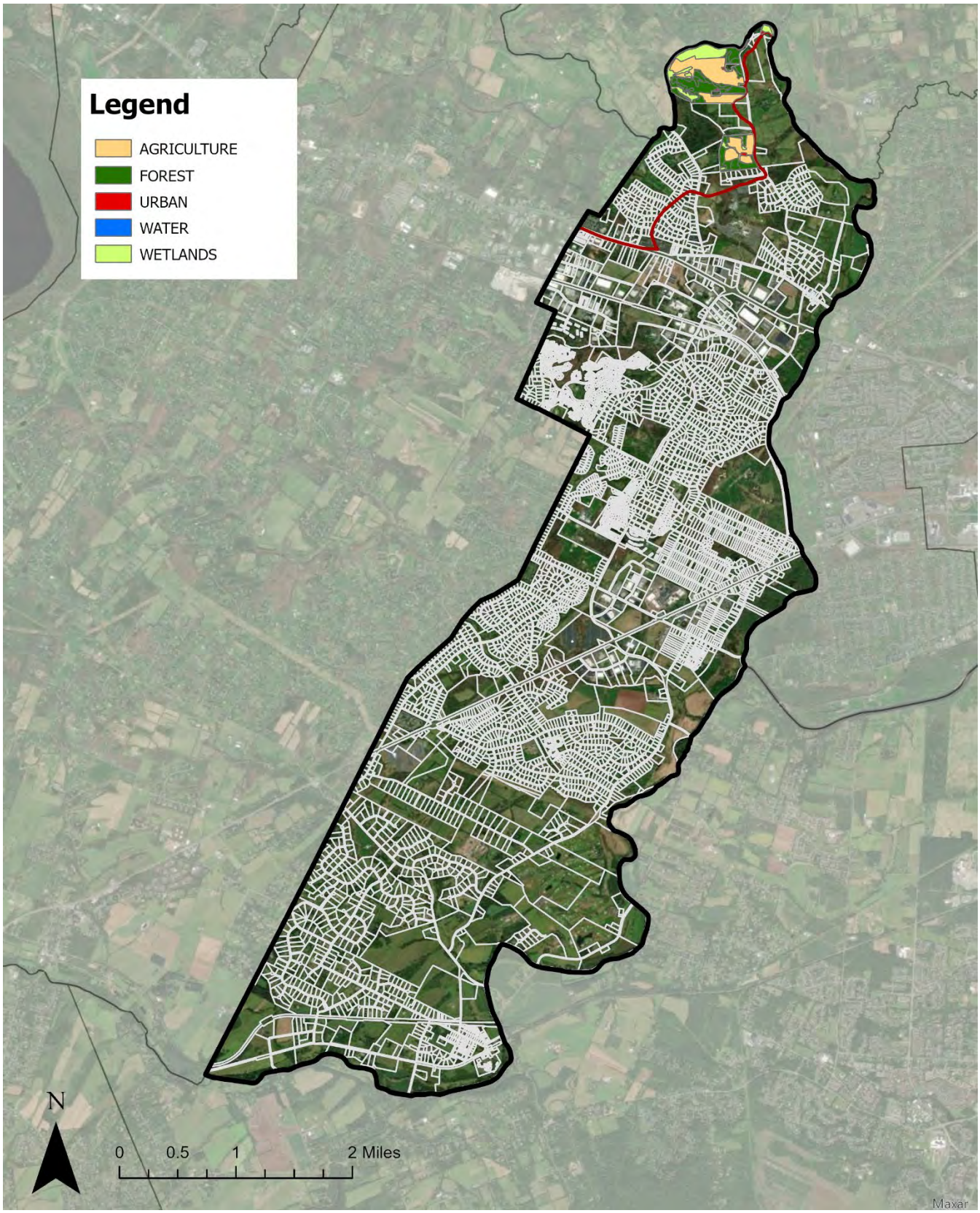


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Branchburg Township

Table 7: Land Use on Q-Farms in the Study Area of Branchburg Township

Land Use	Area (acres)
Agriculture	94.8
Barren Land	0.0
Forest	86.6
Urban	2.5
Water	1.4
Wetlands	42.5
Total:	**227.9**

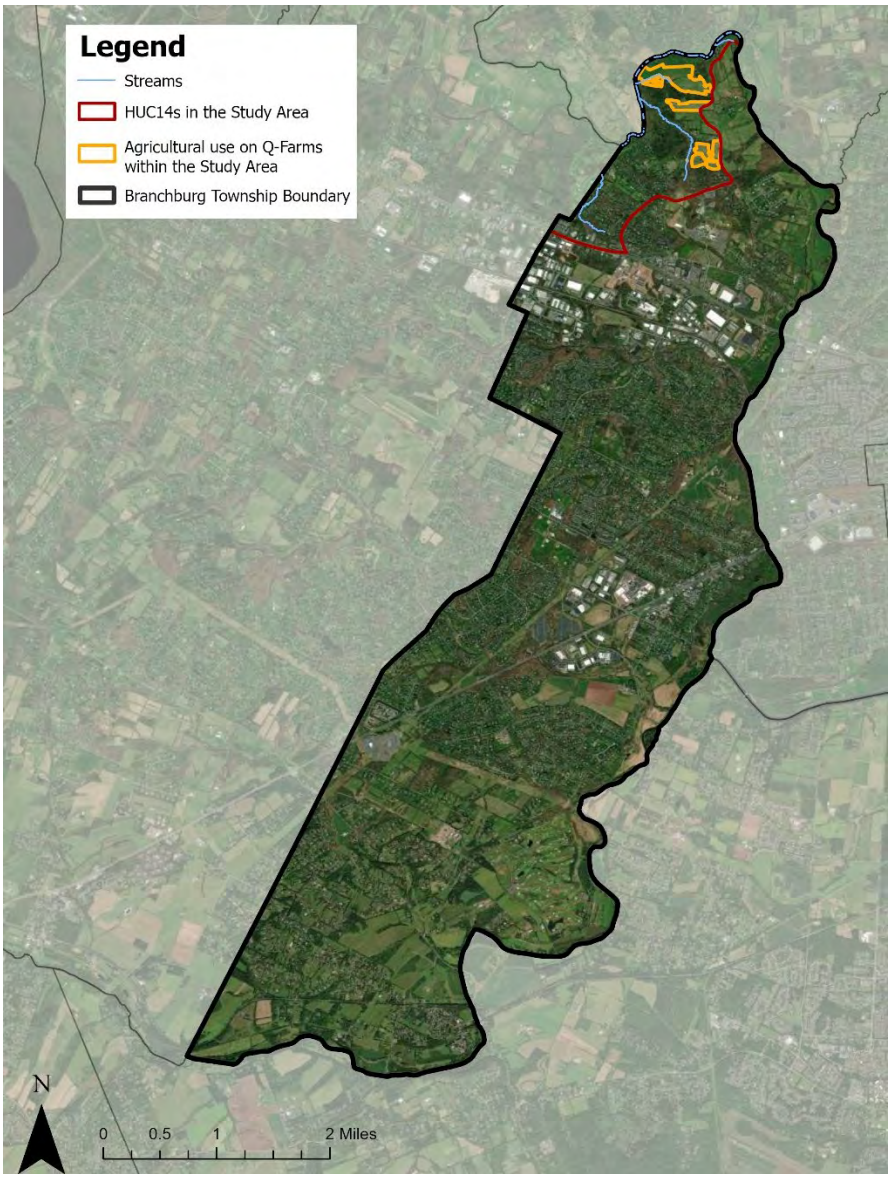


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Branchburg Township

Table 8: Recommendations for Specific Farms in the Study Area of Branchburg Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
3	4	QFARM	X	X				

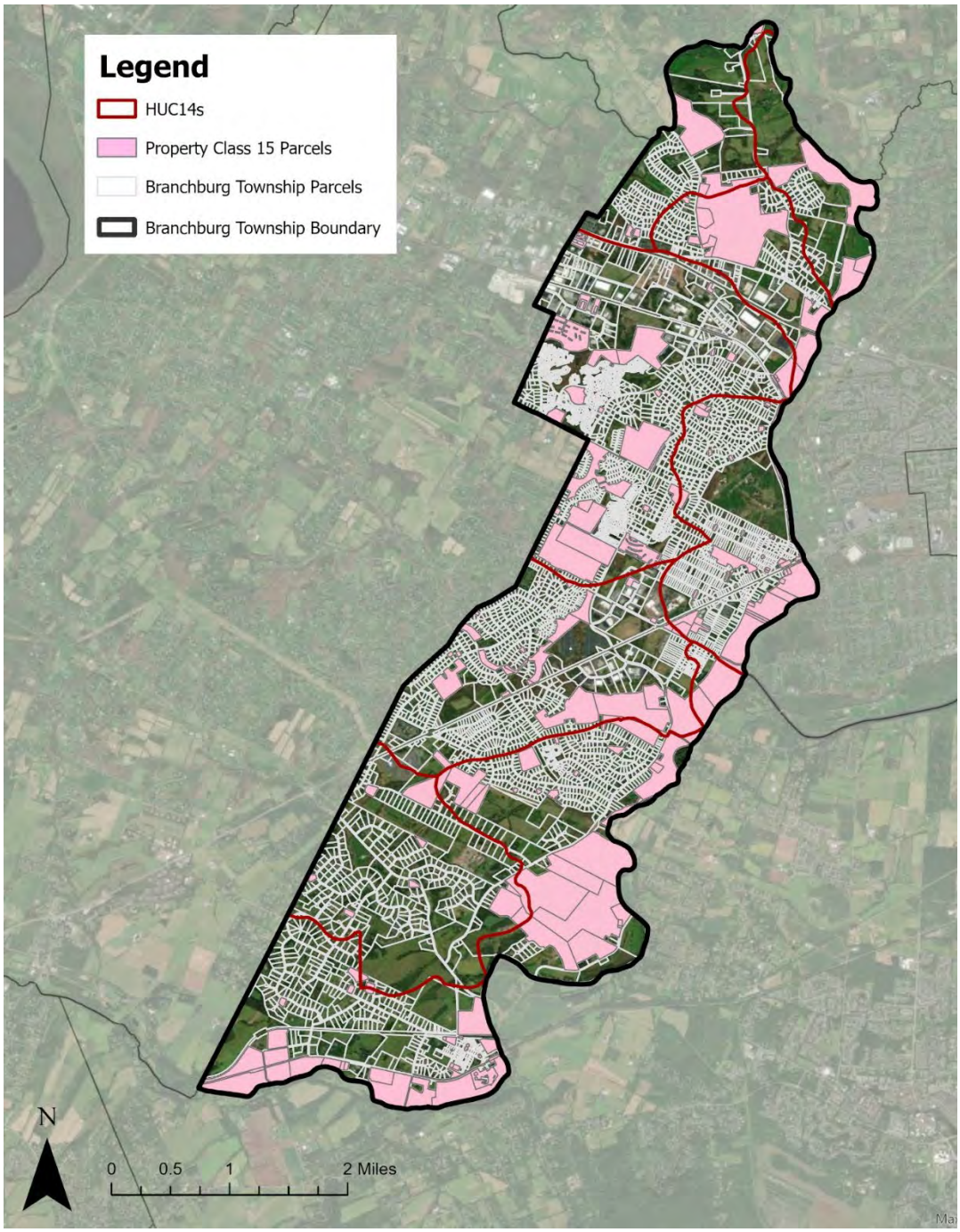


Figure 10: Property Class 15 Parcels in Branchburg Township

Table 9: Property Class 15 Parcels in Branchburg Township

Block	Lot	Prop Class	Location	Facility Type
3	13	15A	102 Lamington Rd	Admin Off/Conf/Resid
3	18	15A	74 Lamington Rd	Admin Off/Conf/Resid
3	18.01	15A	118 Lamington Rd	College
20.07	22	15A	Harlan School Rd	Vacant Land
30	4	15A	Harlan School Rd	Vacant Land
36	1	15A	136 Cedar Grove Rd	Schools
47	34	15A	220-240 Baird Rd	Schools
57	32	15A	580 Old York Rd	Schools
76.1	10.01	15A	470 Whiton Rd	School
17	4	15B	94 Readington Rd	Schools
2	10	15C	Vanderveer Ave - off of	Park
2	12.01	15C	230 Vanderveer Ave	Vacant Land
2	900	15C	400 Vanderveer Ave	Vacant Land
3	16	15C	210 Lamington Rd	Vacant Land
3	19	15C	18 Lamington Rd	Residence/Vacant
3	49.01	15C	Village Way - Rear	Roads
5.11	10	15C	51 France Dr	Vacant Land
8	13	15C	1020 Rt 28	Vacant Land
11	1	15C	Station Rd	Vacant Land
11	2	15C	Station Rd	Park
11	2.01	15C	Station Rd & River Rd	Park
11	3	15C	River Rd	Park
11	4	15C	River Rd	Vacant Land
12	1	15C	440 River Rd	Park
13	2.01	15C	Readington Rd & Railroad	Vacant Land
13	2.02	15C	Readington Rd & Railroad	Vacant Land
13.01	1	15C	Woodfern Rd	Vacant Land
13.01	2	15C	Woodfern Rd.	Vacant Land
13.01	4	15C	Woodfern Rd	Vacant Land
13.01	5	15C	Main St	Vacant Land
17	13	15C	101 Leslie Ln	Farm
17.11	905	15C	905 Narraganset Dr.	Park
17.13	12.01	15C	240 Harlan School	Pool
18	5	15C	Station Rd	Vacant Land
20.06	22	15C	474 West County Dr	Vacant Land
20.08	2	15C	34 Stony Brook Rd	Residence
20.14	11	15C	Shadyside Ct	Vacant Land
20.19	9	15C	24 Shale Hill Rd	Vacant Land
41.01	3	15C	River Rd	Vacant Land
41.01	4	15C	River Rd	Vacant Land
41.01	5	15C	River Rd	Pumping Station
41.01	7	15C	River Rd	Vacant Land
41.01	8.01	15C	River Rd	Park
41.01	8.02	15C	River Rd	Park
44	900	15C	Timbers/Woodgate 1&2	Vacant Land
44	901	15C	Timbers/Woodgate I	Vacant Land

44.01	900	15C	Timbers/Woodgate I	Vacant Land
47	21	15C	37 Mary Lynn Ln	Detention Basin
47	900	15C	Staats Farm Sect I & II	Vacant Land
47	904	15C	Champions Run/Sect I	Vacant Land
47.07	900	15C	Staats Farm Sect I & II	Vacant Land
47.08	900	15C	Champions Run/Sect I	Vacant Land
57	17	15C	34 Kenbury Rd	Office Bldg
57	18	15C	34 Kenbury Rd	Garage
57	31	15C	1077 Rt 202&590 Old York	Polic Sta & Mun Bld
59	24	15C	235 Baird Rd	Park
59	25.01	15C	Stony Brook Rd	Vacant Land
60	900	15C	Old York & Dreahook	Vacant Land
60.02	21	15C	Holland Brook Rd	Vacant Land
61	11	15C	Rt 202	Vacant Land
61	36	15C	Rt 202 & Evergreen Dr	Vacant Land
61	900	15C	Christian Ln	Vacant Land
61	901	15C	Woodside Ln & Colonial Ct	Vacant Land
61	902	15C	West County Dr	Vacant Land
61.02	4	15C	Holland Brook Rd	Vacant Land
61.02	35	15C	Evergreen Dr	Vacant Land
61.04	1.03	15C	671 Old York Rd	Historic Site
70	19	15C	Old York Rd	Vacant Land
76	29.01	15C	650 Case Rd	Farm
76	31	15C	Whiton Rd	Vacant Land
76	32	15C	Case Rd	Vacant Land
76	34.02	15C	Case Rd	Vacant Land
76.01	22	15C	South Branch Rd	Vacant Land
76.04	31	15C	412 Whiton Rd	Drainage Basin
76.07	16	15C	1104 Van Arsdale Dr	Vacant Lot
77	23	15C	2277 South Branch Rd	Office Building
77	24	15C	2283-2289 South Branch Rd	Park
77	25	15C	1005 Opie Rd	Park
77	27	15C	1001 Opie Rd	Residence
77	27.02	15C	1013-1025 Opie Rd	Park
77	28	15C	2301-2303 South Branch Rd	Club House&Lerng Cnt
77	29.01	15C	2325 South Branch Rd	Vacant Land
77	37.01	15C	Opie Rd	Farm
77	37.14	15C	2331 South Branch Rd	Vacant Land
77	38.01	15C	1035-1055 Opie Rd	Vacant Land
77.02	39	15C	410-480 Pleasant Run Rd	Farm
81	26	15C	108 Sturbridge Rd	Vacant Land
85	3.01	15C	Woodfern Rd.	Vacant Land
85	3.02	15C	Woodfern Rd	Vacant Land
86	1	15C	271-279 Woodfern Rd	Vacant Land
87	2	15C	254-266 Woodfern Rd	Vacant Land
89	1	15C	268-278 Woodfern Rd	Vacant Land
89	2	15C	210-240 Woodfern Rd	Vacant Land
89	3	15C	198-208 Woodfern Rd	Green Acres
89	4	15C	196 Woodfern Rd	Green Acres
89	5	15C	192 Woodfern Rd	Green Acres

89	7.01	15C	162-178 Woodfern Rd	Vacant
89	7.03	15C	162-178 Woodfern Rd	Vacant
90	7	15C	Woodfern Rd	Park
90	7.01	15C	Woodfern Rd	Sewerage Disposal
90	9	15C	415 Blackpoint Rd	Park
90.01	2	15C	110 Woodfern Rd Unit B	Comm/Indus Purpose
90.01	3	15C	110 Woodfern Rd Unit C	Comm/Indus Purpose
90.01	5.011	15C	110 Woodfern Rd Unit E1a	Comm/Indus Purpose
90.01	5.012	15C	110 Woodfern Rd Unit E1b	Comm/Indus Purpose
90.01	5.013	15C	110 Woodfern Rd Unit E1c	Comm/Indus Purpose
90.01	5.014	15C	110 Woodfern Rd Unit E1d	Comm/Indus Purpose
90.01	5.015	15C	110 Woodfern Rd Unit E1e	Comm/Indus Purpose
90.01	5.016	15C	110 Woodfern Rd Unit E1f	Comm/Indus Purpose
90.01	5.021	15C	110 Woodfern Rd Unit E2a	Comm/Indus Purpose
90.01	5.022	15C	110 Woodfern Rd Unit E2b	Comm/Indus Purpose
90.01	5.023	15C	110 Woodfern Rd Unit E2c	Comm/Indus Purpose
90.01	5.024	15C	110 Woodfern Rd Unit E2d	Comm/Indus Purpose
90.01	6.01	15C	110 Woodfern Rd Unit F1	Comm/Indus Purpose
90.01	6.02	15C	110 Woodfern Rd Unit F2	Comm/Indus Purpose
90.01	7.01	15C	110 Woodfern Rd Unit G1	Comm/Indus Purpose
90.01	7.02	15C	110 Woodfern Rd Unit G2	Comm/Indus Purpose
90.01	11.011	15C	110 Woodfern Rd-K1a,2a-H	Comm/Indus Purpose
90.01	11.012	15C	110 Woodfern Rd Unit K1b	Comm/Indus Purpose
90.01	11.013	15C	110 Woodfern Rd Unit K1c	Comm/Indus Purpose
90.01	11.014	15C	110 Woodfern Rd Unit K1d	Comm/Indus Purpose
90.01	11.015	15C	110 Woodfern Rd Unit K1e	Comm/Indus Purpose
90.01	11.016	15C	110 Woodfern Rd Unit K1f	Comm/Indus Purpose
90.01	12	15C	110 Woodfern Rd Unit L	Comm/Indus Purpose
90.01	13	15C	110 Woodfern Rd Unit M	Comm/Indus Purpose
90.01	15	15C	110 Woodfern Rd Unit O	Comm/Indus Purpose
90.01	17	15C	110 Woodfern Rd Unit Q	Comm/Indus Purpose
91	21	15C	Leslie Ave	Vacant Land
92	3	15C	330 Chester Ave	Barn
93	1.01	15C	614 Marshall St	Park
93	8	15C	Marshall St	Vacant Land
97	5	15C	412 Olive St	Community Center
98	1	15C	423-431 Olive St	Vacant Land
5	28	15D	29 Lamington Rd	Church
9	31	15D	3201 Rt 22	Humane Society
43	3	15D	19 Cedar Grove Rd	Residence
44	28	15D	113 River Rd	Parking Area
48	11	15D	122 Robbins Rd	Residence
59	16	15D	423 Readington Rd	Residence
60.02	11	15D	94 Windy Willow Way	Residence
70	24.02	15D	1941 Holland Brk/Rt 202	Worship Complex
71.02	2	15D	890 Old York Rd	Residence
71.02	15	15D	815 Parsonage Hill Dr	Restaurant
79	2.03	15D	679 Case Rd	Residence
81.01	1.03	15D	363 Pleasant Run Rd	Residence
96	2	15D	339 Maple Ave	Pond
97	12	15D	301 Maple Ave	Church
97	19	15D	315 Maple Ave	Parsonage
100	1	15D	107 Elm St	Vacant Land

1	1	15F	480 Burnt Mill Rd	Vacant Land
3	1	15F	River - Along The	Vacant Land
3	21	15F	1171 Rt 28	Club House
5.07	24	15F	129 Howell Dr	Disabled Veteran
5.11	6	15F	Rt 22	Common Element
9	1.01	15F	3461 Rt 22	Common Element
9	2	15F	County Line Rd	Common Element
17.01	20	15F	191 Industrial Pky	Common Element
17.01	22.03	15F	161 Industrial Pky	Common Element
17.08	9	15F	54 Choctaw Ridge Rd	Widow Of Serviceman
17.08	10	15F	56 Choctaw Ridge Rd	Disabled Vet
17.09	2	15F	35 Choctaw Ridge Rd	Disabled Vet
17.11	12.11	15F	240 Readington Rd	Disabled Vet
17.13	228	15F	21 Apache Way	Widow Of Serviceman
17.15	900	15F	Magnolia Ln	Common Elements
18	2.01	15F	48 Station Rd	Disabled Vet
19	33	15F	4 Darcy Dr	Disabled Vet
20.01	1	15F	159 Readington Rd	Disabled Vet
20.12	2	15F	215 Bald Eagle Dr	Residence
20.16	10	15F	300 Swan Ct	Disabled Vet
38	12.01	15F	33 Preston Dr	Disabled Veteran
38	32	15F	84 Cedar Grove Rd	Disabled Vet
40	38	15F	12 Nassau Ct	Disabled Veteran
41	3.01	15F	River Rd - Off Of	Reservoir
41	8.01	15F	Mill Ln - Rear Near River	Reservoir
41.01	9.01	15F	River Rd - Off Of	Reservoir
42	6	15F	River Rd	Reservoir
42	8.01	15F	Rt 202	Reservoir
42	10	15F	902 Rt 202	Reservoir
44	29	15F	113 River Rd	Squad Building
46.04	901	15F	2000 Breckenridge Dr	Common Elements
47.07	1	15F	260 Baird Rd	Disabled Veteran
47.07	28	15F	4 Champions Cir	Disabled Vet
55	1	15F	921 Rt 202	Reservoir
55	2.01	15F	Rt 202	Reservoir
55	2.02	15F	Rt 202	Reservoir
55	6.01	15F	Rt 202	Reservoir
55	9.01	15F	North Branch River Rd	Reservoir
55	11.03	15F	North Branch River Rd	Reservoir
55	13	15F	North Branch River Rd	Reservoir
55	13.01	15F	78 North Branch River Rd	Reservoir
55	14	15F	64 North Branch River Rd	Reservoir
55	15	15F	60 North Branch River Rd	Reservoir
55	16	15F	North Branch River Rd	Reservoir
58	18	15F	63 Robbins Rd	Disabled Vet
58	28.03	15F	610 Old York Rd	Firehouse
58.01	3	15F	221 Evans Way	Common Elements
61.02	23	15F	448 Brookview Ct	Disabled Veteran
67	2.03	15F	South Branch Rd	Reservoir
67	3	15F	529 Old York Rd	Reservior
76.03	7	15F	108 Hill Top Ln	Disabled Vet
76.06	17.01	15F	454 Whiton Rd	Disabled Veteran
76.18	7	15F	1121 Van Arsdale Dr	Disabled Vet

77	1	15F	South Branch Rd	Reservoir
77	2	15F	2205 South Branch Rd	Reservoir
77	11.02	15F	South Branch Rd	Reservoir
77	16	15F	South Branch Rd	Reservoir
79	49	15F	621 Sunrise Way	Disabled Vet
80	9.01	15F	138 Otto Rd	Disabled Veteran
80	53	15F	527 Horizon Way	Disabled Vet
81	10.04	15F	101 Sturbridge Rd	Disabled Veteran
81	32	15F	205 Post Rd	Disabled Vet
82.01	27	15F	98 Briar Way	Disabled Vet
90.01	900	15F	110 Woodfern Rd	Common Element
96	3	15F	333 Maple Ave	Fire House

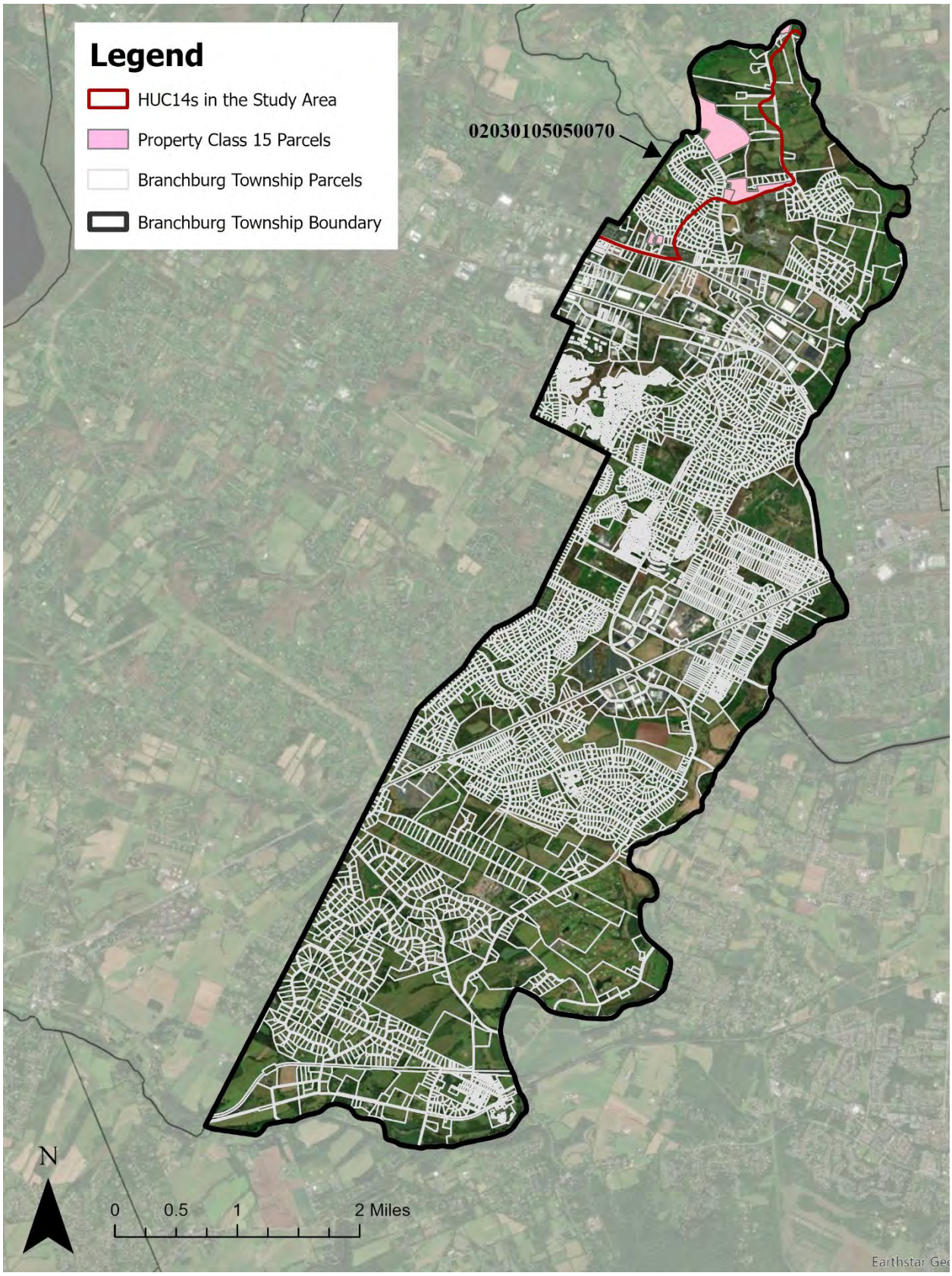


Figure 11: Property Class 15 Parcels in the Study Area of Branchburg Township

Table 10: Property Class 15 Parcels in the Study Area of Branchburg Township*

Block	Lot	Prop Class	Location	Facility Type
3[1]	13	15A	102 Lamington Rd	Admin Off/Conf/Resid
3[1]	18.01	15A	118 Lamington Rd	College
3	16	15C	210 Lamington Rd	Vacant Land
5.11	10	15C	51 France Dr	Vacant Land
1	1	15F	480 Burnt Mill Rd	Vacant Land
3	1	15F	River - Along The	Vacant Land
5.07[1]	24	15F	129 Howell Dr	Disabled Veteran
5.11	6	15F	Rt 22	Common Element

*** No sites that can be retrofitted with green infrastructure were identified within the study area**

[1]Only a portion of the parcel is within the study area

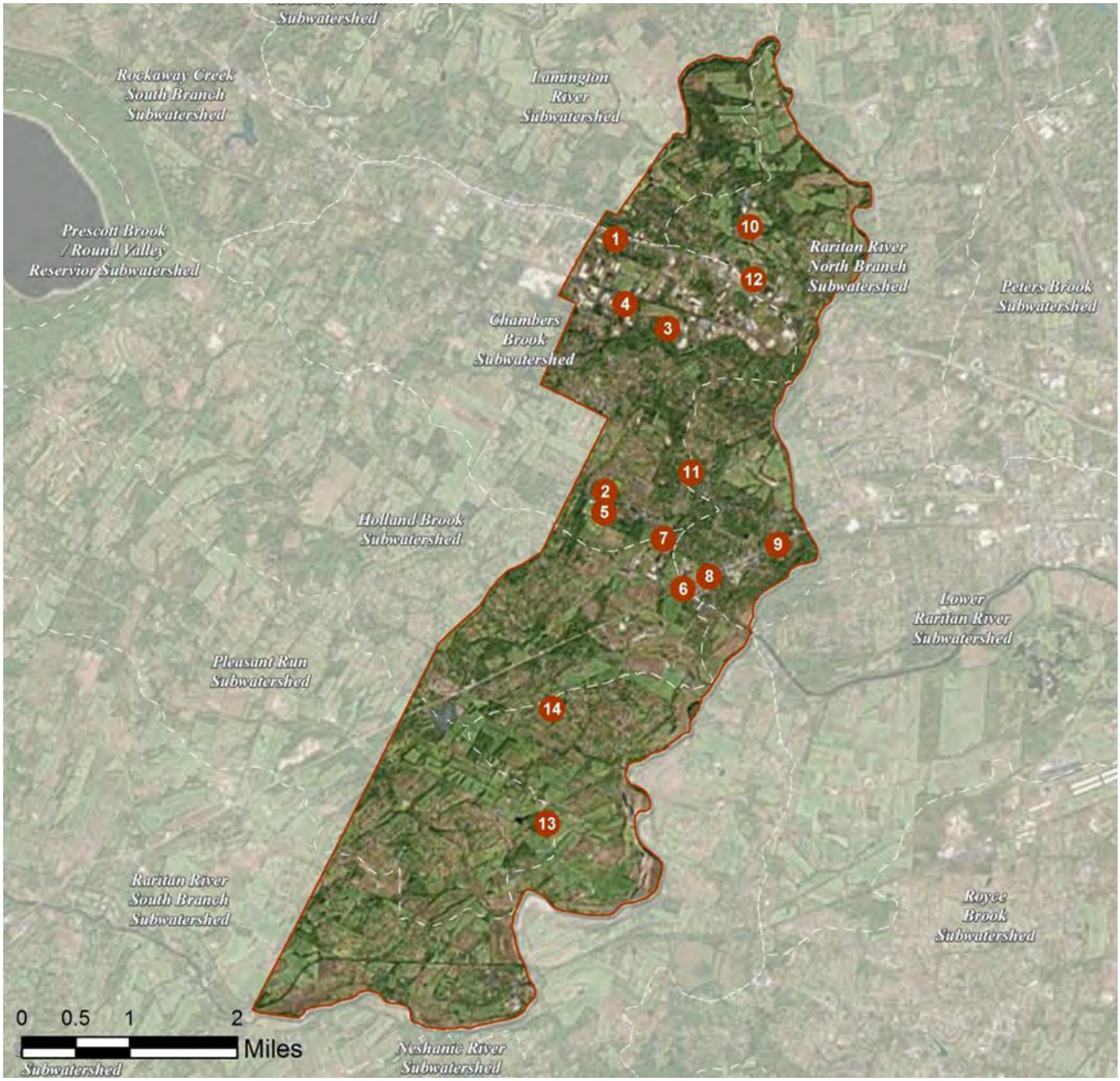


Figure 12: Sites with Green Infrastructure Opportunities in Branchburg Township

BRANCH POINT CHURCH

RAP ID: 1

Subwatershed: Chambers Brook

Site Area: 952,715 sq. ft.

Address: 3421 US 22
Branchburg, NJ 08876

Block and Lot: Block 9, Lot 3.02, 4.01

Parking spots on the south side of the building can be replaced with porous asphalt to capture and infiltrate 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"
22	212,992	10.3	107.6	977.9	0.166	5.84

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	2.110	353	154,858	5.82	22,000	$550,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Branch Point Church

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

0 50' 100'

BRANCHBURG CENTRAL MIDDLE SCHOOL

RAP ID: 2

Subwatershed: Chambers Brook

Site Area: 1,397,215 sq. ft.

Address: 220 Baird Road
Branchburg, NJ 08876

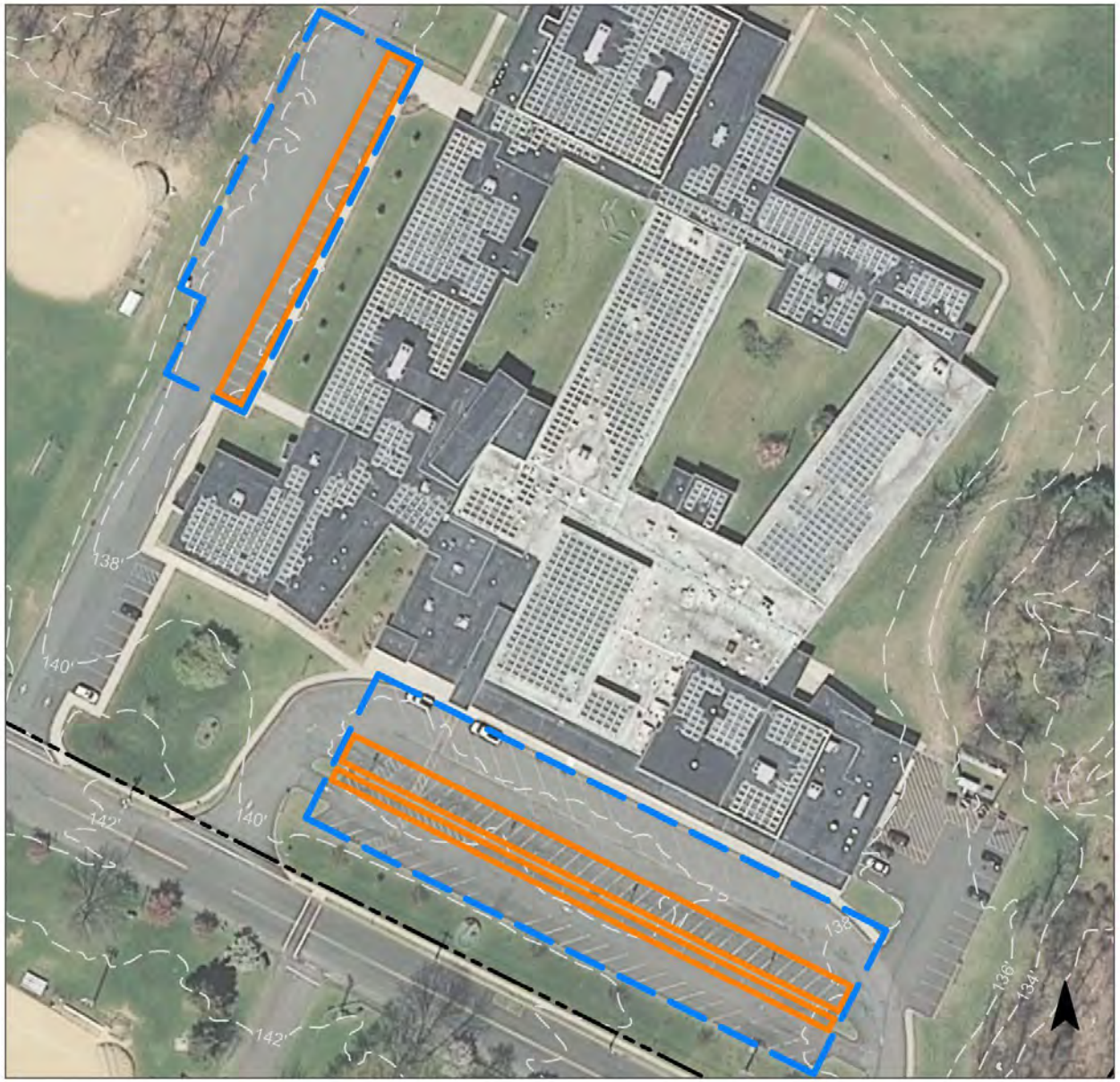
Block and Lot: Block 47, Lot 34

Parking spots on the south and west sides of the building can be replaced with porous asphalt to capture and infiltrate 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"
21	292,484	14.1	147.7	1,342.9	0.228	8.02

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	1.498	251	109,934	4.13	14,000	$350,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Branchburg Central Middle School

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

0 50' 100'

THE MIDLAND SCHOOL

RAP ID: 3

Subwatershed: Chambers Brook

Site Area: 2,344,674 sq. ft.

Address: 94 Readington Road
Branchburg, NJ 08876

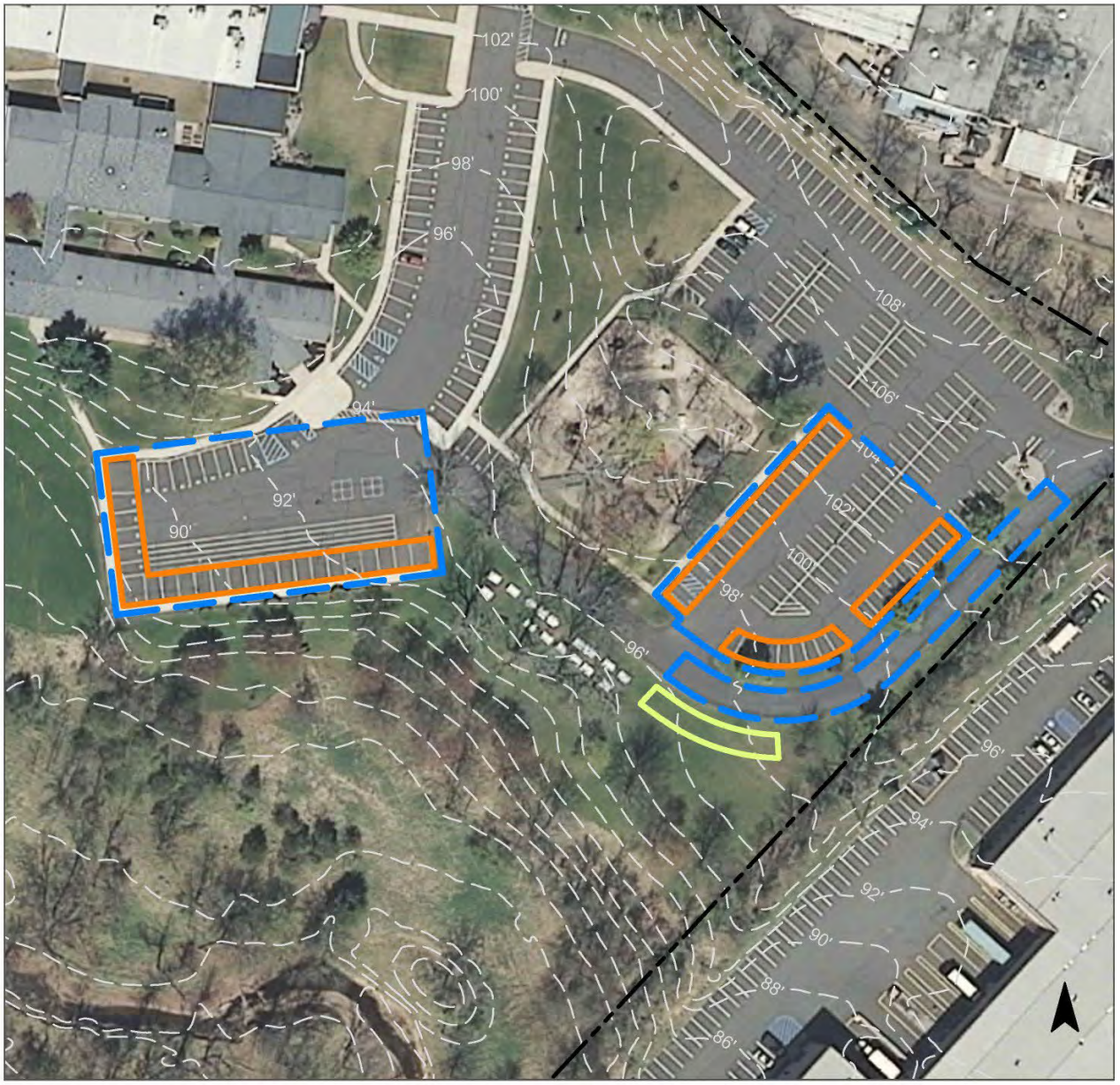
Block and Lot: Block 17, Lot 4

Parking spaces can be replaced with pervious pavement to infiltrate parking lot runoff. A rain garden can be installed to capture, treat, and infiltrate driveway 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"
13	295,178	14.2	149.1	1,355.3	0.230	8.10

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	0.156	26	11,474	0.43	1,400	$7,000
Pervious pavements	1.107	185	81,255	3.05	10,500	$262,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Midland School

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

0 50' 100'

VERIZON WIRELESS

RAP ID: 4

Subwatershed: Chambers Brook

Site Area: 587,278 sq. ft.

Address: 141 Industrial Parkway
Branchburg, NJ 08876

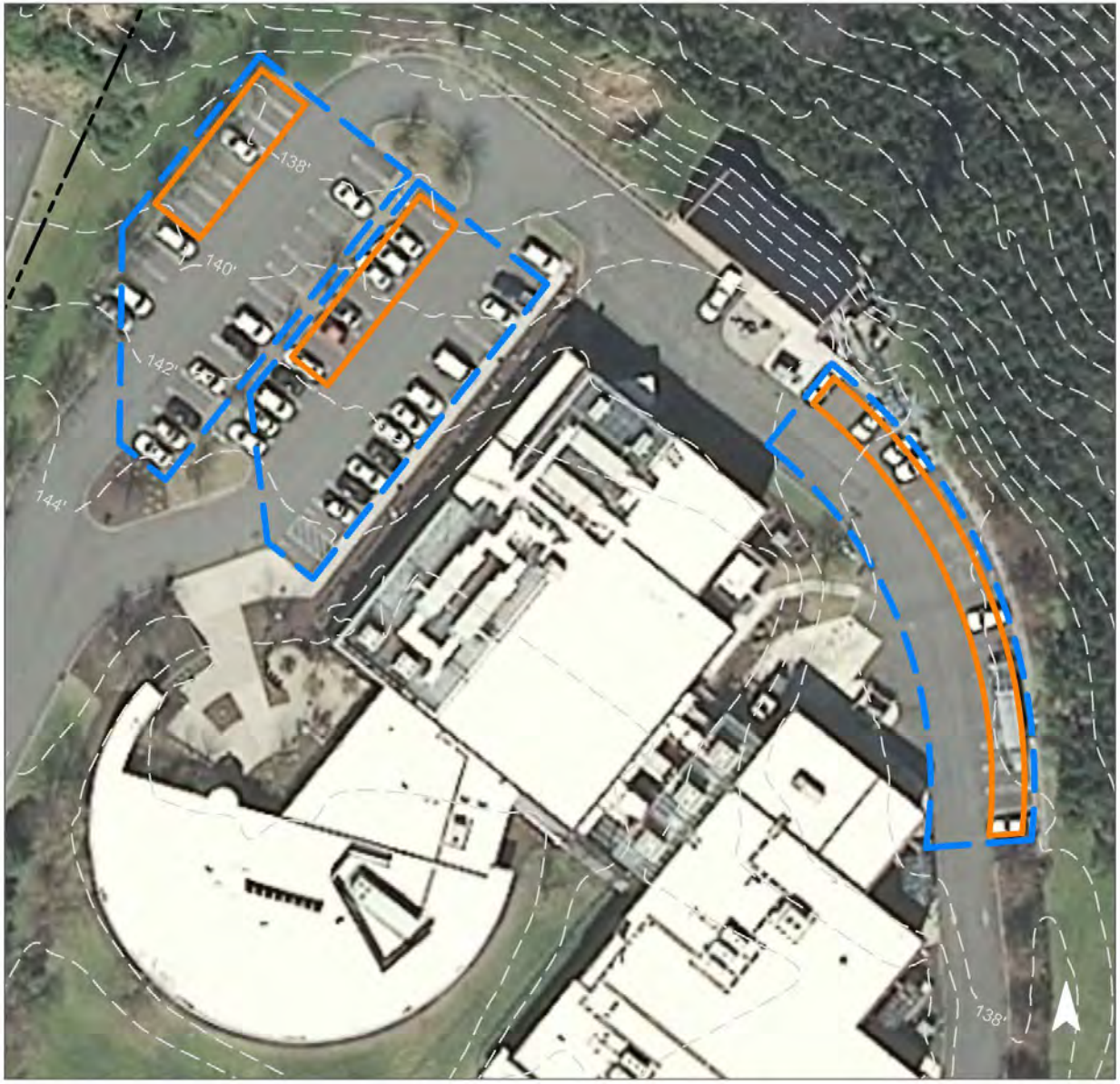
Block and Lot: Block 17.01, Lot 22.05

Parking spots on the east and west sides of the building can be replaced with porous asphalt to capture and infiltrate parking lot 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"
24	138,244	6.7	69.8	634.7	0.108	3.79

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	0.690	116	50,662	1.90	5,500	$137,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Verizon Wireless

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

0 30' 60'

WHITE OAK PARK

RAP ID: 5

Subwatershed: Chambers Brook

Site Area: 2,260,595 sq. ft.

Address: 200 Baird Road
Branchburg, NJ 08876

Block and Lot: Block 59, Lot 24, 25.01

Rain gardens can be built to capture, treat, and infiltrate roof runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
5	113,002	5.4	57.1	518.8	0.088	3.10

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.070	12	5,161	0.19	800	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

White Oak Park

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

0 30' 60'

BRANCHBURG POLICE HEADQUARTERS

RAP ID: 6

Subwatershed: Holland Brook

Site Area: 126,889 sq. ft.

Address: 1077 US 202
Branchburg, NJ 08876

Block and Lot: Block 57, Lot 31

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

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
42	52,684	2.5	26.6	241.9	0.041	1.44

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.052	9	3,822	0.14	500	$2,500
Pervious pavements	0.365	61	26,763	1.01	4,000	$100,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Branchburg Police Headquarters

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

0 30' 60'

MID-ATLANTIC CNC INC.

RAP ID: 7

Subwatershed: Holland Brook

Site Area: 376,725 sq. ft.

Address: 260 Evans Way
Branchburg, NJ 08876

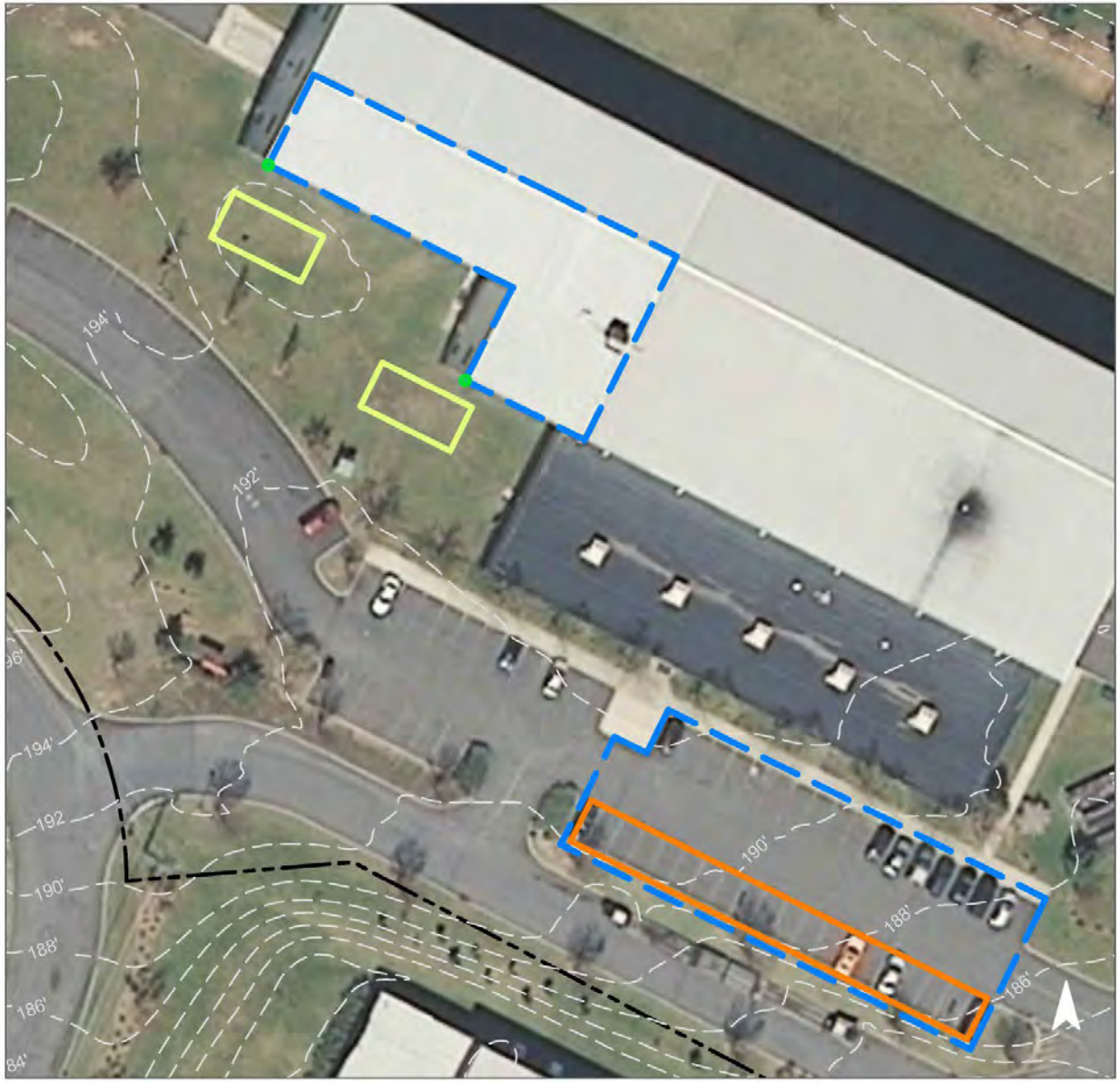
Block and Lot: Block 58, Lot 35

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

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
50	188,895	9.1	95.4	867.3	0.147	5.18

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	0.221	37	16,254	0.61	1,500	$7,500
Pervious pavements	0.305	51	22,365	0.84	3,000	$75,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mid-Atlantic CNC Inc.

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

0 30' 60'

BRANCHBURG MUNICIPAL BUILDING

RAP ID: 8

Subwatershed: Raritan River North Branch

Site Area: 343,525 sq. ft.

Address: 1077 US 202
Branchburg, NJ 08876

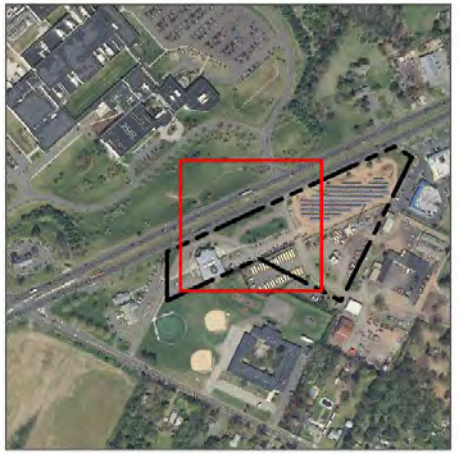
Block and Lot: Block 57, Lot 31

Parking spaces can be replaced with pervious pavement to infiltrate runoff. Bioretention systems can be installed to capture, treat, and infiltrate additional stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
48	164,571	7.9	83.1	755.6	0.128	4.51

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.112	19	8,221	0.31	1,300	$6,500
Pervious pavements	0.724	121	53,153	2.00	13,800	$345,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Branchburg Municipal Building

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

0 50' 100'

HOLIDAY INN EXPRESS HOTEL AND SUITES

RAP ID: 9

Subwatershed: Raritan River North Branch

Site Area: 148,307 sq. ft.

Address: 347 US 202
Branchburg, NJ 08876

Block and Lot: Block 55, Lot 6,8

Existing pervious pavers surround the south and west sides of the buildings. Downspouts can be disconnected and directed into the pavers to capture and infiltrate roof runoff. Parking spaces can be replaced with porous asphalt to capture parking lot 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"
59	88,229	4.3	44.6	405.1	0.069	2.42

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	0.391	65	28,678	1.08	2,000	$50,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Holiday Inn Express Hotel and Suites

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

0 30' 60'

RARITAN VALLEY COMMUNITY COLLEGE

RAP ID: 10

Subwatershed: Raritan River North Branch

Site Area: 9,956,441 sq. ft.

Address: 118 Lamington Road
Branchburg, NJ 08876

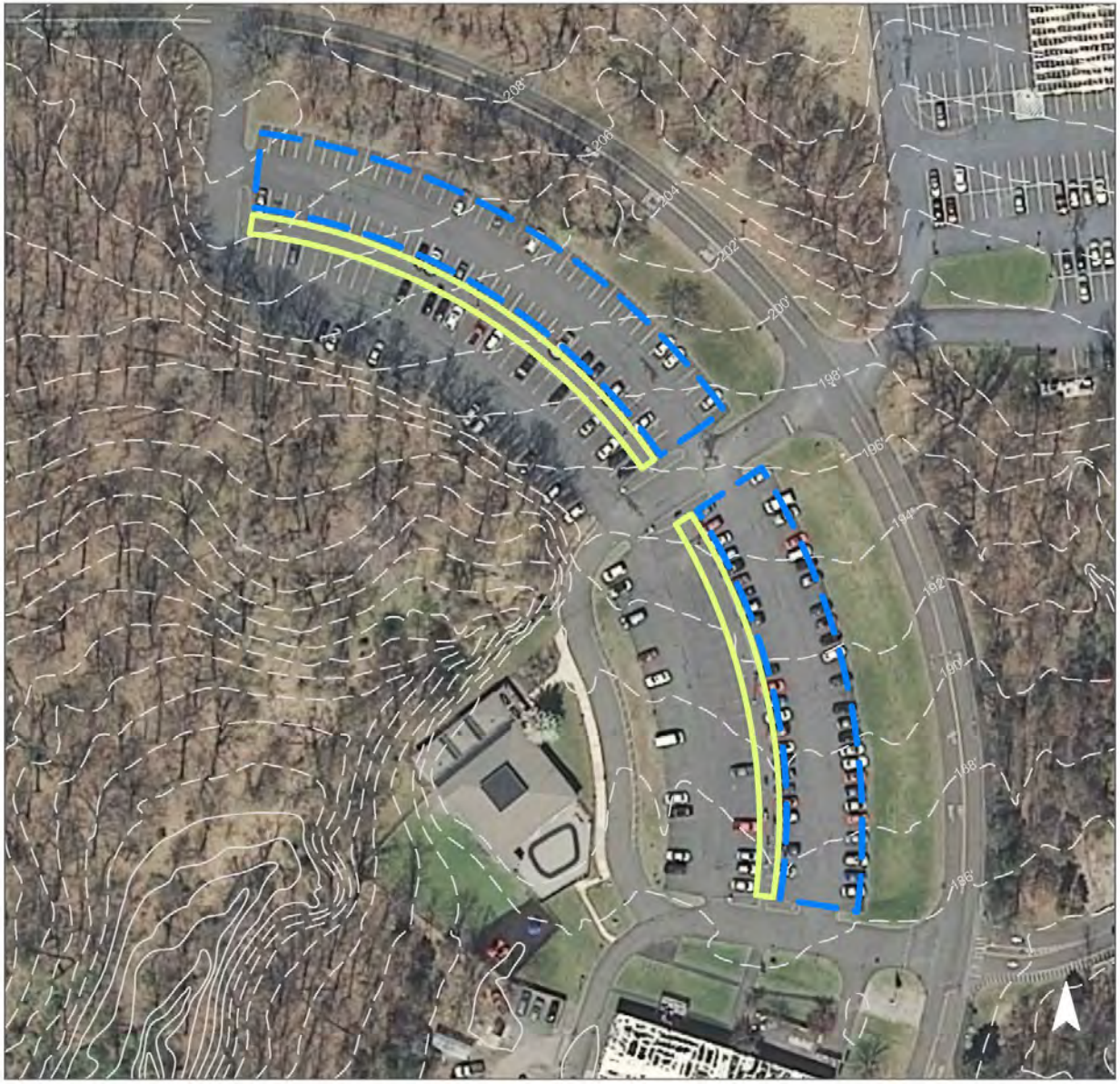
Block and Lot: Block 3, Lot 18.01

Two rain gardens can be installed in the parking lot to capture, treat, and infiltrate 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"
15	1,540,353	74.3	778.0	7,072.3	1.200	42.25

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.782	131	57,357	2.16	6,800	$34,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Raritan Valley Community College

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

0 50' 100'

STONY BROOK ELEMENTARY SCHOOL

RAP ID: 11

Subwatershed: Raritan River North Branch

Site Area: 565,562 sq. ft.

Address: 136 Cedar Grove Road
Branchburg, NJ 08876

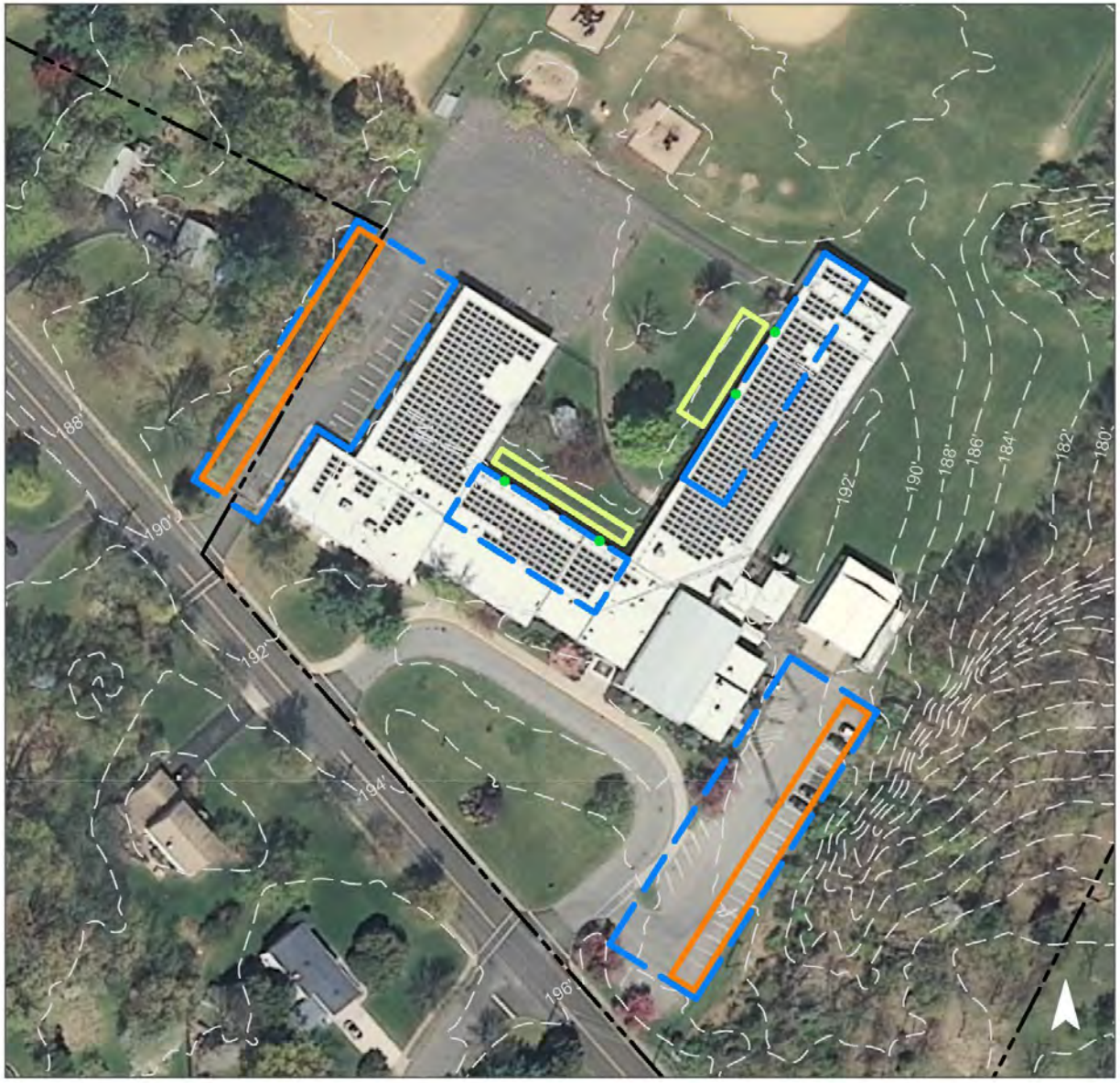
Block and Lot: Block 36, Lot 1

Parking spaces on the east and west sides of the school can be replaced with porous asphalt to capture and infiltrate stormwater runoff from the parking lot. Bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	109,469	5.3	55.3	502.6	0.085	3.00

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.261	44	19,119	0.72	2,500	$12,500
Pervious pavements	0.743	124	54,484	2.05	7,400	$185,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Stony Brook Elementary School

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

0 50' 100'

VIVA OPTIQUE INC.

RAP ID: 12

Subwatershed: Raritan River North Branch

Site Area: 588,198 sq. ft.

Address: 3140 US 22
Branchburg, NJ 08876

Block and Lot: Block 7, Lot 1.02

Parking spaces can be replaced with pervious pavement to infiltrate runoff. In the northwest corner of the site a rain garden can be installed to capture, treat, and infiltrate stormwater generated by 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"
49	285,813	13.8	144.4	1,312.3	0.223	7.84

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	0.078	13	5,737	0.22	800	$4,000
Pervious pavements	0.886	148	65,001	2.44	14,000	$350,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Viva Optique Inc.

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

0 50' 100'

NESHANIC VALLEY GOLF COURSE

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 4,933,336 sq. ft.

Address: 2301 South Branch Road
Branchburg, NJ 08876

Block and Lot: Block 77, Lot 28

Parking spaces can be replaced with porous asphalt to capture and infiltrate runoff. Bioretention systems can also be installed to capture, treat, and infiltrate roof runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
1	62,507	3.0	31.6	287.0	0.049	1.71

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	3,254	0.12	500	$2,500
Pervious pavements	0.547	92	40,145	1.51	3,200	$80,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Neshanic Valley Golf Course

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

0 30' 60'

WHITON ELEMENTARY SCHOOL

RAP ID: 14

Subwatershed: Raritan River South Branch

Site Area: 702,026 sq. ft.

Address: 470 Whiton Road
Neshanic Station, NJ 08853

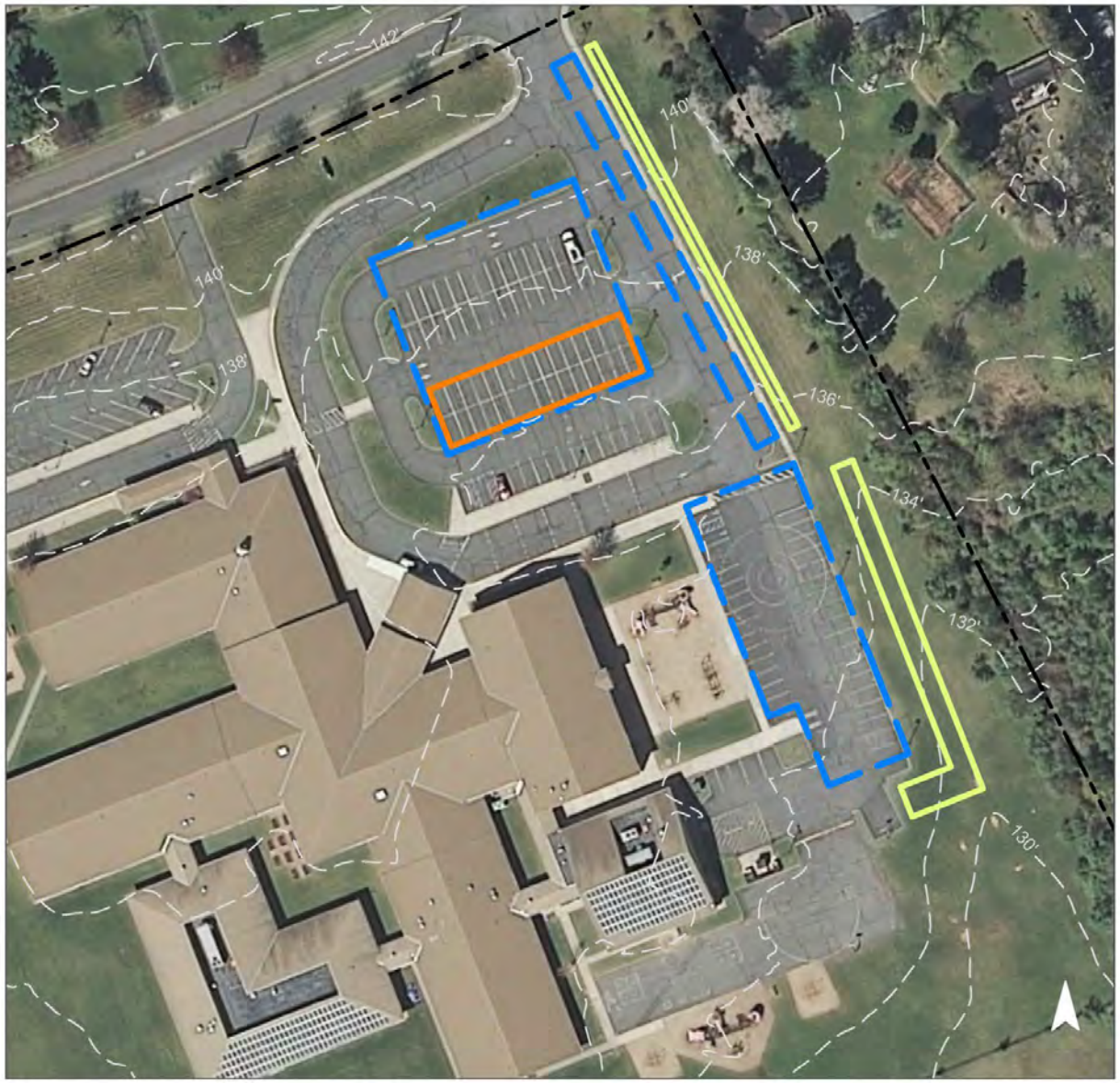
Block and Lot: Block 76.1, Lot 10.01

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

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
40	284,118	13.7	143.5	1,304.5	0.221	7.79

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	0.495	83	36,323	1.37	5,700	$28,500
Pervious pavements	0.521	87	38,238	1.44	5,000	$125,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Whiton Elementary School

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

0 50' 100'

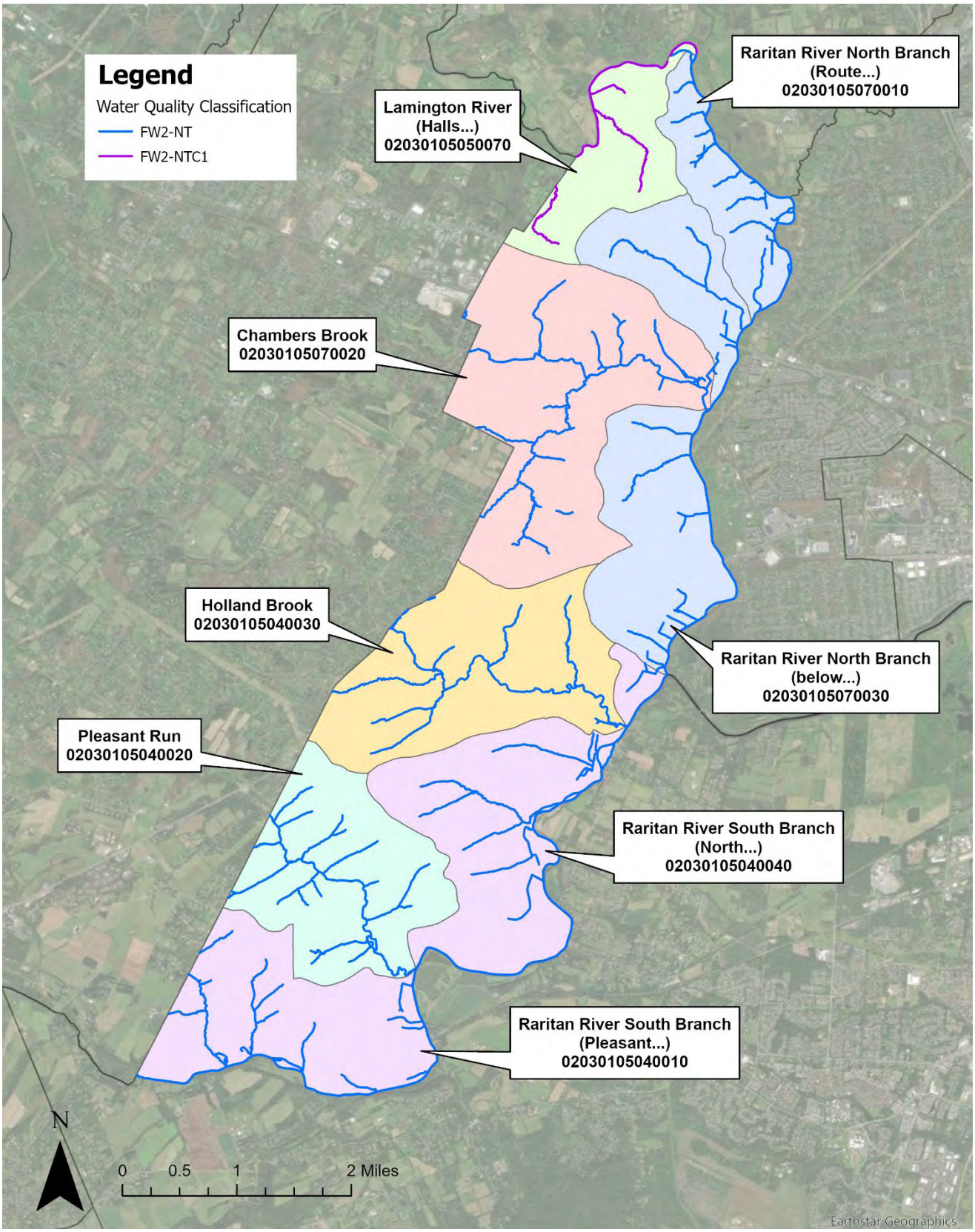


Figure 13. Water Quality Classification of Surface Waters in Branchburg Township

Table 11. Water Quality Classification of Surface Waters in Branchburg Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	68.6	94.2%
Freshwater 2, non-trout, Category One	FW2-NTC1	4.3	5.8%

Chester Borough

Introduction

Located in Morris County in New Jersey, Chester Borough covers about 1.6 square miles. With a population of 1,681 (2020 United States Census), Chester Borough consists of 68.1% of urban land uses by area. Of that urban land use, approximately 28.9% is comprised of low-density residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 28.7% of Chester Borough.

Chester Borough contains portions of four subwatersheds (Table 1). There are approximately 2.3 miles of rivers and streams within the municipality; these include tributaries to Burnett Brook, Hacklebarney Brook, tributaries to the Lamington River, and Peapack Brook and its tributaries. Chester 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 Chester Borough

Subwatershed	HUC14
Lamington River (Furnace Road to Hillside Road)	02030105050030
Lamington River (Pottersville gage to Furnace Road)	02030105050040
Burnett Brook (above Old Mill Road)	02030105060020
Peapack Brook (above/including Gladstone Brook)	02030105060050

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Chester 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 Chester 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 Chester Borough in relation to the study area. Figure 2 shows the portions of the four HUC14s in Chester Borough and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Chester Borough. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Chester Borough and is presented in Table 2. Figure 4 shows the impervious cover in Chester Borough based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Chester 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 Chester Borough within the study area.

The Q-Farms in the study area of Chester 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 31.3 acres of agricultural land use in Chester Borough, all of which lie within the study area for this Watershed Restoration and Protection Plan. There are 9 Q-Farms in Chester Borough, totaling 108.0 acres. Within the 9 Q-Farms, there are approximately 27.2 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, recommendations for the agricultural lands in the study area in Chester Borough are presented in Table 7.

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 (02030105050030, 02030105050040, 02030105060020, 02030105060050). Within these four HUC14s, there are 56.2 acres of buildings and 66.3 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 Chester Borough, approximately 3.5 acres of rooftop runoff would be managed with 0.70 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study

area within Chester Borough, approximately 6.6 acres of roadway would be managed, or 1.8 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 8. Class 15E parcels were excluded from the assessment. Nine of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 8 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. 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 Chester Borough. Figure 11 depicts the water quality classifications of surface waters throughout Chester Borough and Table 9 summarizes the total miles and percentage of each surface water quality classification in the municipality.

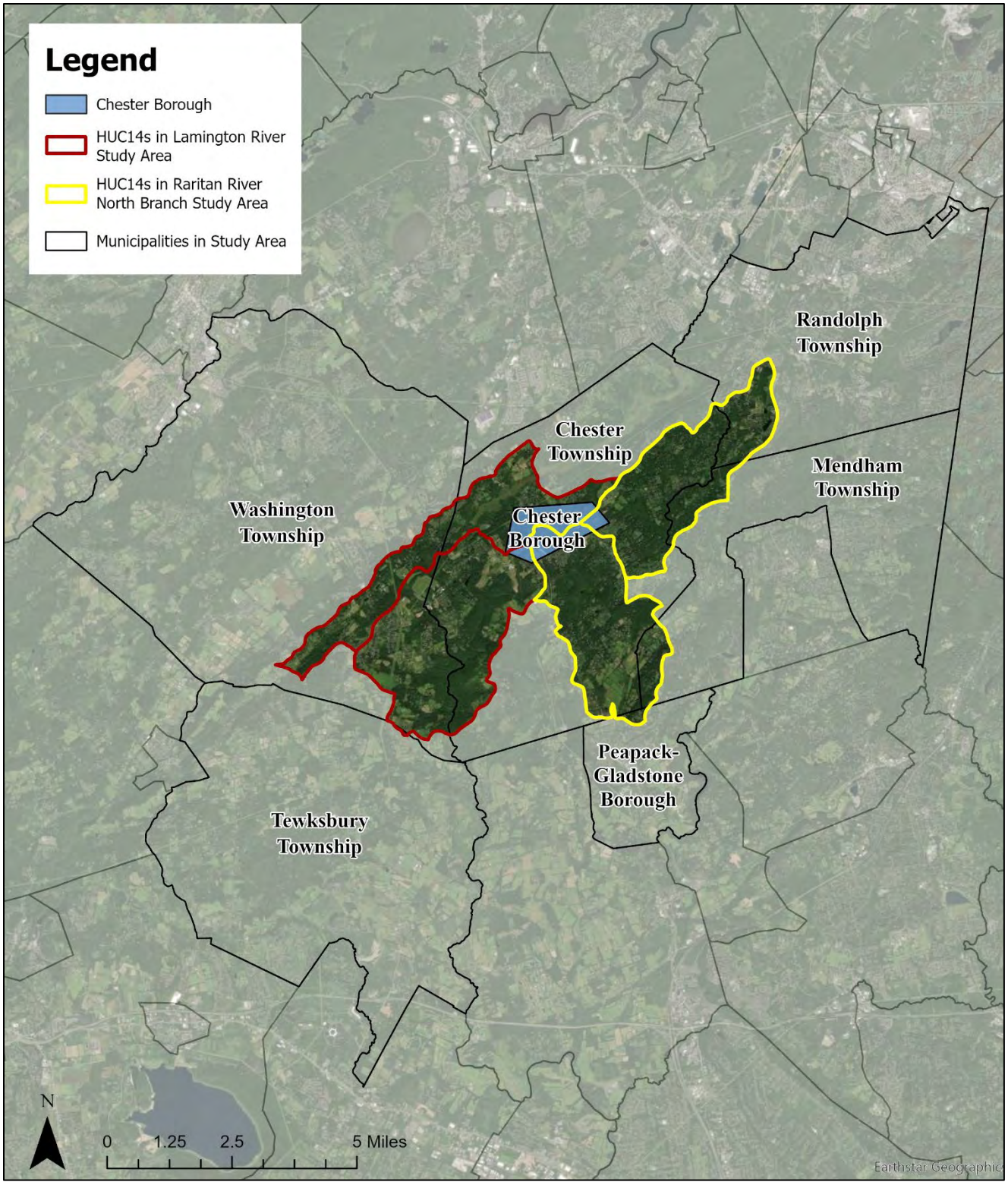


Figure 1: Municipalities in the Study Area

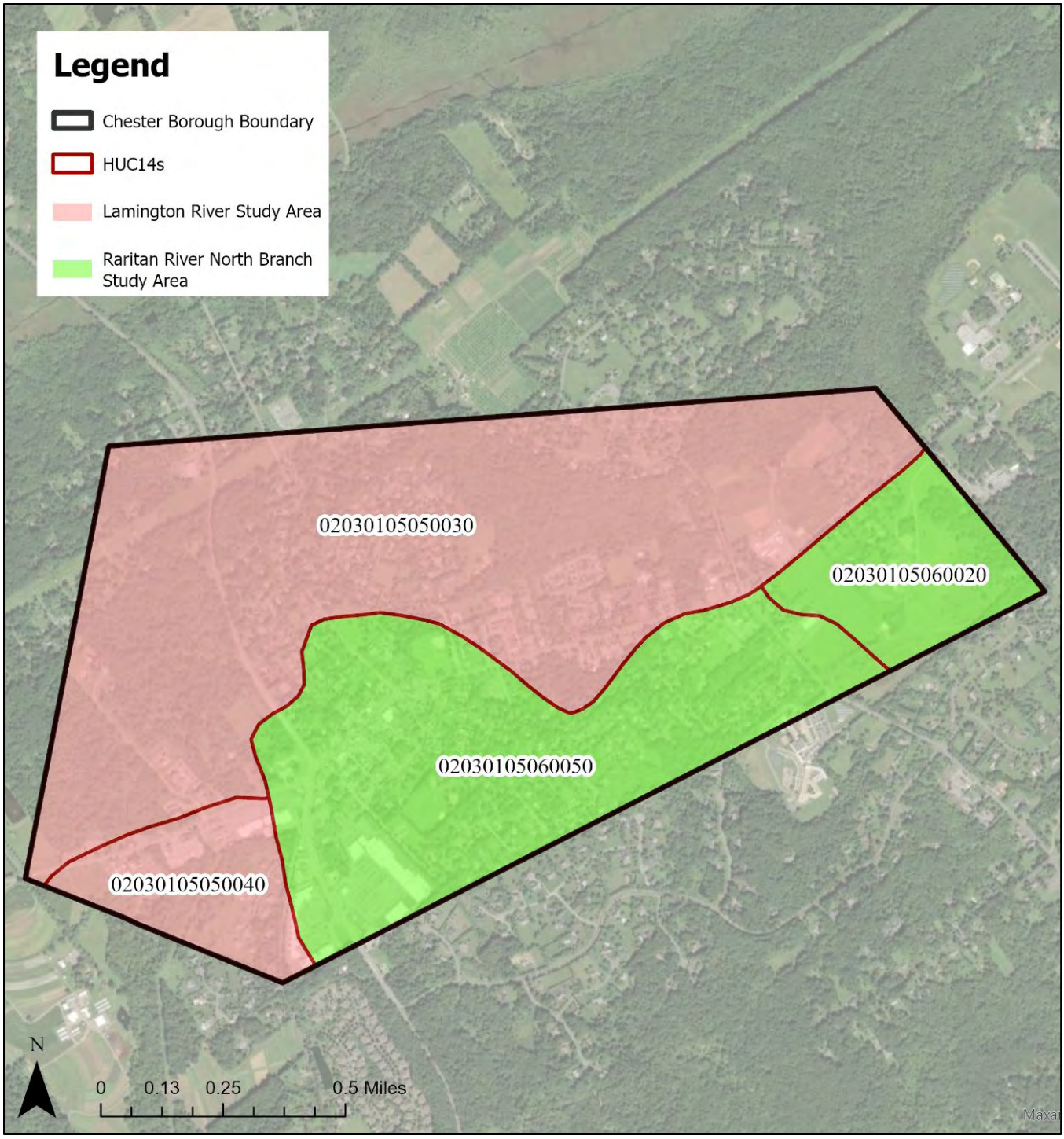


Figure 2: Portions of four HUC14s are in Chester Borough

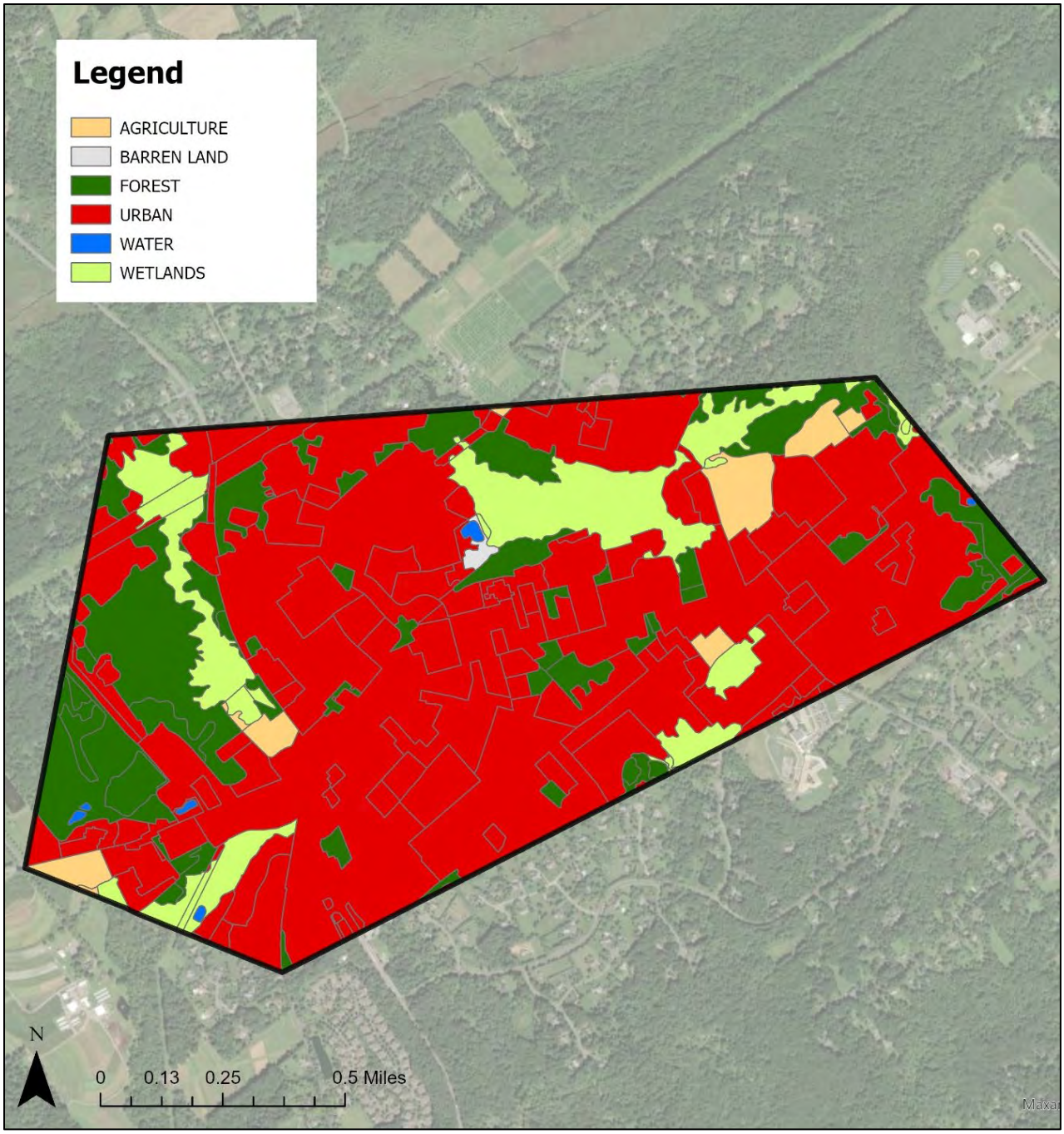


Figure 3: Land Use in Chester Borough

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105050030				
Agriculture	20.2	26.3	202.1	6,064.3
Barren Land	1.9	0.9	9.3	111.9
Forest	148.9	14.9	446.8	5,957.3
Urban	303.3	424.6	4,549.4	42,461.1
Water	1.4	0.1	4.1	55.0
Wetlands	83.0	8.3	249.0	3,320.3
TOTAL =	**558.7**	**475.1**	**5,460.7**	**57,969.9**
02030105050040				
Agriculture	4.9	6.4	49.4	1,482.7
Barren Land	0.0	0.0	0.0	0.0
Forest	5.5	0.5	16.5	219.8
Urban	47.5	66.5	712.5	6,649.9
Water	0.7	0.1	2.0	26.7
Wetlands	13.1	1.3	39.4	525.0
TOTAL =	**71.7**	**74.8**	**819.8**	**8,904.1**
02030105060020				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	16.7	1.7	50.1	668.3
Urban	66.4	92.9	995.8	9,294.1
Water	0.2	0.0	0.5	6.2
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**83.3**	**94.6**	**1,046.4**	**9,968.6**
02030105060050				
Agriculture	6.2	8.0	61.8	1,854.8
Barren Land	0.0	0.0	0.0	0.0
Forest	11.1	1.1	33.4	444.7
Urban	277.3	388.2	4,158.9	38,816.1
Water	0.0	0.0	0.0	0.0
Wetlands	12.0	1.2	35.9	478.7
TOTAL =	**306.6**	**398.5**	**4,290.0**	**41,594.3**
All HUCs				
Agriculture	31.3	40.7	313.3	9,401.8
Barren Land	1.9	0.9	9.3	111.9
Forest	182.2	18.2	546.8	7,290.1
Urban	694.5	972.2	10,416.6	97,221.2
Water	2.3	0.2	6.6	87.9
Wetlands	108.1	10.8	324.3	4,324.0

TOTAL =	**1,020.3**	**1,043.0**	**11,616.9**	**118,436.9**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Chester 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 Chester Borough. Based upon the NJDEP impervious surface data, Chester Borough has impervious cover totaling 25.7%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Chester 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, Chester Borough's impervious cover percentage would suggest that its waterways are primarily non-supporting and most likely contributing to not meeting the state's surface water quality standards.

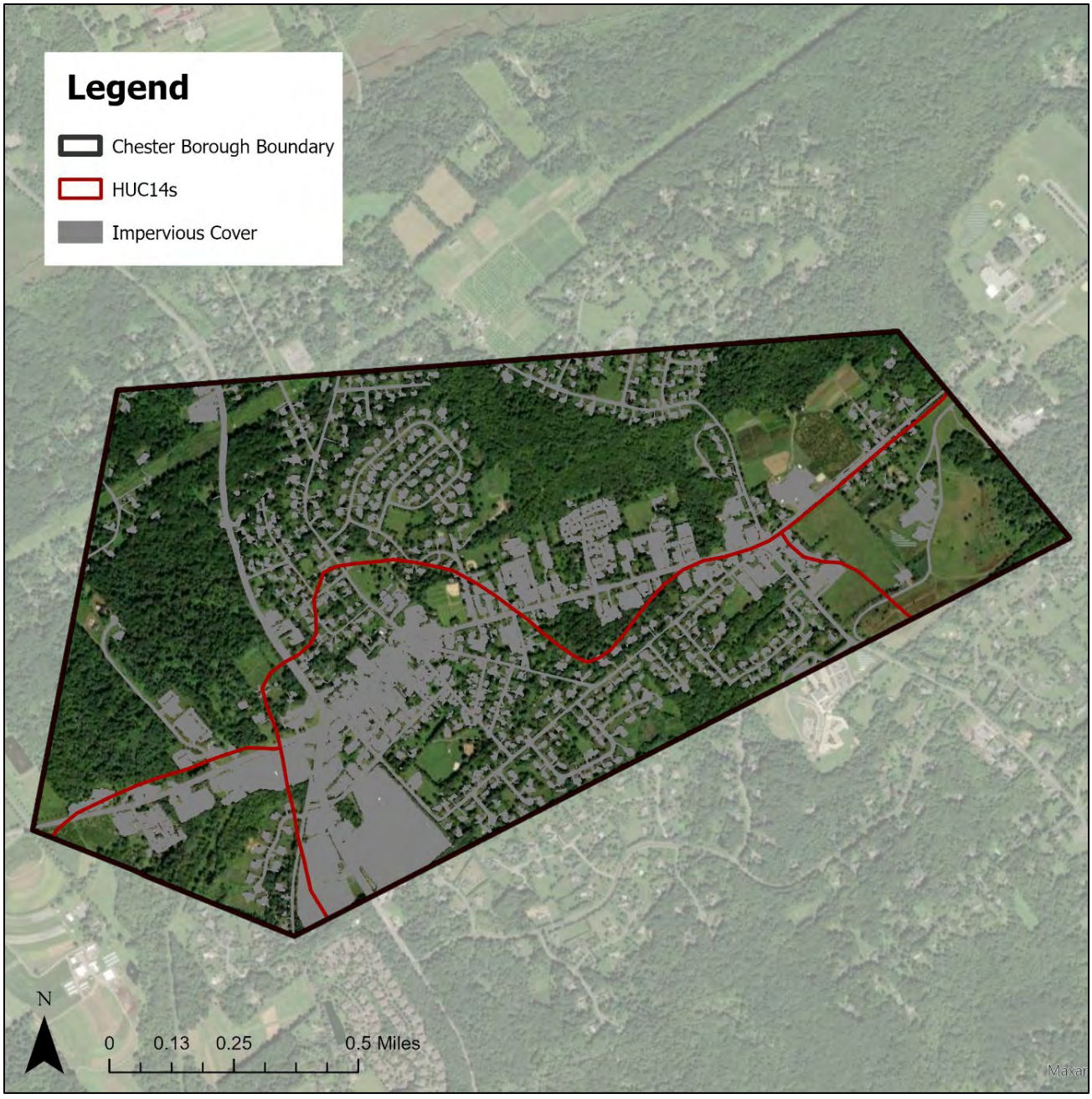


Figure 4: Impervious Cover in Chester Borough

Table 3: Impervious Cover Analysis by HUC14 for Chester Borough

Class	Area (acres)	HUC Impervious Cover (%)
02030105050030		
Building	22.23	
Other	48.91	
Road	29.35	
TOTAL =	**100.5**	**18.0%**
02030105050040		
Building	4.19	
Other	15.54	
Road	4.24	
TOTAL =	**24.0**	**33.4%**
02030105060020		
Building	1.51	
Other	4.28	
Road	1.63	
TOTAL =	**7.4**	**8.9%**
02030105060050		
Building	28.23	
Other	71.53	
Road	31.08	
TOTAL =	**130.8**	**42.7%**
All HUCs		
Building	56.16	
Other	140.26	
Road	66.30	
TOTAL =	**262.7**	**25.7%**

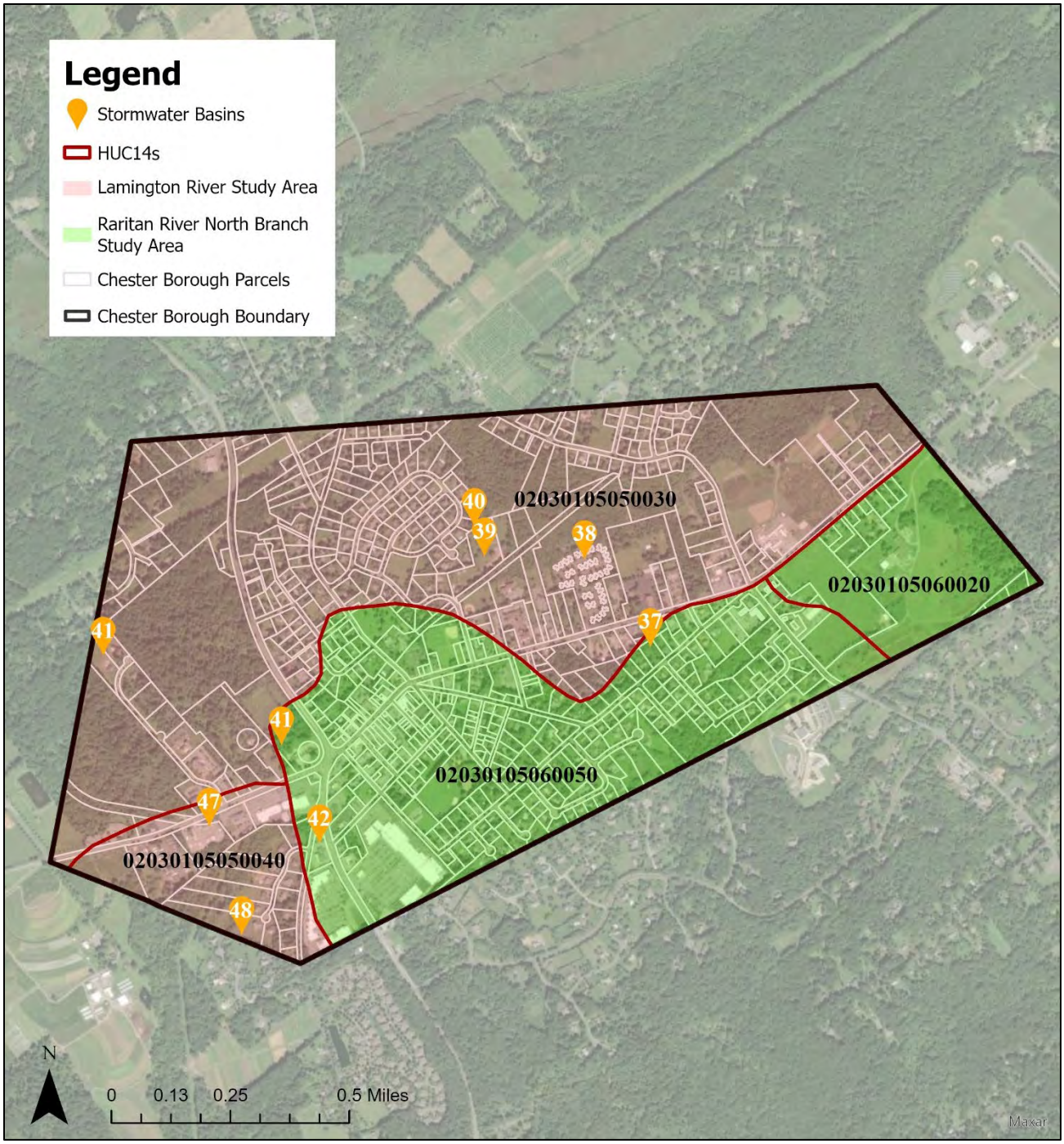


Figure 5: Stormwater Facilities in the Study Area of Chester Borough

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

Raritan River North Branch Study Area		
ID	**Address**	**Type**
41	146 US Highway 206 S	D
42	198 US Highway 206 S	D
Lamington River Study Area		
ID	**Address**	**Type**
37	384 Main St	I
38	Barkman Way	N
39	64 Collis Ln	R
40	31 Ammerman Way	N
41	32 Mill Ridge Ln	N
47	1 Mill Ridge Ln	R
48	14 Windy Top Ln	N

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

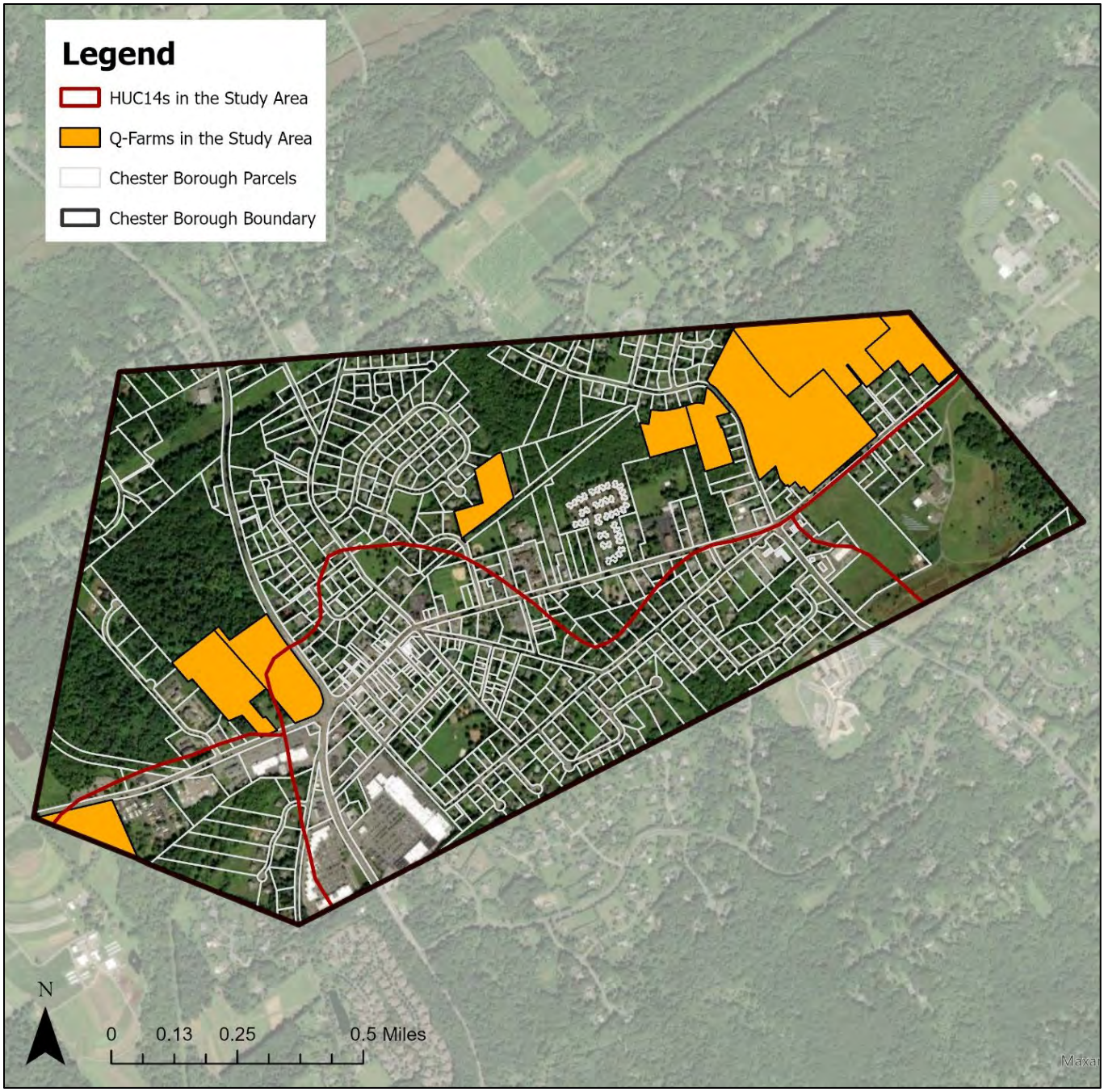


Figure 6: Q-Farm Parcels in the Study Area of Chester Borough

Table 5: Q-Farm Parcels in the Study Area of Chester Borough

Block	Lot	Q-Code	Prop Class	Location
101	13	QFARM	3B	2 Route 24
101	15	QFARM	3B	46 West Main St
110	18	QFARM	3B	77a Oakdale Rd.Rear
110	57	QFARM	3B	64 Collis Ln
110	67	QFARM	3B	77 Oakdale Rd.Rear
114	4	QFARM	3B	10 Williamson Ln
114	5	QFARM	3B	47 North Rd
114	15	QFARM	3B	15 North Rd
133	1	QFARM	3B	255 Route 24

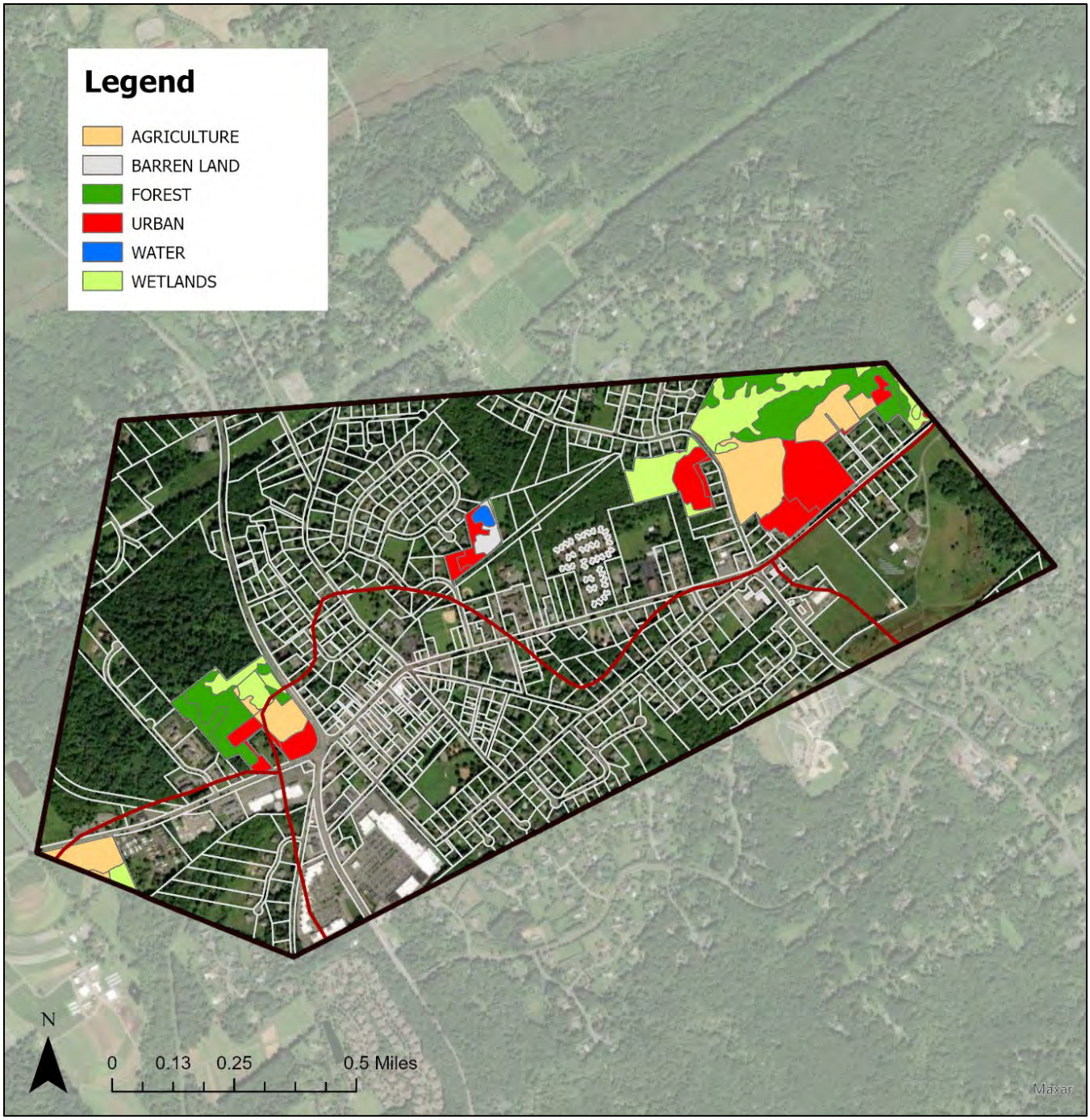


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Chester Borough

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

Land Use	Area (acres)
Agriculture	27.2
Barren Land	1.7
Forest	26.7
Urban	26.8
Water	0.8
Wetlands	24.7
Total:	**108.0**

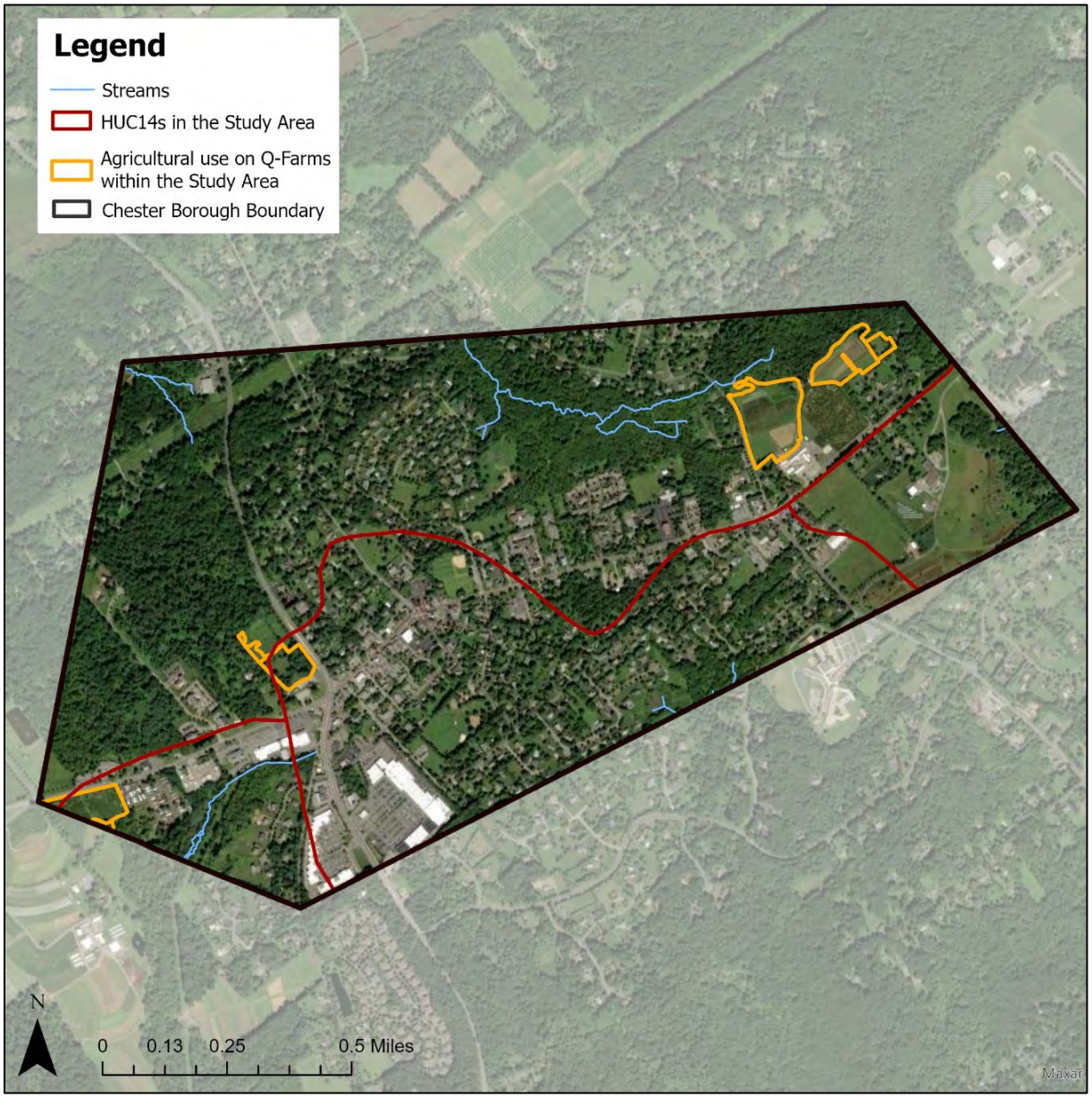


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Chester Borough

Table 7: Recommendations for Specific Farms in the Study Area of Chester Borough

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
114	4	QFARM	X					
114	15	QFARM	X		X	X		

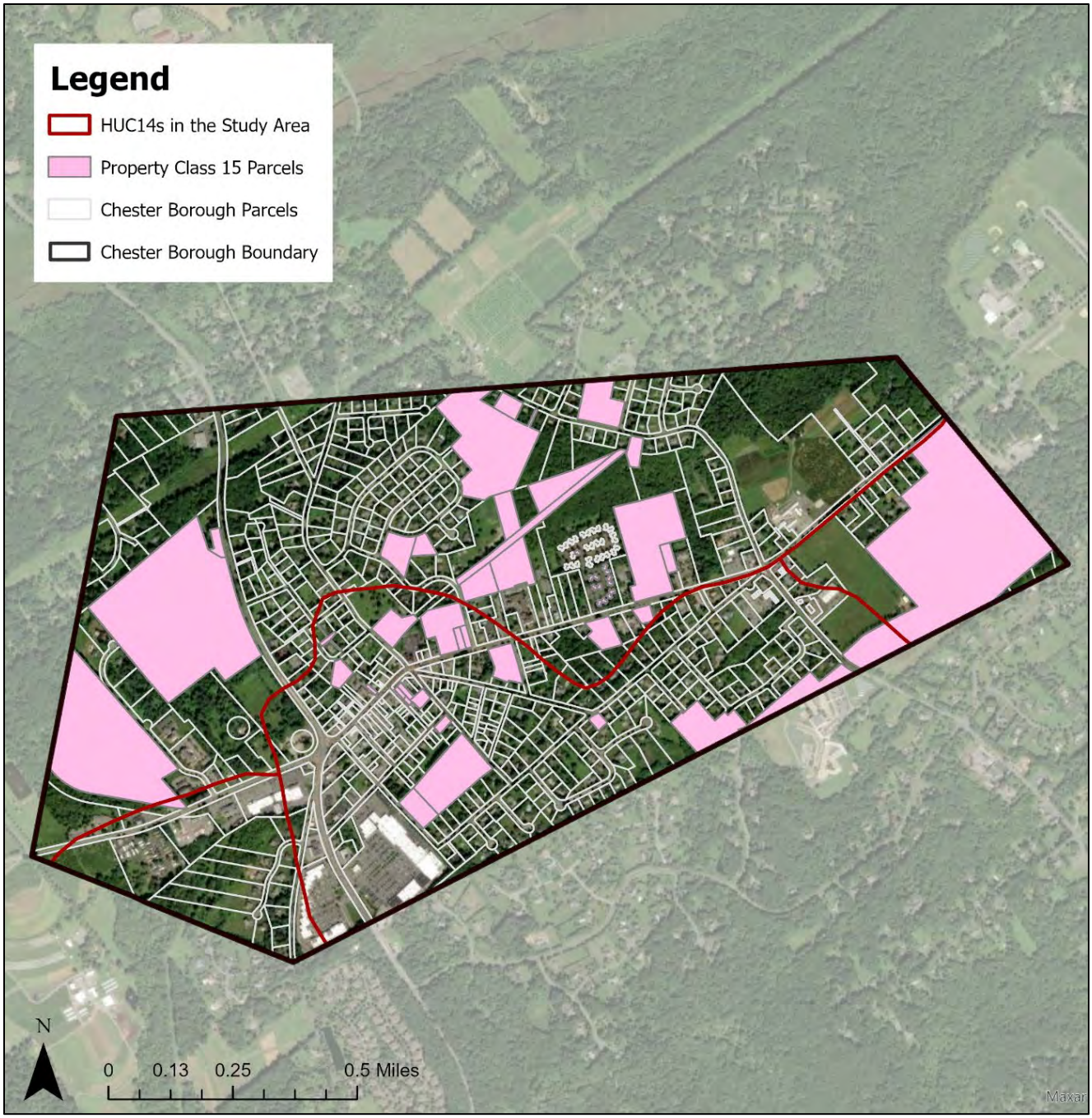


Figure 9: Property Class 15 Parcels in the Study Area of Chester Borough

Table 8: Property Class 15 Parcels in the Study Area of Chester Borough

Block	Lot	Prop Class	Location	Facility Type
110	47	15A	54 Collis Ln	Vacant Land
118	12	15A	640 Main St	Parking Areas
101	11	15C	235 Route 206	Storage Bldg.
101	12	15C	185 Route 206	Vacant Land
101	18	15C	140 West Main St	Park
103	25	15C	67 Main St	Parking Areas
104	10	15C	18 Hedges Rd	Water Supply
***107**[1]	**11**	**15C**	**155 Main St**	**Playground**
***107**[1]	**13**	**15C**	**175 Main St**	**Vacant Land**
110	1	15C	31 Ammerman Way	Vacant Land
110	3	15C	111b Oakdale Rd	Vacant Land
110	49	15C	62 Collis Ln	Vacant Land
110	53	15C	43 Ammerman Way	Vacant Land
110	54	15C	41 Ammerman Way	Vacant Land
110	62	15C	62 Collis La.Rear	Vacant Land
110	64	15C	93 Oakdale Rd.Rear	Vacant Land
***115**	**17**	**15C**	**50 North Rd**	**Administrative Bldg.**
119	8	15C	300 Main St	Municipal Bldg.
120	16	15C	21 Larch Dr	Vacant Land
127	4	15C	70 Grove St	Park
***127**	**13**	**15C**	**107 Seminary Ave**	**Park**
***107**	**18**	**15D**	**30 Hillside Rd**	**Church & Parsonage**
110	13	15D	91 Oakdale Rd	Office
110	31	15D	Main St	Church
***110**	**32**	**15D**	**375 Main St**	**Church & Rectory**
***110**	**48**	**15D**	**245 Main St.Rear**	**Retirement Home**
110.01	2	15D	1 Meadow Ln	Retirement Home
110.01	3	15D	3 Meadow Ln	Retirement Home
110.01	4	15D	5 Meadow Ln	Retirement Home
110.01	5	15D	7 Meadow Ln	Retirement Home
110.01	6	15D	9 Meadow Ln	Retirement Home
110.01	7	15D	11 Meadow Ln	Retirement Home
110.01	8	15D	13 Meadow Ln	Retirement Home
110.01	9	15D	15 Meadow Ln	Retirement Home
110.01	10	15D	2 Meadow Ln	Retirement Home
110.01	11	15D	4 Meadow Ln	Retirement Home
110.01	12	15D	8 Meadow Ln	Retirement Home
110.01	13	15D	6 Meadow Ln	Retirement Home
112	5	15D	100 Oakdale Rd	Chapel
***123**	**6**	**15D**	**196-220 Main St**	**Church**
103	14	15F	11 Hedges Rd	Disabled Veteran
***107**[1]	**12**	**15F**	**177 Main St**	**Club House**
110.01	37	15F	43 Barkman Way	Disabled Veteran
115	1	15F	2 North Rd #1	Cancer Hope Network
***119**	**11**	**15F**	**370 Main St**	**Masonic Temple**
120	35	15F	79 Fairmount Ave	Disabled Veteran

***126[2]**	**2**	**15F**	**80 Main St**	**Volunteer Fire Co**
***126[2]**	**3**	**15F**	**86 Main St**	**Volunteer Fire Co**
***126[2]**	**4**	**15F**	**86 Main St**	**Vacant Land**
***126[2]**	**7**	**15F**	**Main St**	**Vacant Land**
***126[2]**	**8**	**15F**	**26 Grove St**	**Vacant Land**
127	1	15F	54 Grove St	Theater

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

[1]Site includes three tax-exempt parcels
[2]Site includes five tax-exempt parcels

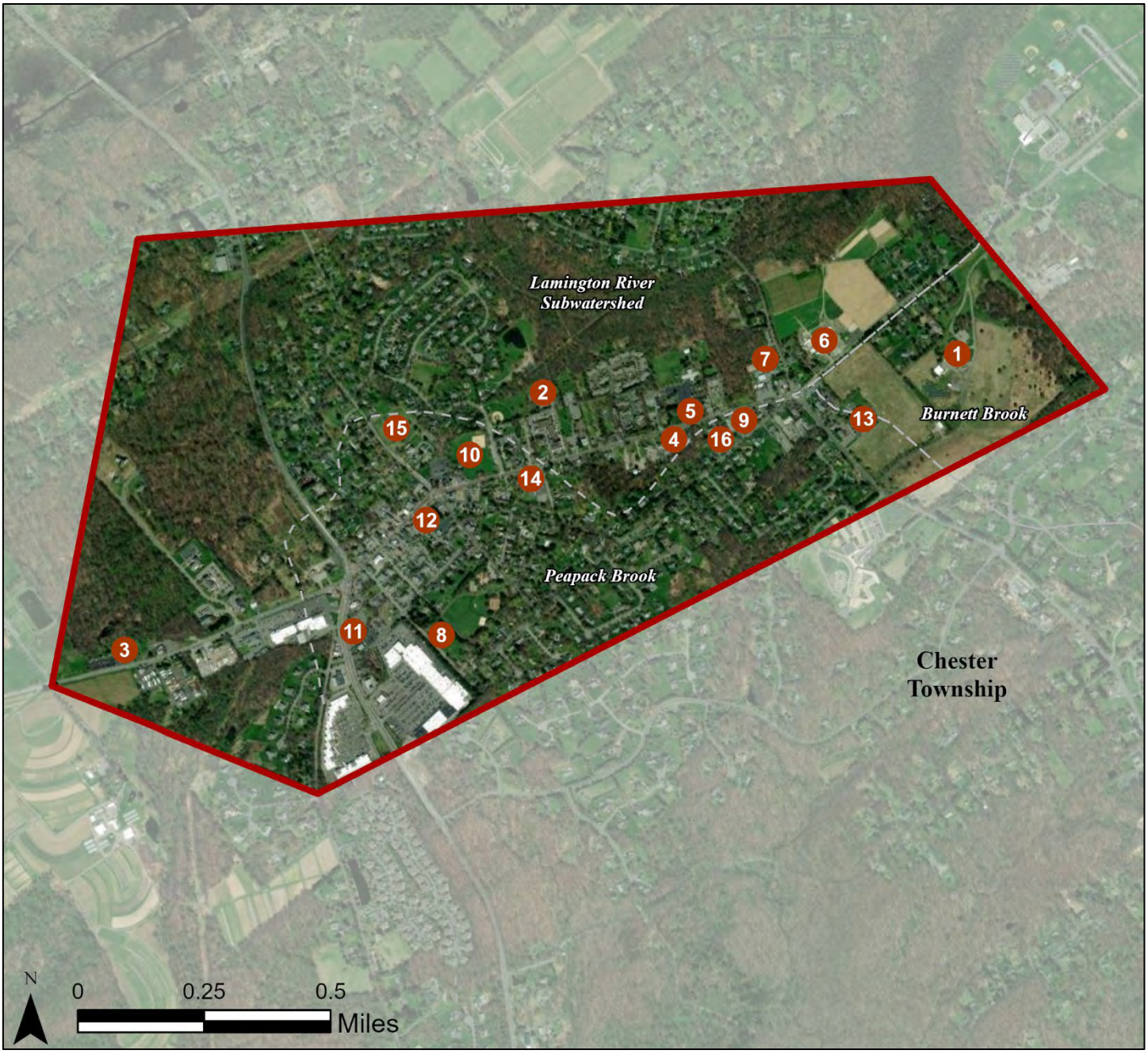


Figure 10: Sites with Green Infrastructure Opportunities in Chester Borough

CHESTER BOROUGH OFFICE

RAP ID: 1

Subwatershed: Burnett Brook

HUC14 ID: 02030105060020

Site Area: 2,589,180 sq. ft.

Address: 50 North Road
Chester, NJ 07930

Block and Lot: Block 115, Lot 17

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway and parking lot. Trench drains will be required for some of these gardens. Existing parking spaces in the northern and southern parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the 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 50"
9	234,240	11.3	118.3	1,075.5	0.183	7.30

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	3,660	0.108	15	7,640	0.29	915	$9,150
Pervious pavement	19,110	0.566	84	39,860	1.50	6,990	$174,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chester Borough Office

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

0 50' 100'

CHESTER SENIOR HOUSING

RAP ID: 2

Subwatershed: Lamington River

Site Area: 171,540 sq. ft.

Address: 1 Cole Court
Chester Borough, NJ 07930

Block and Lot: Block 110, Lot 4

Two rain gardens can be installed west of the two buildings to accumulate and infiltrate stormwater runoff from the buildings. Additionally, porous pavement can be used to capture stormwater from the parking lot in front of the main building. 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"
24	40,325	1.9	20.4	185.1	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 systems	0.042	7	2,980	0.11	405	$2,025
Pervious pavement	0.178	30	12,640	0.48	1,450	$36,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chester Senior Housing

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

0 30' 60'

CHESTER LIBRARY

RAP ID: 3

Subwatershed: Lamington River

Site Area: 393,550 sq. ft.

Address: 250 West Main Street
Chester, NJ 07930

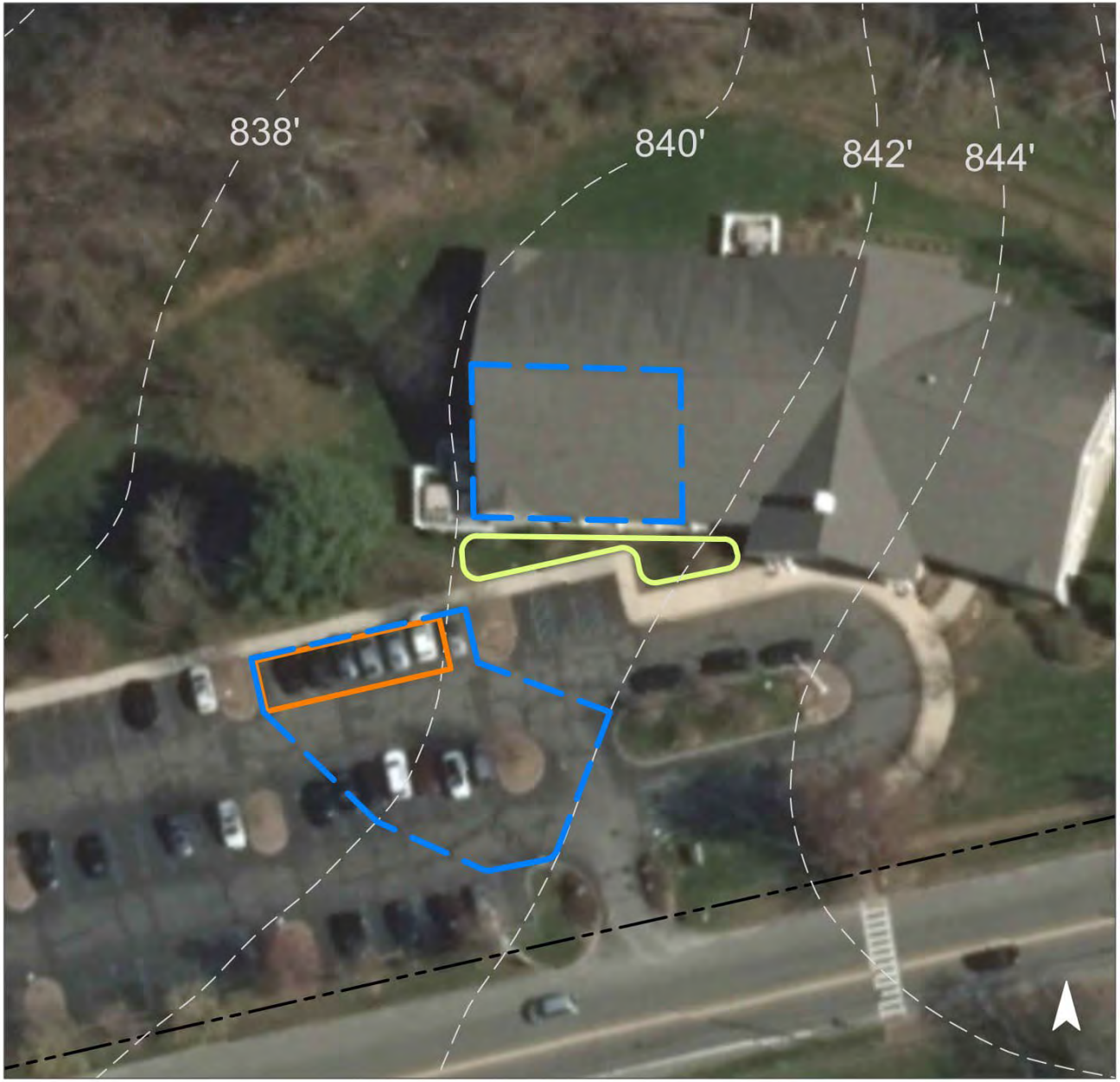
Block and Lot: Block 101, Lot 21

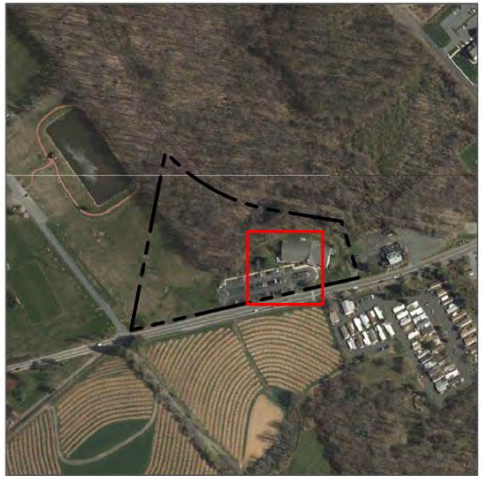
Parking spaces in the parking lot to the west of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot, before it enters the nearby storm drain. A rain garden can be installed south of the building to capture, filter, and infiltrate stormwater runoff from the roof if the front downspouts are disconnected. 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"
17	68,470	3.3	34.6	314.4	0.053	1.88

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	0.089	15	6,310	0.24	860	$4,300
Pervious pavement	0.157	26	11,120	0.42	1,055	$26,375

GREEN INFRASTRUCTURE RECOMMENDATIONS





Chester Library

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

0 25' 50'

COLONIAL PROSPECT LODGE #24 MASONIC LODGE

RAP ID: 4

Subwatershed: Lamington River

HUC14 ID: 02030105050030

Site Area: 29,963 sq. ft.

Address: 370 Main Street
Chester, NJ 07930

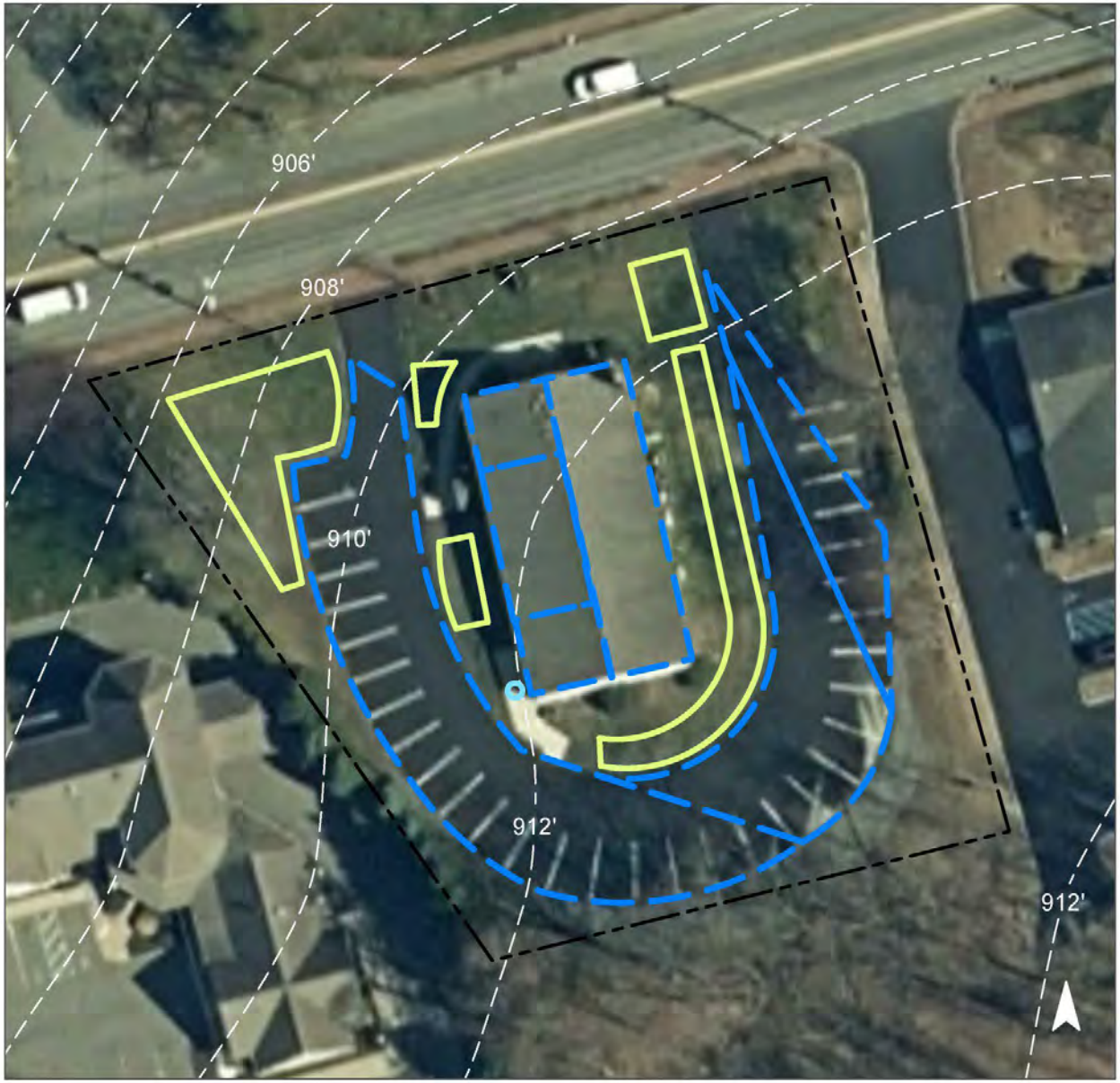
Block and Lot: Block 119, Lot 11

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway and rooftop. This will require downspout disconnections, trench drains, and in some cases downspout redirection beneath the sidewalk. A cistern can be installed to the southwest of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed. 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 50"
58	17,428	0.8	8.8	80.0	0.014	0.54

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	12,090	0.358	53	25,220	0.95	3,025	$30,250
Rainwater harvesting	430	0.013	2	350	N/A	350 (gal)	$1,050

GREEN INFRASTRUCTURE RECOMMENDATIONS



Colonial Prospect Lodge
#24 Masonic Lodge

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

0 20' 40'

ST. LAWRENCE CHURCH

RAP ID: 5

Subwatershed: Lamington River

Site Area: 534,640 sq. ft.

Address: 375 Main Street
Chester, NJ 07930

Block and Lot: Block 110, Lot 32

A rain garden can be installed west of the building behind the parking lot to capture, treat, and infiltrate stormwater runoff from the roof. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
22	116,365	5.6	58.8	534.3	0.091	3.19

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.214	36	15,160	0.57	2,050	$10,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Lawrence Church

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

0 25' 50'

STONY HILL FARM MARKET

RAP ID: 6

Subwatershed: Lamington River

Site Area: 1,466,765 sq. ft.

Address: 15 North Road
Chester Borough, NJ 07930

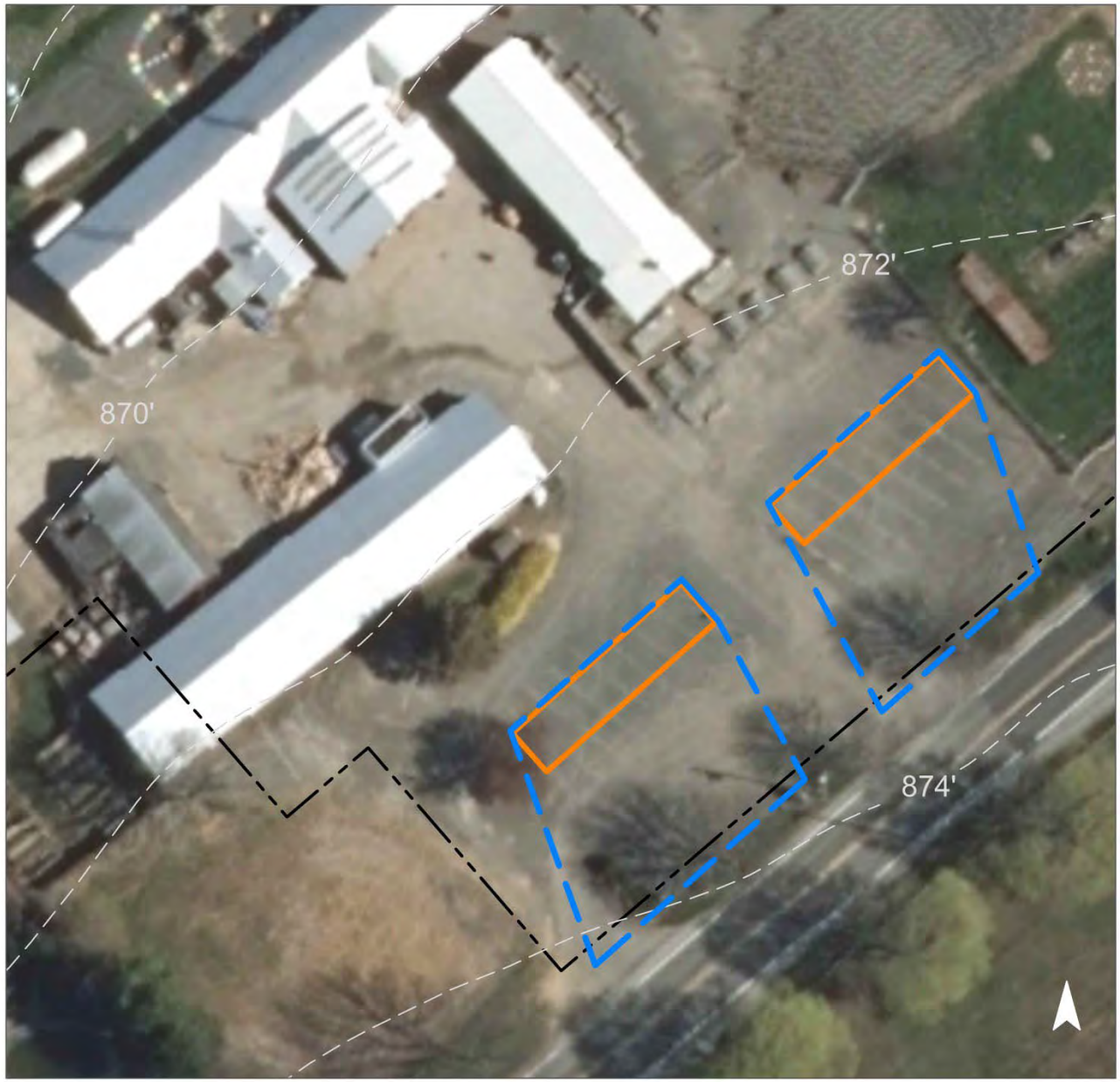
Block and Lot: Block 114, Lot 15

Pervious pavement can be installed in the parking lot to capture the 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"
3	39,515	1.9	20.0	181.4	0.031	1.08

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 (sq. ft.)	Estimated Cost
Pervious pavement	0.316	53	22,460	0.84	2,700	$67,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Stony Hill Farm Market

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

0 25' 50'

SUBURBAN HILLS SCHOOL

RAP ID: 7

Subwatershed: Lamington River

Site Area: 53,755 sq. ft.

Address: 41 Oakdale Road
Chester Borough, NJ 07930

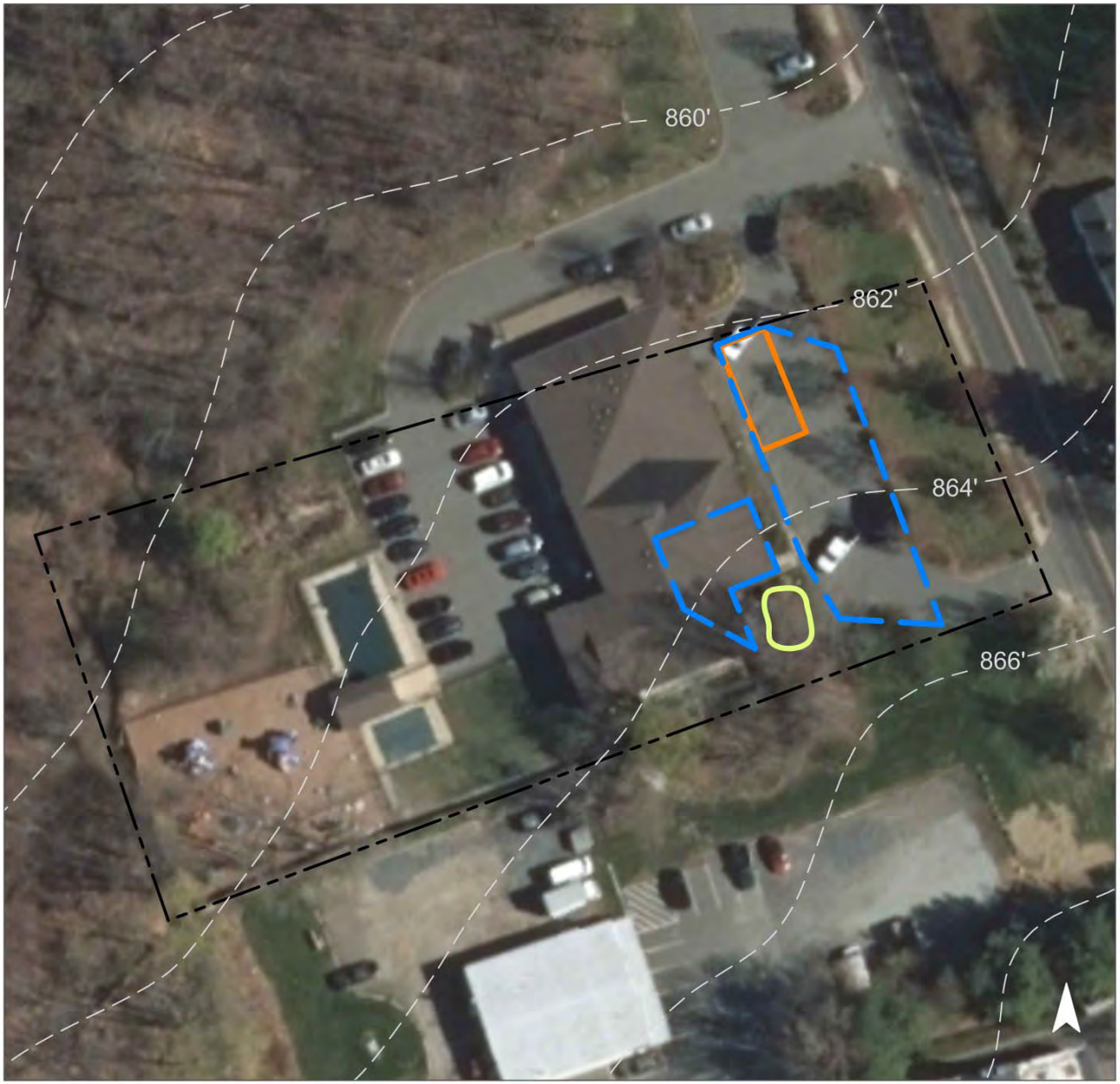
Block and Lot: Block 110, Lot 25

Parking spaces in the parking lot to the northeast of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A rain garden can be installed in the turfgrass area near the entrance of the building to capture, treat, and infiltrate stormwater runoff from the roof. 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"
64	34,200	1.6	17.3	157.0	0.027	0.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.038	6	2,690	0.10	365	$1,825
Pervious pavement	0.131	22	9,320	0.35	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Suburban Hills School

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

0 30' 60'

BORO OF CHESTER RECREATION OFFICE

RAP ID: **8**

Subwatershed: **Peapack Brook**

HUC14 ID: **02030105060050**

Site Area: **84,985 sq. ft.**

Address: **107 Seminary Avenue**
Chester, NJ 07930

Block and Lot: **Block 127, Lot 13**

Rain gardens can be installed to the northwest of the parking lot and to the southeast of the building to capture, treat, and infiltrate the stormwater runoff from the parking lot and building rooftop. This will require curb cuts and downspout redirection beneath the sidewalk. 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 50"
19	16,463	0.8	8.3	75.6	0.013	0.51

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	8,915	0.264	38	18,600	0.70	2,230	$22,300

GREEN INFRASTRUCTURE RECOMMENDATIONS

Boro of Chester
Recreation Office

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

0 20' 40'

CHASE BANK

RAP ID: 9

Subwatershed: Peapack Brook

Site Area: 34,760 sq. ft.

Address: 444 East Main Street
Chester, NJ 07930

Block and Lot: Block 116, Lot 1

A rain garden can be installed north of the building to capture, treat, and infiltrate stormwater runoff from the roof and parking lot. Parking spaces near the catch basin in the rear parking lot can be converted to porous pavement to capture and infiltrate 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"
65	22,590	1.1	11.4	103.7	0.018	0.62

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	0.031	5	2,180	0.08	295	$1,475
Pervious pavement	0.098	16	6,930	0.26	810	$20,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chase Bank

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

0 20' 40'

CHESTER BOROUGH PARK

RAP ID: 10

Subwatershed: Peapack Brook

Site Area: 198,640 sq. ft.

Address: 134 Main Street
Chester Borough, NJ 07930

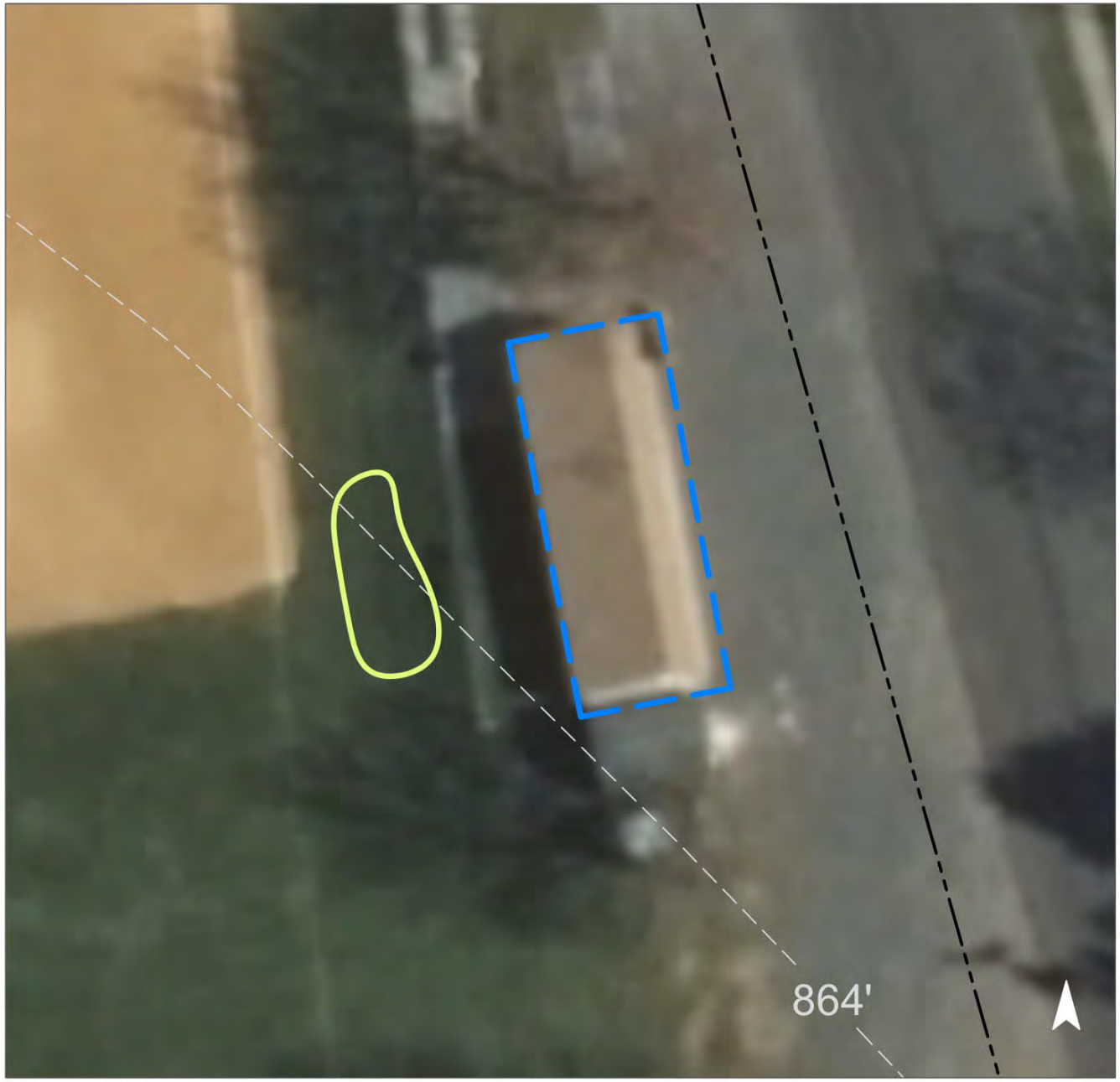
Block and Lot: Block 107, Lots 11, 12, & 13

A rain garden can be installed to the west of the building nearby the baseball field. 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"
10	19,760	1.0	10.0	90.7	0.015	0.54

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.026	4	1,850	0.07	250	$1,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Borough Park

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

0 10' 20'

CHESTER DINER

RAP ID: 11

Subwatershed: Peapack Brook

Site Area: 63,920 sq. ft.

Address: 65 US-206
Chester Borough, NJ 07930

Block and Lot: Block 131, Lot 17

Porous pavement can be installed on the west side of the building to capture and infiltrate stormwater runoff from the building and surrounding area. 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"
75	48,190	2.3	24.3	221.3	0.038	1.32

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	0.155	26	11,000	0.41	1,080	$27,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chester Diner

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

0 30' 60'

CHESTER FIRE COMPANY

RAP ID: 12

Subwatershed: Peapack Brook

HUC14 ID: 02030105060050

Site Area: 45,869 sq. ft.

Address: 86 Main Street
Chester, NJ 07930

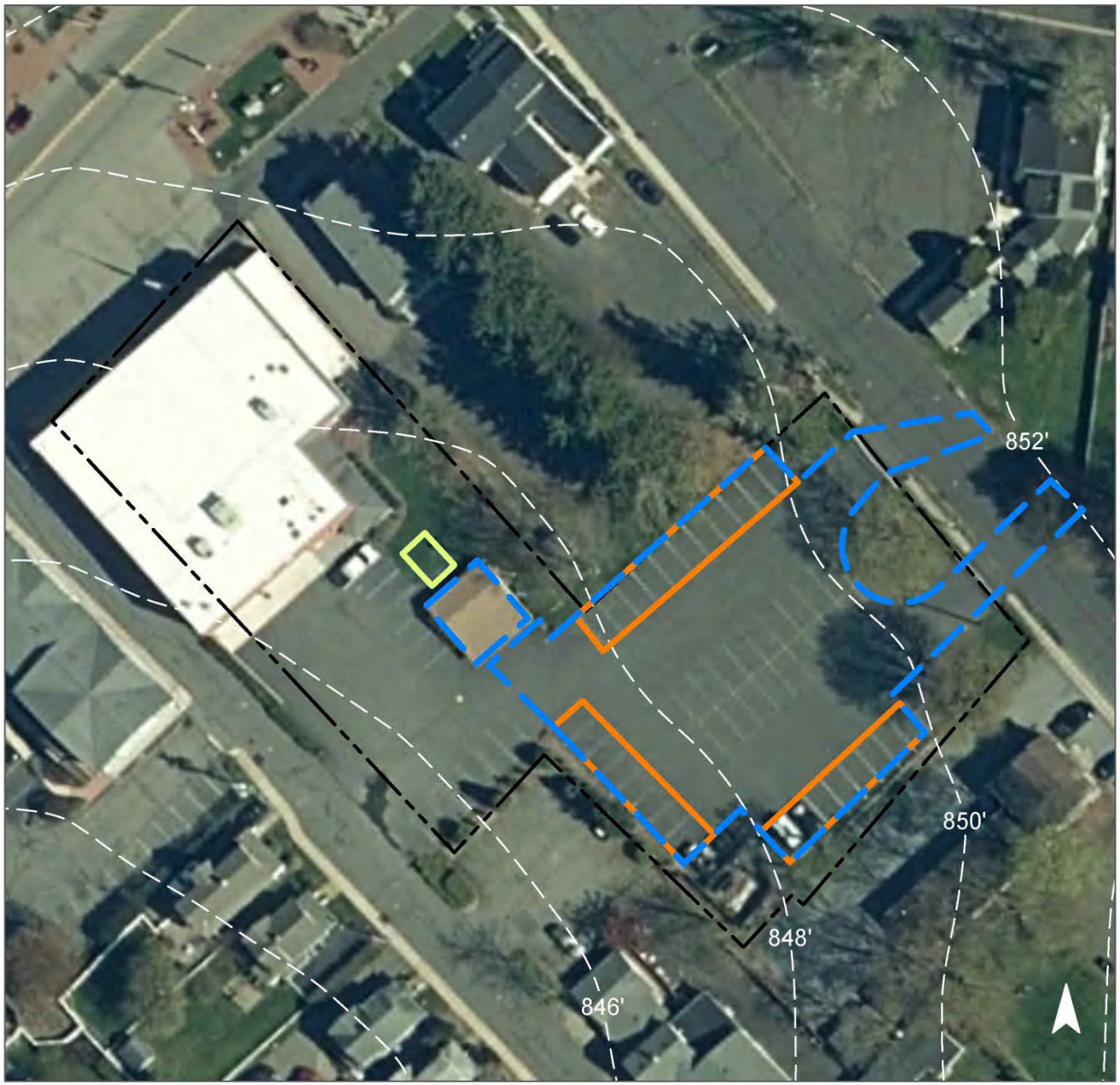
Block and Lot: Block 126, Lots 2,3,4,7 & 8

A rain garden can be installed to the west of the shed to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require a downspout disconnection. The gutters on the eastern section of the shed can also be reworked and directed towards the raingarden to increase the treated drainage area. Existing parking spaces in the eastern parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. 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 50"
87	39,938	1.9	20.2	183.4	0.031	1.24

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	810	0.024	4	1,690	0.06	205	$2,050
Pervious pavement	18,255	0.541	80	38,070	1.43	4,155	$103,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Fire Company

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

0 30' 60'

CHESTER TENNIS CLUB

RAP ID: 13

Subwatershed: Peapack Brook

Site Area: 91,750 sq. ft.

Address: 581 Main Street
Chester, NJ 07930

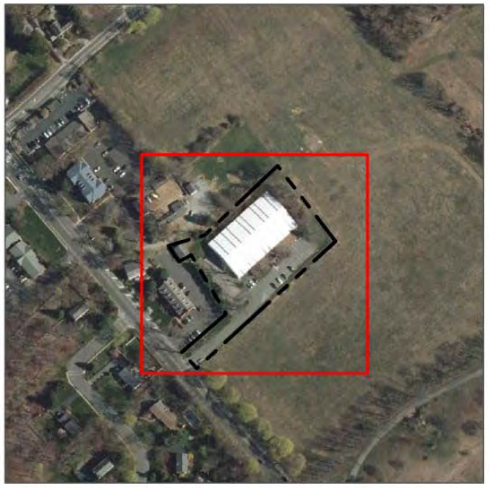
Block and Lot: Block 115, Lot 5

Parking spaces in the parking lot to the south of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof via the downspouts, which are disconnected. 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"
59	54,365	2.6	27.5	249.6	0.042	1.49

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	0.190	32	13,490	0.51	1,300	$32,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Tennis Club

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

0 30' 60'

COMMUNITY PRESBYTERIAN CHURCH

RAP ID: 14

Subwatershed: Peapack Brook

HUC14 ID: 02030105060050

Site Area: 101,358 sq. ft.

Address: 220 Main Street
Chester, NJ 07930

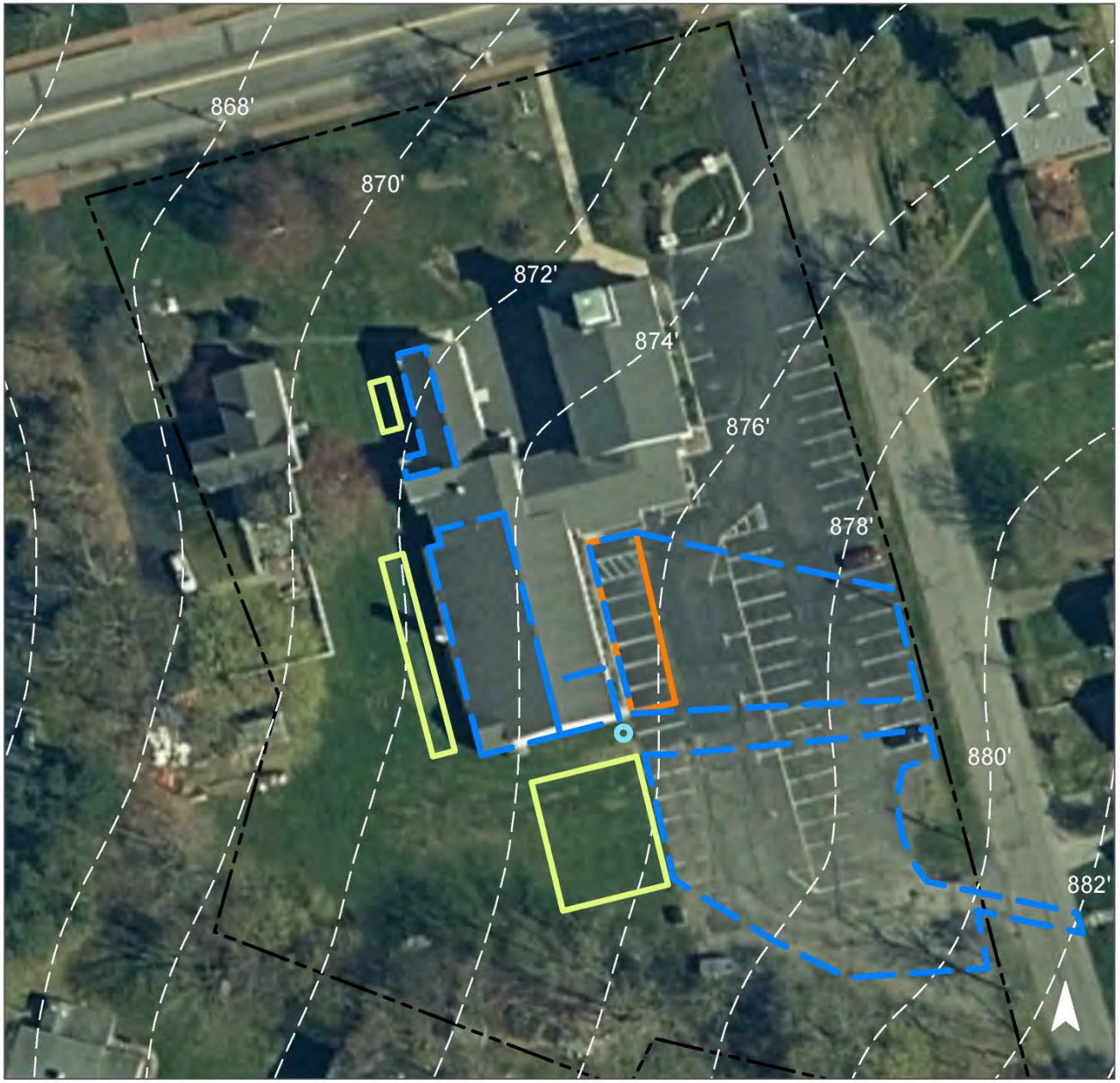
Block and Lot: Block 123, Lot 6

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops and parking lot. This will require downspout redirection and disconnections. Existing parking spaces in western section of the parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A cistern can be installed to the southeast of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed. 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 50"
54	55,160	2.7	27.9	253.3	0.043	1.72

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	12,290	0.364	53	25,630	0.96	3,075	$30,750
Pervious pavement	6,735	0.199	29	14,050	0.53	1,255	$31,375
Rainwater harvesting	510	0.015	2	400	N/A	400 (gal)	$1,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Community Presbyterian Church

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

0 30' 60'

FIRST CONGREGATIONAL CHURCH

RAP ID: **15**

Subwatershed: **Peapack Brook**

HUC14 ID: **02030105060050**

Site Area: **278,454 sq. ft.**

Address: **30 Hillside Road**
Chester, NJ 07930

Block and Lot: **Block 107, Lots 18 & 19**

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops. This will require downspout disconnections, and in some cases downspout redirection underneath the sidewalk. Existing parking spaces in the eastern and western parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. 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 50"
20	55,020	2.7	27.8	252.6	0.043	1.71

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	2,090	0.062	10	4,360	0.16	520	$5,200
Pervious pavement	14,800	0.438	65	30,870	1.16	3,480	$87,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

First Congregational Church

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

0 30' 60'

UNITED STATES POSTAL SERVICE

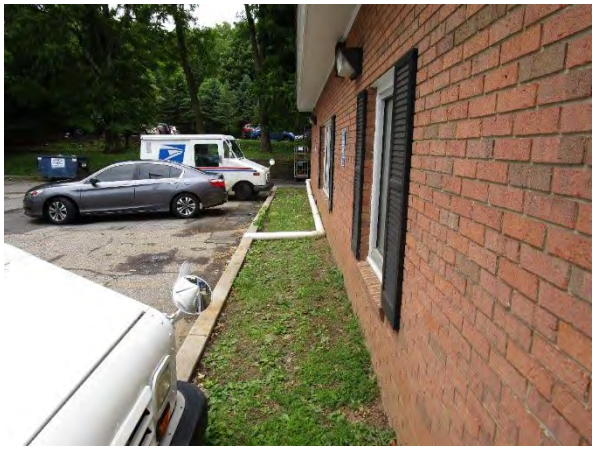
RAP ID: 16

Subwatershed: Peapack Brook

Site Area: 47,570 sq. ft.

Address: 1 Sentry Lane
Chester, NJ 07930

Block and Lot: Block 119, Lot 15

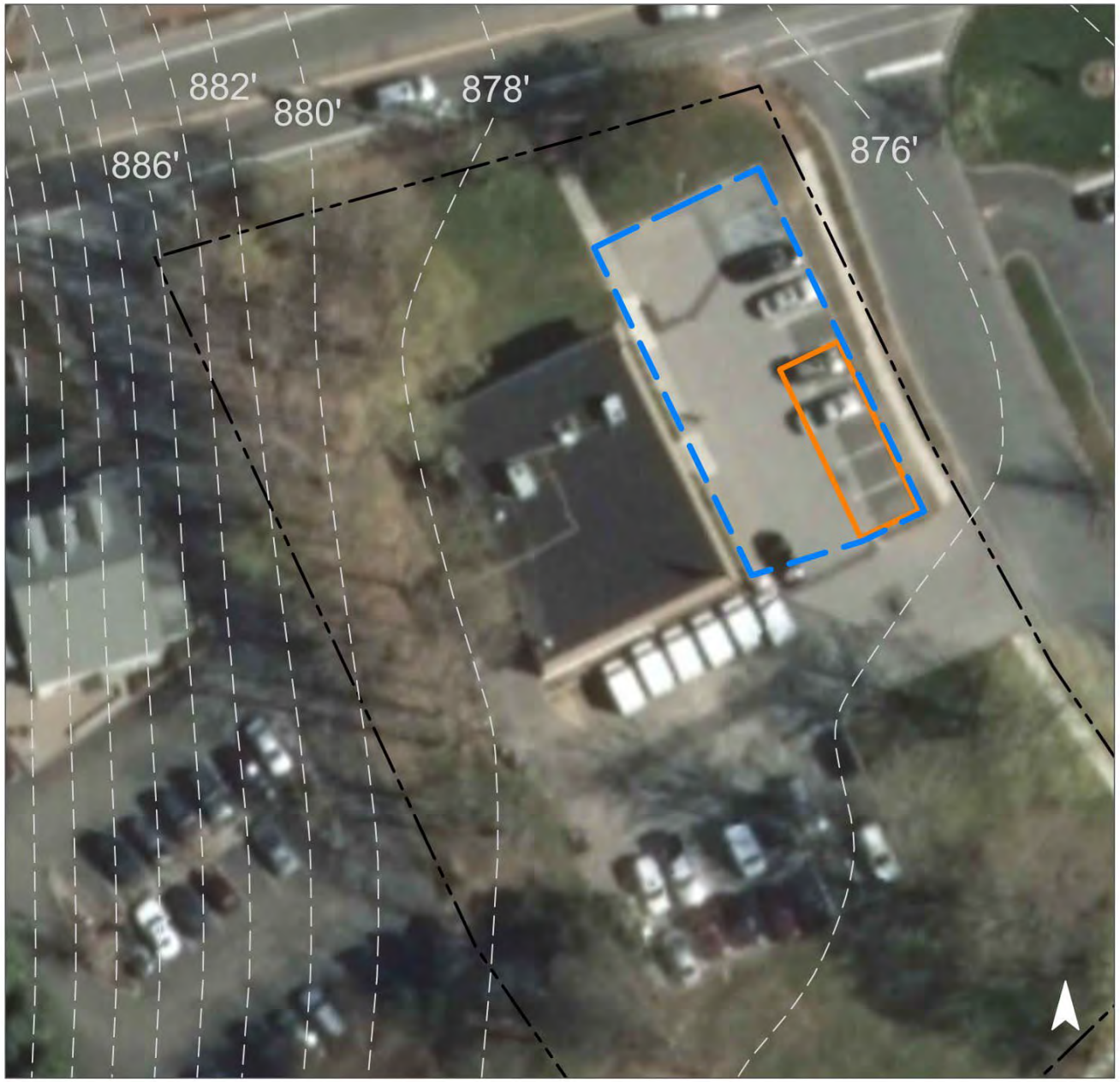


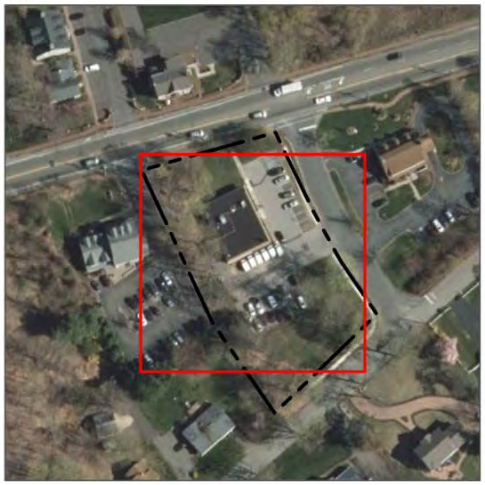
Parking spaces in the parking lot to the east of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot and the downspout. A septic system in the turfgrass area north of the building limits rain garden opportunities. A preliminary soil assessment 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"
62	29,480	1.4	14.9	135.4	0.023	0.81

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
Pervious pavement	0.123	21	8,750	0.33	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS





United States Postal Service

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

0 20' 40'

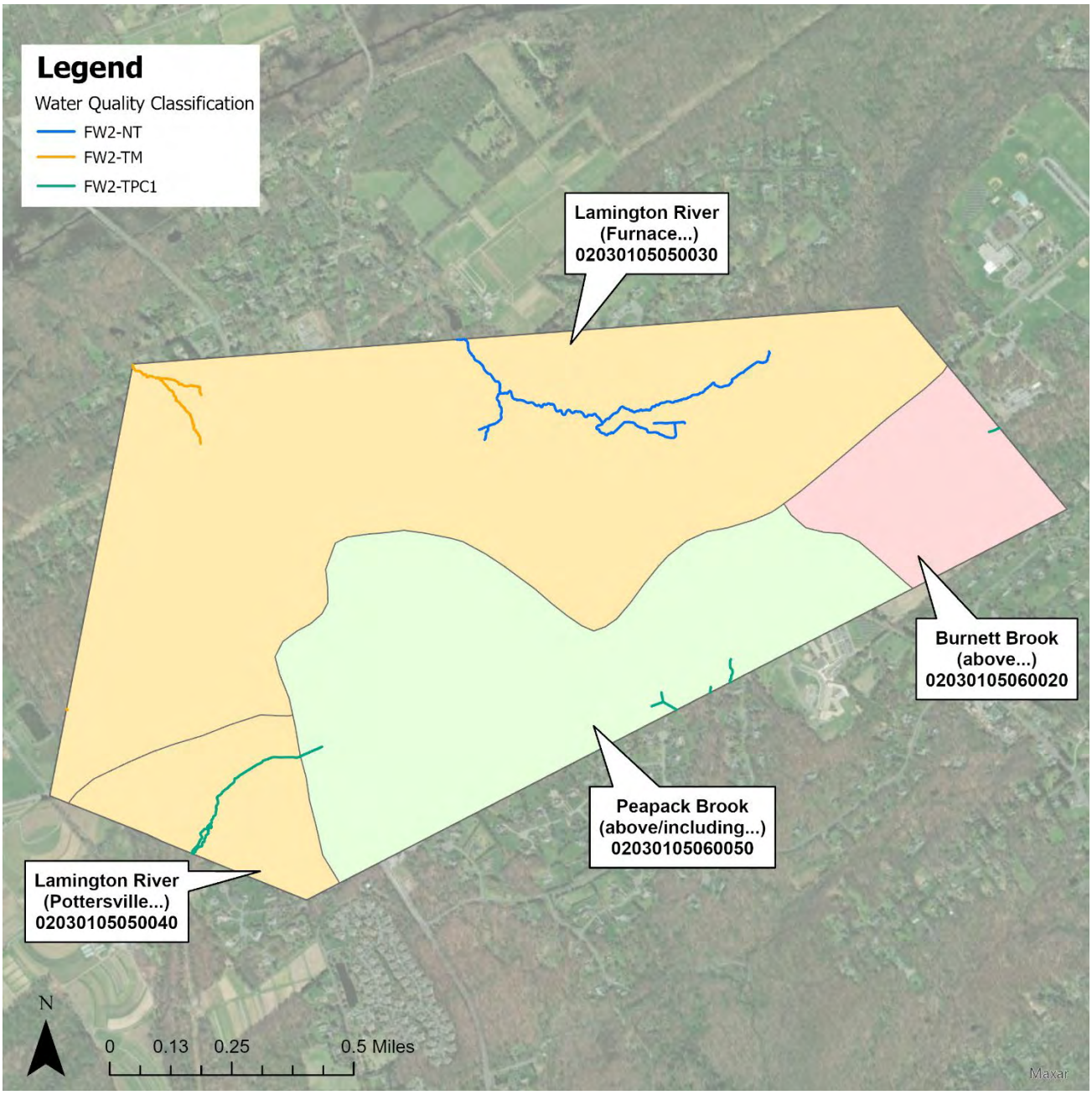


Figure 11. Water Quality Classification of Surface Waters in Chester Borough

Table 9. Water Quality Classification of Surface Waters in Chester Borough

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	1.3	56.7 %
Freshwater 2, trout production, Category One	FW2-TPC1	0.6	27.7%
Freshwater 2, trout maintenance	FW2-TM	0.4	15.7%

Chester Township

Introduction

Located in Morris County in New Jersey, Chester Township covers about 29.2 square miles. With a population of 7,838 (2020 United States Census), Chester Township consists of 26.6% of urban land uses by area. Of that urban land use, approximately 75.7% 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 62.9% of Chester Township.

Chester Township contains portions of twelve subwatersheds (Table 1). There are approximately 103.9 miles of rivers and streams within the municipality; these include Burnett Brook and its tributaries, tributaries to Drakes Brook, Gladstone Brook and its tributaries, Hacklebarney Brook and its tributaries, Herzog Brook and its tributaries, Lamington River and its tributaries, Peapack Brook and its tributaries, tributaries to the South Branch Raritan River, Tanners Brook, Trout Brook, and several uncoded tributaries. Chester Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Chester Township

Subwatershed	HUC14
Drakes Brook (below Eyland Avenue)	02030105010020
Raritan River South Branch (Long Valley bridge to 74d44m15s)	02030105010050
Lamington River (Hillside Road to Route 10)	02030105050020
Lamington River (Furnace Road to Hillside Road)	02030105050030
Lamington River (Pottersville gage to Furnace Road)	02030105050040
Pottersville tributary (Lamington River)	02030105050050
Lamington River (Herzog Brook to Pottersville gage)	02030105050130
Burnett Brook (above Old Mill Road)	02030105060020
Raritan River North Branch (including McVickers to India Brook)	02030105060030

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 Chester Township. 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 Chester Township'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 Chester Township in relation to the Study Area. Figure 2 shows the portions of the twelve HUC14s in Chester Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Chester Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Chester Township and is presented in Table 2. Figure 4 shows the impervious cover in Chester Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Chester Township 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 Chester Township within the study area.

The Q-Farms in the study area of Chester Township, 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 1,916.7 acres of agricultural land use in Chester Township, all of which lie within the study area for this Watershed Restoration and Protection Plan. There are 166 Q-Farms in Chester Township, totaling 3,222.1 acres. Within the 166 Q-Farms, there are approximately 1,328.8 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, recommendations for the agricultural lands in the study area in Chester Township are presented in Table 7.

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. Twelve HUC14s are included in the study area (02030105010020, 02030105010050, 02030105050020, 02030105050030, 02030105050040, 02030105050050, 02030105050130, 02030105060020, 02030105060030, 02030105060050, 02030105060060, 02030105060080). Within these twelve HUC14s, there are 235.7 acres of buildings and 399.4 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 Chester Township, approximately 14.7 acres of rooftop runoff would be managed with 2.95 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Chester Township, approximately 39.9 acres of roadway would be managed, or 11.0 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 8. 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 8 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. 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 six classifications that apply to the streams in Chester Township. Figure 11 depicts the water quality classifications of surface waters throughout Chester Township and Table 9

summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

An administrator from Chester Township has identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. Flooding on South Road between Locust and Cromwell Drive has been observed when adjacent Burnett Brook overflows its banks. A bridge along a trail in Tiger Brook Park washes out when Tiger Brook floods as well, posing risks to nearby infrastructure and public safety. Figure 12 shows the locations of the aforementioned areas of concern.

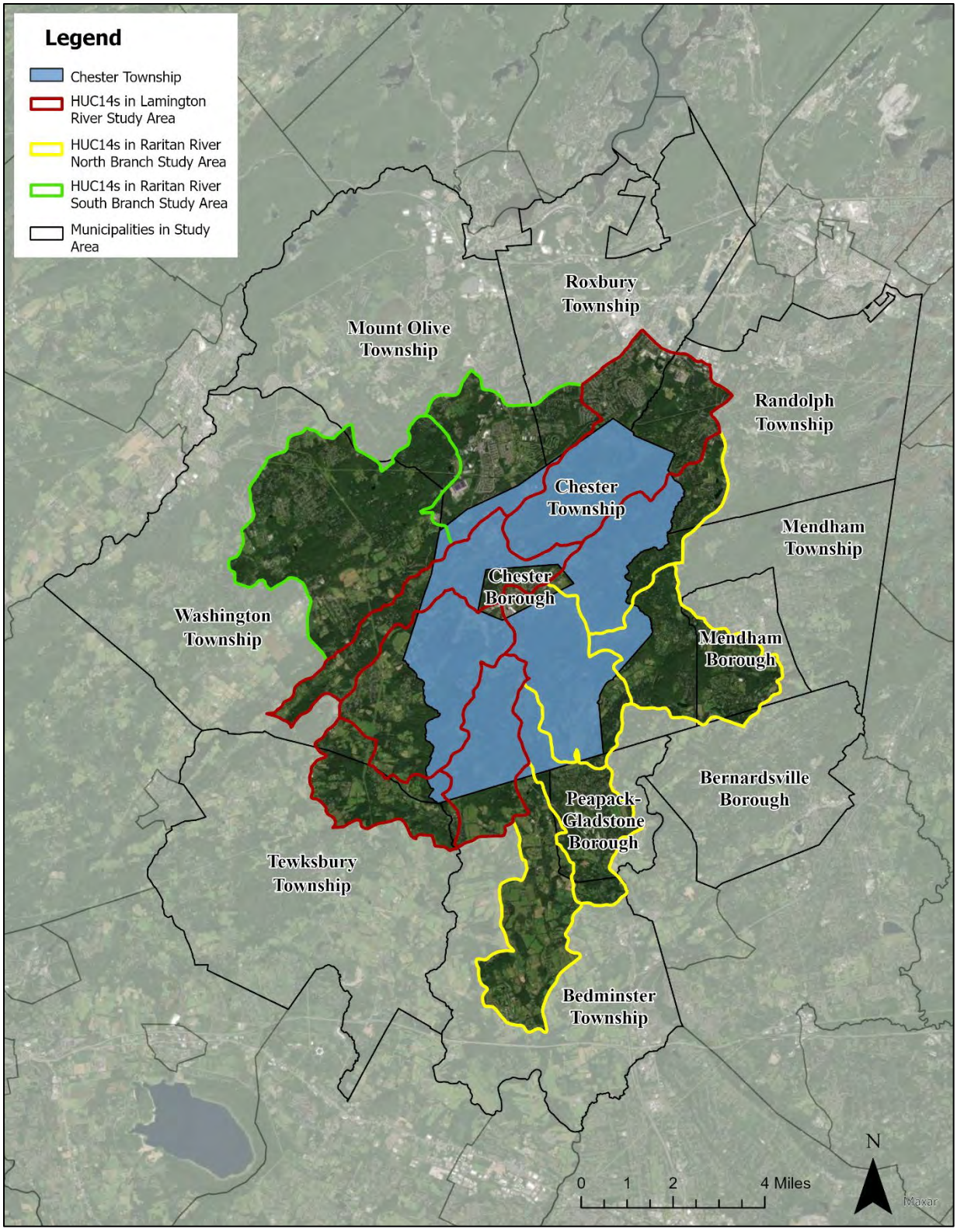


Figure 1: Municipalities in the Study Area

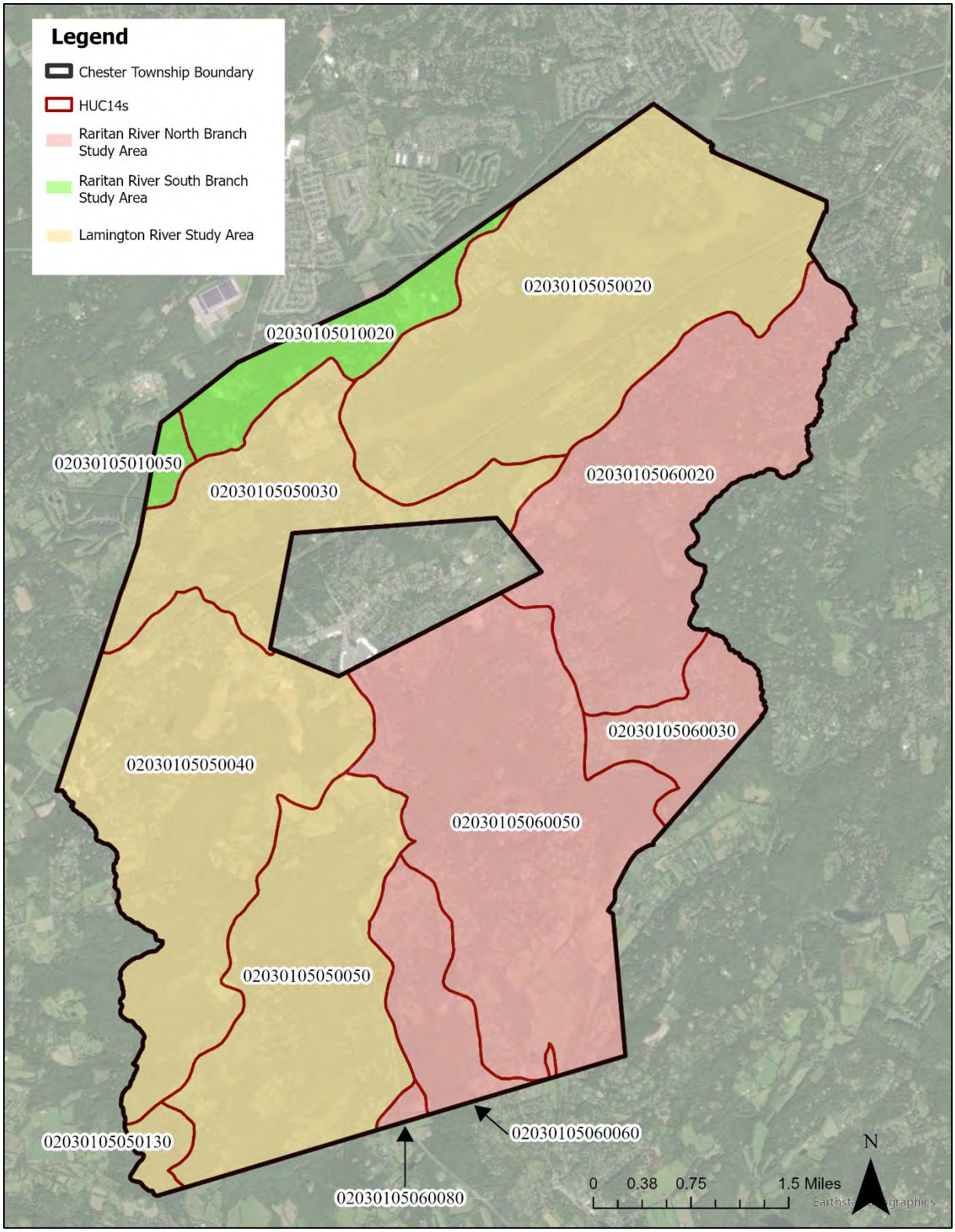


Figure 2: Portions of twelve HUC14s are in Chester Township

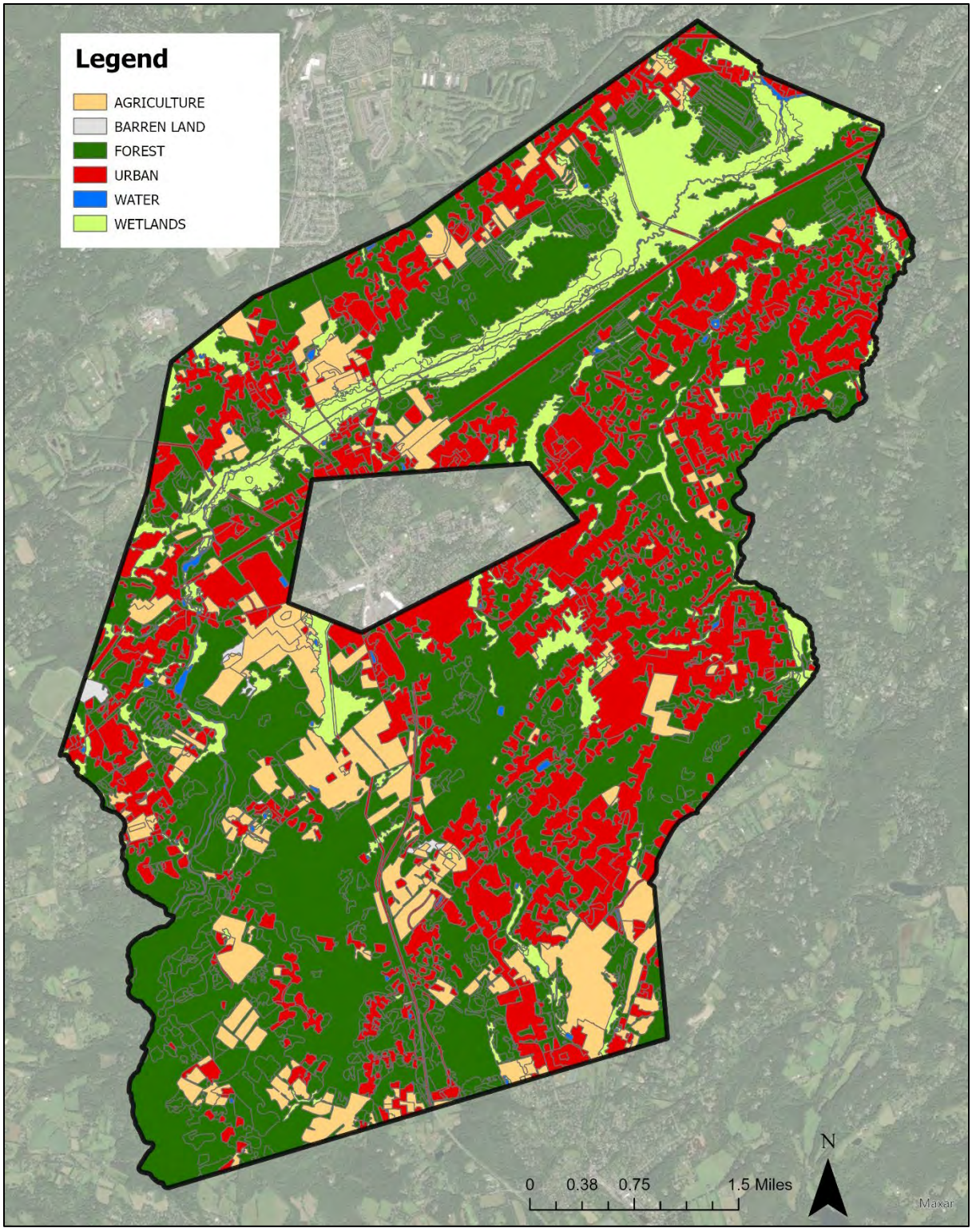


Figure 3: Land Use in Chester Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Chester Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010020				
Agriculture	85.0	110.5	849.7	25,489.9
Barren Land	0.0	0.0	0.0	0.0
Forest	332.0	33.2	996.0	13,280.5
Urban	199.3	279.0	2,989.5	27,901.8
Water	1.9	0.2	5.7	76.4
Wetlands	39.8	4.0	119.4	1,591.9
TOTAL =	**658.0**	**426.8**	**4,960.3**	**68,340.4**
02030105010050				
Agriculture	3.0	4.0	30.5	914.6
Barren Land	0.0	0.0	0.0	0.0
Forest	64.6	6.5	193.9	2,585.1
Urban	23.6	33.0	353.7	3,300.8
Water	0.0	0.0	0.0	0.0
Wetlands	14.0	1.4	42.1	560.8
TOTAL =	**105.3**	**44.8**	**620.1**	**7,361.3**
02030105050020				
Agriculture	146.5	190.5	1,465.3	43,960.4
Barren Land	0.0	0.0	0.0	0.0
Forest	1,799.5	180.0	5,398.6	71,980.9
Urban	546.8	765.5	8,201.7	76,549.4
Water	28.9	2.9	86.8	1,157.6
Wetlands	1,079.7	108.0	3,239.2	43,189.6
TOTAL =	**3,601.5**	**1,246.8**	**18,391.7**	**236,837.9**
02030105050030				
Agriculture	175.7	228.4	1,756.6	52,697.0
Barren Land	2.0	1.0	10.1	121.5
Forest	560.0	56.0	1,680.1	22,401.3
Urban	530.5	742.7	7,957.0	74,265.8
Water	14.7	1.5	44.1	588.2
Wetlands	329.7	33.0	989.2	13,189.6
TOTAL =	**1,612.6**	**1,062.5**	**12,437.2**	**163,263.4**
02030105050040				
Agriculture	499.0	648.7	4,989.7	149,691.9
Barren Land	26.8	13.4	133.9	1,606.5
Forest	1,688.3	168.8	5,065.0	67,533.3
Urban	568.5	795.9	8,527.2	79,586.8
Water	45.2	4.5	135.5	1,807.2
Wetlands	211.3	21.1	633.8	8,450.4

TOTAL =	**3,039.0**	**1,652.4**	**19,485.1**	**308,676.2**
02030105050050				
Agriculture	397.4	516.6	3,974.0	119,220.6
Barren Land	0.5	0.3	2.7	32.2
Forest	1,543.7	154.4	4,631.1	61,747.4
Urban	282.6	395.6	4,238.3	39,557.1
Water	3.2	0.3	9.7	129.9
Wetlands	20.5	2.0	61.4	818.8
TOTAL =	**2,247.9**	**1,069.2**	**12,917.2**	**221,506.1**
02030105050130				
Agriculture	1.8	2.3	17.8	533.5
Barren Land	0.0	0.0	0.0	0.0
Forest	151.5	15.2	454.6	6,061.5
Urban	0.4	0.5	5.8	54.4
Water	2.6	0.3	7.9	105.7
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**156.3**	**18.3**	**486.2**	**6,755.1**
02030105060020				
Agriculture	53.5	69.5	534.5	16,035.1
Barren Land	0.0	0.0	0.0	0.0
Forest	1,240.9	124.1	3,722.7	49,635.8
Urban	1,184.3	1,658.0	17,763.9	165,796.7
Water	15.2	1.5	45.6	607.9
Wetlands	118.9	11.9	356.6	4,755.3
TOTAL =	**2,612.7**	**1,865.0**	**22,423.4**	**236,830.9**
02030105060030				
Agriculture	41.4	53.8	414.2	12,424.7
Barren Land	0.0	0.0	0.0	0.0
Forest	283.1	28.3	849.2	11,322.4
Urban	215.5	301.7	3,232.9	30,173.9
Water	4.2	0.4	12.5	166.9
Wetlands	43.0	4.3	129.1	1,721.6
TOTAL =	**587.2**	**388.6**	**4,637.9**	**55,809.4**
02030105060050				
Agriculture	360.1	468.2	3,601.2	108,036.2
Barren Land	1.6	0.8	8.1	97.4
Forest	1,545.2	154.5	4,635.6	61,808.4
Urban	1,285.3	1,799.5	19,280.2	179,948.9
Water	10.4	1.0	31.2	415.4
Wetlands	166.0	16.6	497.9	6,638.1
TOTAL =	**3,368.6**	**2,440.6**	**28,054.2**	**356,944.4**
02030105060060				
Agriculture	144.1	187.3	1,440.9	43,226.1

Barren Land	6.6	3.3	33.0	396.3
Forest	373.6	37.4	1,120.9	14,944.8
Urban	124.8	174.8	1,872.6	17,477.7
Water	1.8	0.2	5.5	72.7
Wetlands	7.7	0.8	23.1	308.5
TOTAL =	**658.7**	**403.7**	**4,496.0**	**76,426.2**
02030105060080				
Agriculture	9.3	12.1	93.1	2,792.3
Barren Land	0.0	0.0	0.0	0.0
Forest	20.2	2.0	60.7	809.5
Urban	17.2	24.1	258.1	2,409.1
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**46.8**	**38.2**	**411.9**	**6,011.0**
All HUCs				
Agriculture	1,916.7	2,491.8	19,167.4	575,022.4
Barren Land	37.6	18.8	187.8	2,253.9
Forest	9,602.8	960.3	28,808.3	384,110.9
Urban	4,978.7	6,970.2	74,681.0	697,022.4
Water	128.2	12.8	384.6	5,128.0
Wetlands	2,030.6	203.1	6,091.9	81,224.7
TOTAL =	**18,694.6**	**10,656.9**	**129,321.0**	**1,744,762.2**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Chester Township 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 Chester Township. Based upon the NJDEP impervious surface data, Chester Township has impervious cover totaling 6.6%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Chester Township 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, Chester Township's impervious cover percentage would suggest that its waterways are primarily sensitive and most likely preventing degradation of the state's surface water quality standards.

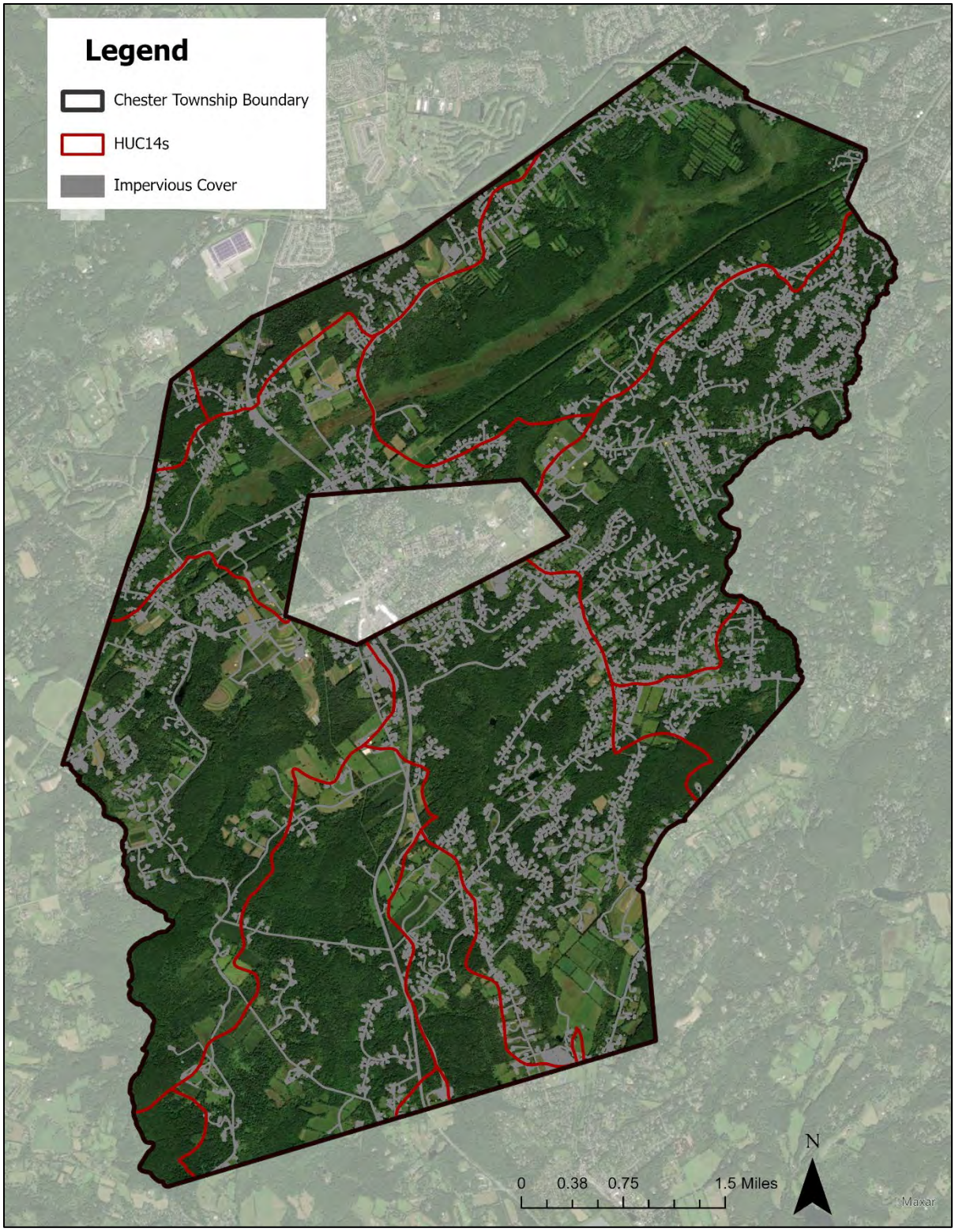


Figure 4: Impervious Cover in Chester Township

Table 3: Impervious Cover Analysis by HUC14 for Chester Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010020		
Building	11.19	
Other	21.87	
Road	18.56	
TOTAL =	**51.6**	**7.8%**
02030105010050		
Building	1.33	
Other	3.22	
Road	1.71	
TOTAL =	**6.3**	**5.9%**
02030105050020		
Building	19.94	
Other	50.82	
Road	34.16	
TOTAL =	**104.9**	**2.9%**
02030105050030		
Building	22.05	
Other	61.64	
Road	38.67	
TOTAL =	**122.4**	**7.6%**
02030105050040		
Building	28.76	
Other	89.91	
Road	46.76	
TOTAL =	**165.4**	**5.4%**
02030105050050		
Building	11.26	
Other	35.57	
Road	51.04	
TOTAL =	**97.9**	**4.4%**
02030105050130		
Building	0.03	
Other	0.06	
Road	0.00	
TOTAL =	**0.1**	**0.1%**
02030105060020		
Building	59.44	
Other	143.35	
Road	84.67	
TOTAL =	**287.5**	**11.0%**
02030105060030		
Building	9.22	
Other	23.29	
Road	19.97	
TOTAL =	**52.5**	**8.9%**

02030105060050		
Building	64.19	
Other	148.45	
Road	88.29	
TOTAL =	**300.9**	**8.9%**
02030105060060		
Building	6.82	
Other	17.35	
Road	13.60	
TOTAL =	**37.8**	**5.7%**
02030105060080		
Building	1.53	
Other	3.25	
Road	1.91	
TOTAL =	**6.7**	**14.3%**
All HUCs		
Building	235.73	
Other	598.77	
Road	399.35	
TOTAL =	**1,233.9**	**6.6%**

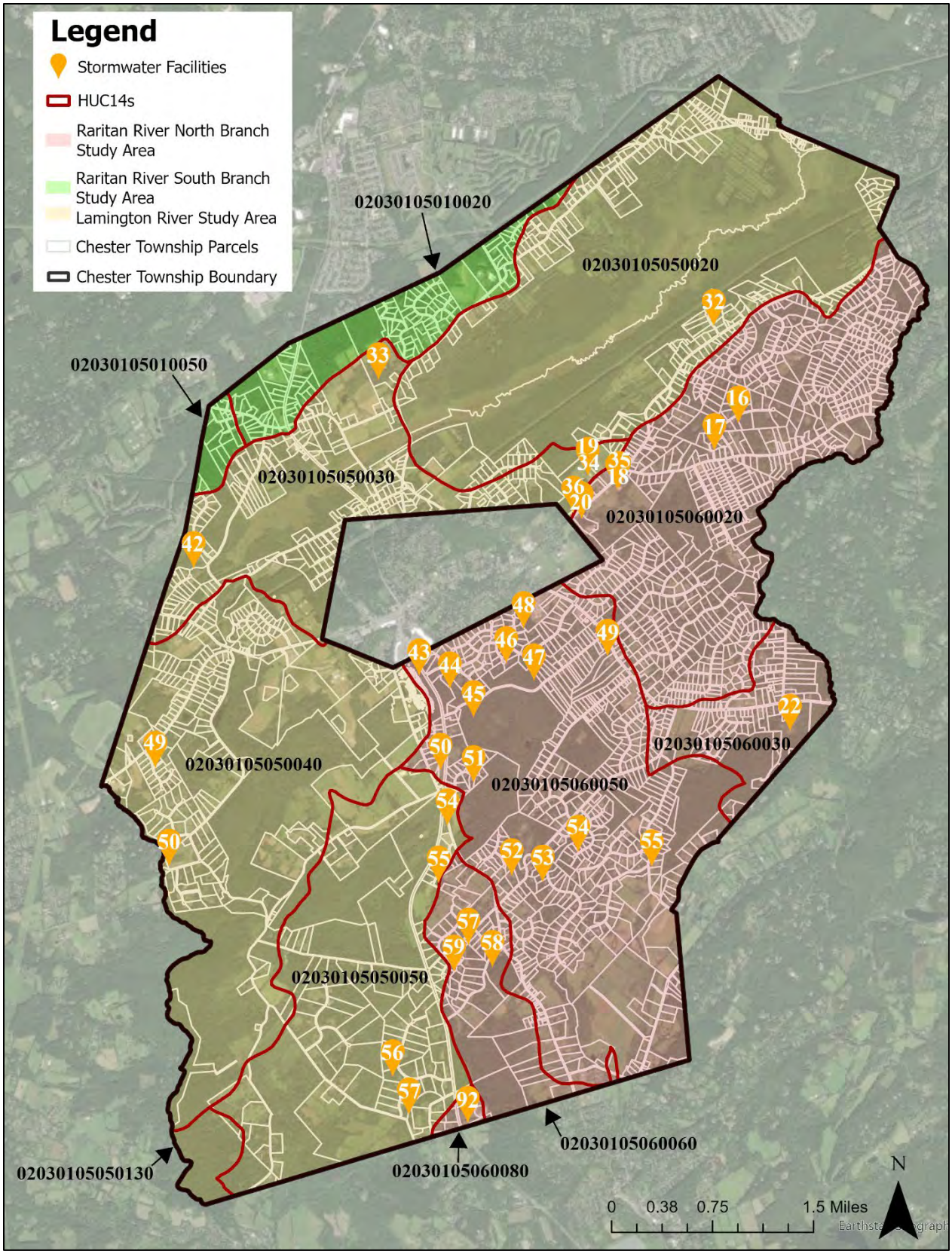


Figure 5: Stormwater Facilities in the Study Area of Chester Township

Table 4: Location of Stormwater Facilities in the Study Area of Chester Township

Lamington River Study Area		
ID	**Address**	**Type**
32	10 Horton Dr	N
33	85 Pleasant Hill Rd	D
34	233 North Rd	N
36	133 North Rd	N
42	1 Carlisle Ct	D
49	1 Highland Dr	D
50	1 Trout Brook Ct	N
54	1 Hunters Trl	N
55	10 Hall Rd	D
56	13 Spring Lake Dr	N
57	4 Bamboo Ln	D
Raritan River North Branch Study Area		
ID	**Address**	**Type**
16	11 S Gables Dr	D
17	Warren Cutting Rd	D
18	233 North Rd	I
19	233 North Rd	I
20	North Rd	N
22	480 Route 24	D
35	233 North Rd	I
43	499 US Highway 206 S	D
44	38 Colby Farm Rd	N
45	4 Skinner Trl	N
46	24 Colby Farm Rd	RB
47	17 Colby Farm Rd	N
48	250 Rt 24	D
49	361 Route 24 W	D
50	1250 US Highway 206	D
51	3 Colt Run	D
52	5 Heath Dr	N
53	1 Beacon Hill Dr	N
54	10 Sugar Maple Row	N
55	42 E Fox Chase Rd	N
57	75 Fox Chase Rd	N
58	85 Rogers Rd	D
59	54 Fox Chase Rd	D/N*
92	2 Rogers Rd	D

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

*Basin is partially naturalized, but mostly mowed

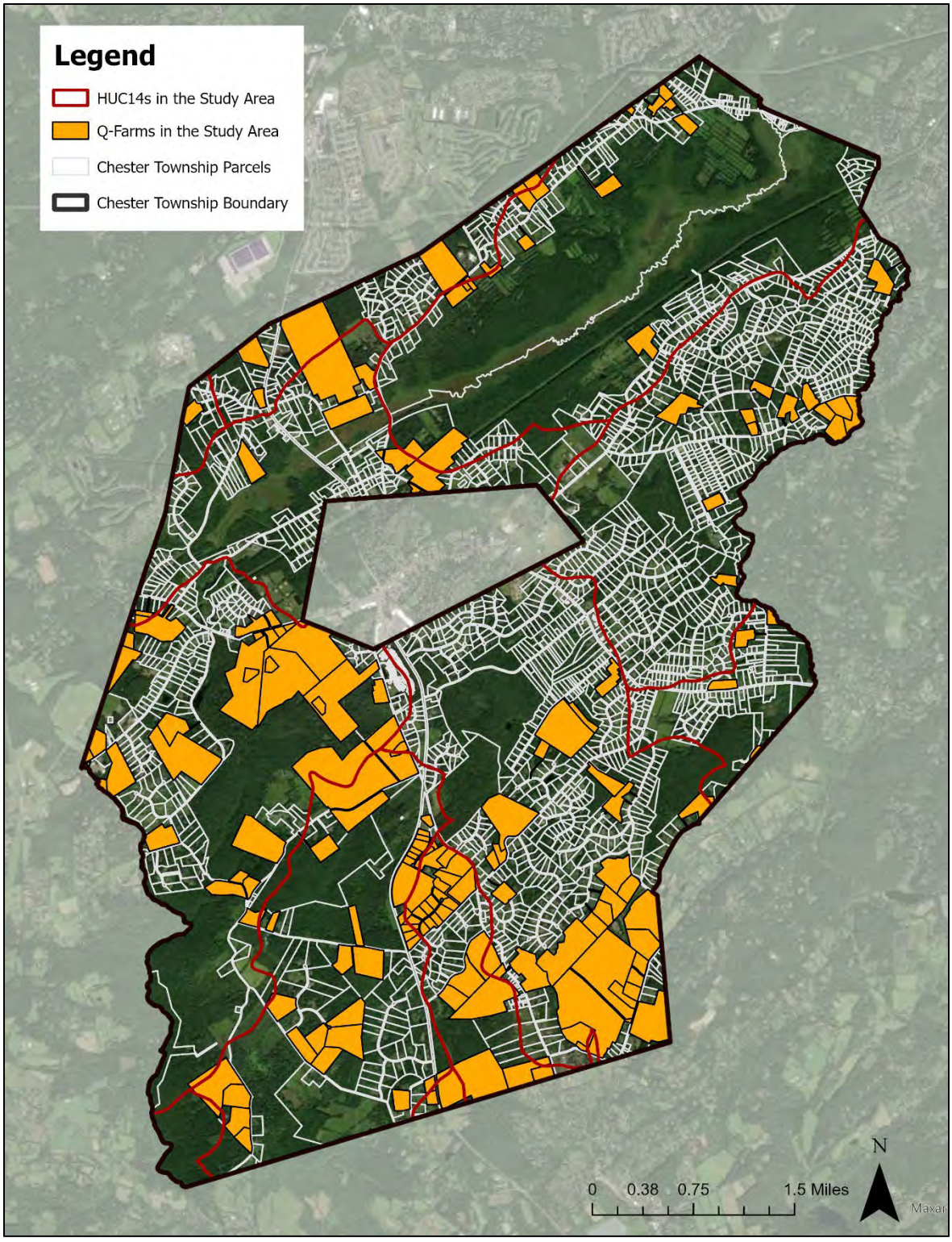


Figure 6: Q-Farm Parcels in the Study Area of Chester Township

Table 5: Q-Farm Parcels in the Study Area of Chester Township

Block	Lot	Q-Code	Prop Class	Location
1	13	QFARM	3B	770 Pottersville Rd
1	14	QFARM	3B	650 Pottersville Rd
1	14.01	QFARM	3B	740 Pottersville Rd
1	15	QFARM	3B	700 Pottersville Rd
1	26	QFARM	3B	55 Hacklebarney Rd
3	14	QFARM	3B	55 Lamerson Rd
3	16.01	QFARM	3B	5 Luce Dr
3	16.02	QFARM	3B	6 Luce Dr
3	16.04	QFARM	3B	299 Longview Rd
3	16.05	QFARM	3B	297 Longview Rd
3	16.06	QFARM		Howell Dr & Luce Ct
3	16.09	QFARM	3B	3 Howell Dr
3	16.15	QFARM	3B	57 Lamerson Rd
3.01	2.03	QFARM	3B	8 Daly Rd
4	35.01	QFARM	3B	1200 Old Chester Gladston
4	35.02	QFARM	3B	1100 Old Chester Rd
4	36	QFARM	3B	2 Rogers Rd
4	41	QFARM	3B	8 Rogers Rd
4	42	QFARM	3B	Old Chester Gladstone Rd
4	43	QFARM	3B	20 Rogers Rd
4	44	QFARM	3B	600 Old Chester Gladstone
7	12.05	QFARM	3B	158 - 158-A Fox Chase Rd
7	13.22	QFARM	3B	60 East Fox Chase Rd
7	13.23	QFARM	3B	48 E Fox Chase Rd
7	13.24	QFARM	3B	5 Hickory Dr
7	13.25	QFARM	3B	11-B Hickory Dr
7	13.26	QFARM	3B	11-A Hickory Dr
7	14.01	QFARM	3B	222 E Fox Chase Rd
7	14.03	QFARM	3B	55 Mendham Rd
7	15	QFARM	3B	15 Mendham Rd
7	15.01	QFARM	3B	Mendham Rd
7	15.02	QFARM	3B	Mendham Rd
7	15.03	QFARM	3B	Mendham Rd
7	15.04	QFARM	3B	15 Mendham Rd
7	17.02	QFARM	3B	35 Beacon Hill Dr
7	27	QFARM	3B	1015 Old Chester Gladston
7	44	QFARM	3B	15 St Bernards Rd
7	44.01	QFARM	3B	11 St Bernards Rd
7	44.02	QFARM	3B	15 St Bernards Rd
7.01	4.01	QFARM	3B	398 Fox Chase Rd
7.01	7.07	QFARM	3B	38 E Fox Chase Rd

8	7	QFARM	3B	20 Mendham Rd
9	4.02	QFARM	3B	11 Winston Farm Ln
9	16	QFARM	3B	23 Mt Paul Rd
10	3	QFARM	3B	185 Fox Chase Rd
10	4	QFARM	3B	201 Fox Chase Rd
10	17	QFARM	3B	255 Fox Chase Rd
10.04	12	QFARM	3B	6 Pond View Rd
10.05	31	QFARM	3B	378 Route 24
10.05	31.04	QFARM	3B	37 Cliffwood Rd
10.05	48	QFARM	3B	75 Cliffwood Rd
12	1.01	QFARM	3B	450 Old Chester Gladstone
12	1.03	QFARM	3B	1901 Route 206
12	1.04	QFARM	3B	16 Hall Rd
12	1.05	QFARM	3B	14 Hall Rd
12	1.06	QFARM	3B	12 Hall Rd
12	1.07	QFARM	3B	10 Hall Rd
12	1.08	QFARM	3B	8 Hall Rd
12	1.09	QFARM	3B	6 Hall Rd
12	1.11	QFARM	3B	2 Hall Rd
12	1.13	QFARM	3B	3 Hall Rd
12	1.14	QFARM	3B	5 Hall Rd
12	1.15	QFARM	3B	21 Knight Dr
12	1.16	QFARM	3B	19 Knight Dr
12	1.17	QFARM	3B	17 Knight Dr
12	1.18	QFARM	3B	15 Knight Dr
12	1.19	QFARM	3B	11 Knight Dr
12	1.2	QFARM	3B	9 Knight Dr
12	1.21	QFARM	3B	7 Knight Dr
12	1.22	QFARM	3B	5 Knight Dr
12	1.23	QFARM	3B	3 Knight Dr
12	1.24	QFARM	3B	1 Knight Dr
12	1.25	QFARM	3B	2 Knight Dr
12	1.26	QFARM	3B	4 Knight Dr
12	1.27	QFARM	3B	6 Knight Dr
12	1.28	QFARM	3B	8 Knight Dr
12	1.29	QFARM	3B	10 Knight Dr
12	3.01	QFARM	3B	444 Old Chester Rd
12	3.02	QFARM	3B	446 Old Chester Gladstone
12	3.03	QFARM	3B	444 Old Chester Gladstone
12	4	QFARM	3B	500 Old Chester Gladstone
13	2	QFARM	3B	120 Lamerson Rd
13	3.01	QFARM	3B	250 Lamerson Rd
13	3.02	QFARM	3B	210 Lamerson Rd
13	4.03	QFARM	3B	201 Pottersville Rd

13	7	QFARM	3B	100 Pottersville Rd
15	2	QFARM	3B	20 Hacklebarney Rd
15	3	QFARM	3B	55 Hacklebarney Rd
15	9	QFARM	3B	260 Pottersville Rd
15	27	QFARM	3B	80 Route 24
15	28.01	QFARM	3B	100 Route 24
15	28.02	QFARM	3B	2 Alstede Farms Ln
15	28.03	QFARM	3B	182 Old Ch Gl Rd
15	28.04	QFARM	3B	182 Old Ch Gl Rd
15	28.05	QFARM	3B	84 Route 24
15	28.06	QFARM	3B	84 Route 24
15	28.07	QFARM	3B	82 Route 24
15	28.08	QFARM	3B	82 Route 24
15	29	QFARM	3B	92 Route 24
15	30	QFARM	3B	94 Route 24
15	40.01	QFARM	3B	200 Old Chester Gladstone
15	42.01	QFARM	3B	300 Old Chester Gladstone
15	42.02	QFARM	3B	300 Old Chester Gladstone
15	45	QFARM	3B	100 Pottersville Rd
16	6	QFARM	3B	125 Parker Rd
16	7	QFARM	3B	Parker Rd
16	9	QFARM	3B	165 Parker Rd
16	10	QFARM	3B	163 Parker Rd
16	13	QFARM	3B	60 State Park Rd
16	21.02	QFARM		State Park Rd
16.02	5	QFARM	3B	104 State Park Rd
17	1	QFARM	3B	120 Parker Rd
17	2	QFARM	3B	116 Parker Rd
17	3	QFARM	3B	110 Parker Rd
17	22	QFARM	3B	21 Schoolhouse Ln
*17	31.01	QFARM	3B	20 Schoolhouse Ln
17	33	QFARM	3B	10 Route 24
17	33.01	QFARM	3B	8 Route 24
18.02	1	QFARM	3B	2 Chesterfield Dr
18.04	1	QFARM	3B	3 Chesterfield Dr
19	2	QFARM	3B	4240 Route 206
19	3	QFARM	3B	4250 Route 206
26	159	QFARM	3B	40 Valley Pl
26.01	18.01	QFARM	3B	525 Route 24
26.01	50	QFARM	3B	31 Old Mill Rd
26.04	75	QFARM	3B	62 Twinbrooks Trl
27	6.01	QFARM	3B	42 Old Mill Rd
*27	6.02	QFARM	3B	38 Old Mill Rd
28	4	QFARM	3B	140 South Rd

28	5	QFARM	3B	160 South Rd
28	6	QFARM	3B	180 South Rd
28	9	QFARM	3B	Off South Rd
32	52	QFARM	3B	145 South Rd
32	53.01	QFARM	3B	127 South Rd
32	57.01	QFARM	3B	95 South Rd
32	57.02	QFARM	3B	97 South Rd
32	85.05	QFARM	3B	9 South Gables Dr
32	85.17	QFARM	3B	17 South Gables Dr
32.06	13	QFARM	3B	20 Ironia Mendham Rd
33	2.01	QFARM	3B	30 Pleasant Hill Rd
33	4	QFARM	3B	122 Oakdale Rd
33	38	QFARM	3B	295 North Rd
33	100.01	QFARM	3B	24 Ironia Rd
33	107	QFARM	3B	250 Pleasant Hill Rd
33	110.02	QFARM	3B	214-B Pleasant Hill Rd
33	111.03	QFARM	3B	180 Pleasant Hill Rd
33	112.01	QFARM	3B	160 Pleasant Hill Rd
33	113.01	QFARM	3B	158 Pleasant Hill Rd
33	113.02	QFARM	3B	150 Pleasant Hill Rd
*34	4	QFARM	3B	109 Oakdale Rd
34	5	QFARM	3B	107 Oakdale Rd
40	7	QFARM	3B	33 Pleasant Hill Rd
40	14	QFARM	3B	10 Larison Rd
42	33	QFARM	3B	25 Tanners Brook Rd
43	20.01	QFARM	3B	15 Old Four Bridges Rd
44	7	QFARM	3B	80 Route 206
44	11	QFARM		Us Hwy 206
46	19	QFARM	3B	7 Larison Rd
46	20.03	QFARM	3B	65 Pleasant Hill Rd
46.06	35	QFARM	3B	175 Pleasant Hill Rd
48	10	QFARM	3B	233 Pleasant Hill Rd
48	11	QFARM	3B	239 Pleasant Hill Rd
49	5	QFARM	3B	319 Pleasant Hill Rd
*51.01	7.02	QFARM	3B	316 Pleasant Hill Rd
51.01	7.04	QFARM	3B	316 Pleasant Hill Rd
51.01	7.06	QFARM	3B	316 Pleasant Hill Rd

*Only a portion of the Q-Farm parcel is within the Chester Township boundary

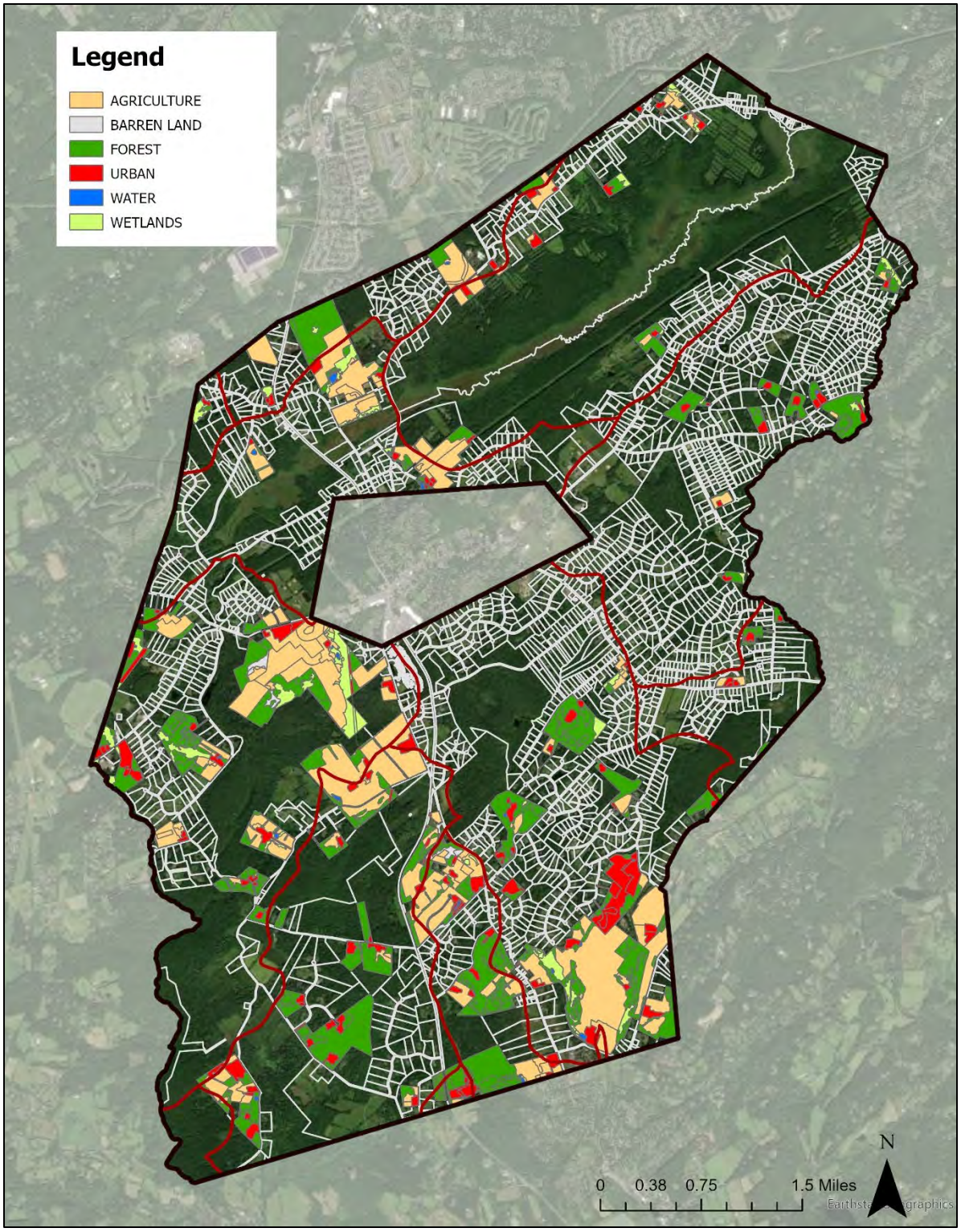


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Chester Township

Table 6: Land Use on Q-Farms in the Study Area of Chester Township

Land Use	Area (acres)
Agriculture	1,328.8
Barren Land	17.0
Forest	1,294.5
Urban	385.7
Water	15.0
Wetlands	181.2
Total:	**3,222.1**

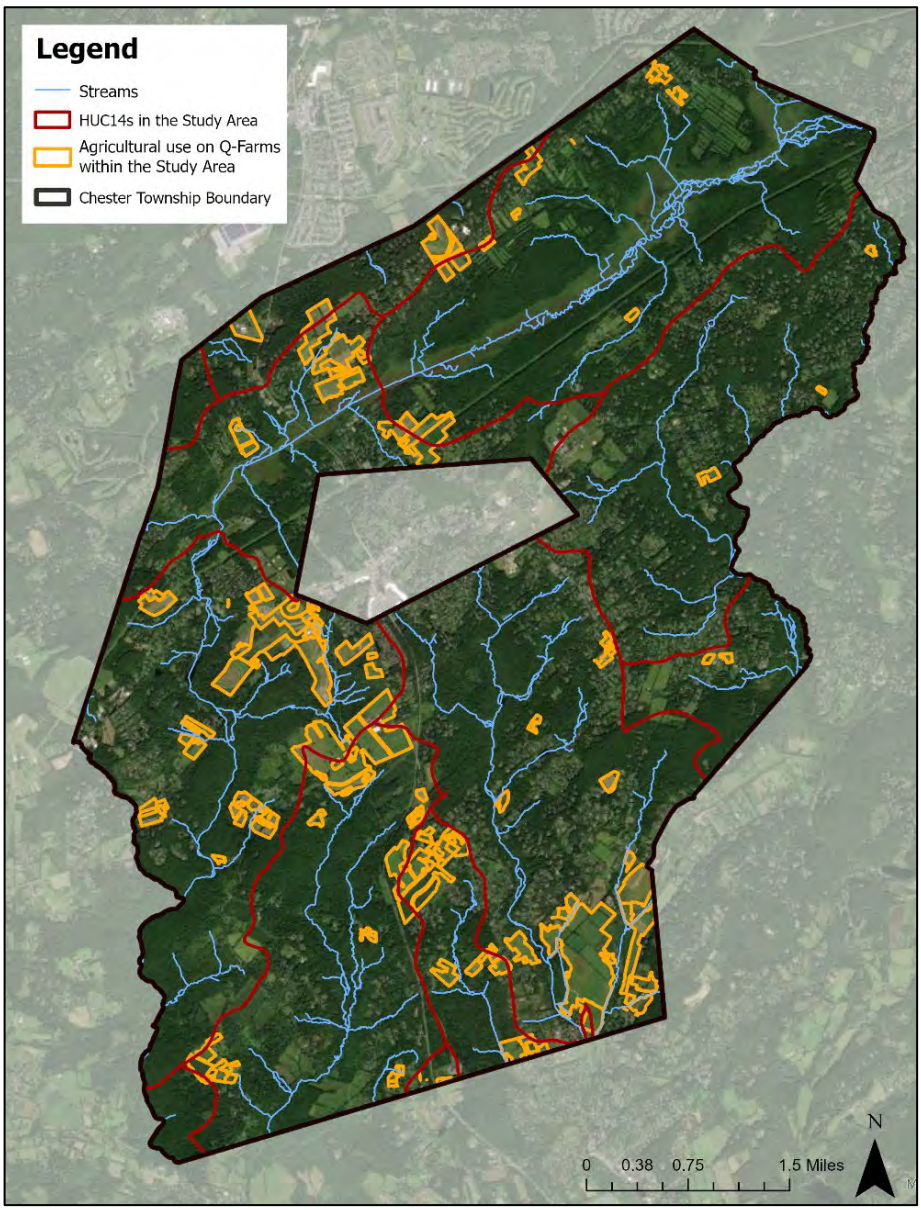


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Chester Township

Table 7: Recommendations for Specific Farms in the Study Area of Chester Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
15	9	QFARM	X	X				
15	28.01	QFARM	X	X	X	X		
15	28.03	QFARM	X					
15	28.05	QFARM	X		X	X		
15	45	QFARM	X	X		X		
16	13	QFARM		X		X		
33	38	QFARM		X		X		
46	19	QFARM	X					X

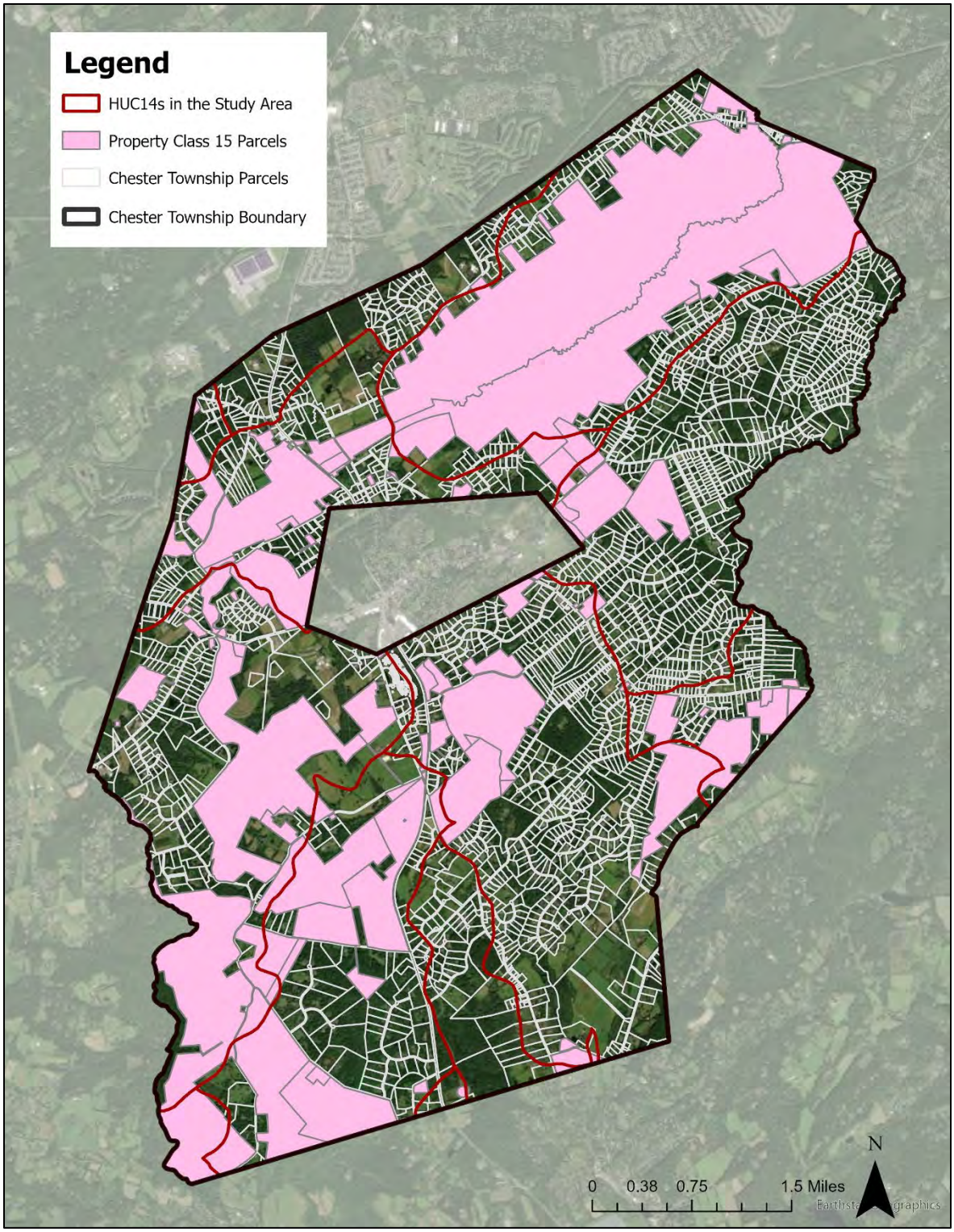


Figure 9: Property Class 15 Parcels in the Study Area of Chester Township

Table 8: Property Class 15 Parcels in the Study Area of Chester Township

Block	Lot	Prop Class	Location	Facility Type
***25.01**	**38.01**	**15A**	**250 Route 24**	**Schools**
33	17.01	15A	233 North Rd	School Fields
***33**	**17.02**	**15A**	**133 North Rd**	**School**
5	1	15B	25 St Bernards Rd	Schools
7	43.01	15B	3 St Bernards Rd	Residence
***27**	**4**	**15B**	**577 Route 24**	**Montessori School**
1	1	15C	634 Pottersville Rd	Preserve
1.01	1	15C	Pottersville Rd	Vacant Land
2	1	15C	300 Longview Rd	Bamboo Brook Edu Ctr
2	4.01	15C	170 Longview Rd	Park
2	6	15C	725 Pottersville Rd	Brady/Millhouse O/Sp
3	15	15C	Lamerson Rd	Knight - Open Space
3	17	15C	Lamerson Rd	Park
3	17.03	15C	Lamerson Rd	Knight - Open Space
9	3.01	15C	452 Fox Chase Rd	Park
9	15.03	15C	Mt Paul Rd	Road
9	22	15C	900 Route 24	Open Space
10	52	15C	Cliffwood Rd	Macgregor Park
10	58.01	15C	48 Cliffwood Rd	Vacant Land
10	100	15C	68 Cliffwood Rd	Tiger Brook Reservoi
10	107	15C	375 Old Chester Gladstone	Macgregor Park
10	108	15C	Off Old Chester Gladstone	Macgregor Park
10	120	15C	Route 206	Tiger Brook Park
13	1.01	15C	1000 Route 206	Conserved Land
13	3	15C	120 Lamerson Rd	Knight - Open Space
13	4	15C	Pottersville Rd	Allen - Open Space
13	6	15C	155 Pottersville Rd	Vacant Land
13	9	15C	75 Pottersville Rd	Vacant Land
14	1	15C	751 Route 206	Vacant Land
***15**	**1**	**15C**	**200 Pottersville Rd**	**Park**
15	12.01	15C	Pottersville Rd	Park
15	23	15C	70 Route 24	Park
15	41	15C	Old Chester Gladstone	Park
***16**	**34**	**15C**	**1 Parker Rd**	**Municipal Bldg.**
16.01	16	15C	State Park Rd	Open Space
17	7	15C	98a Parker Rd	Filtering Plant
17	22.05	15C	Parker Rd	Parker Rd Fields
18	3	15C	Furnace Rd	Open Space
18	4	15C	65 Furnace Rd	Chubb Park
18	12.01	15C	Route 24	Park
18	38	15C	Route 24	Park
20	4	15C	145 Old Chester Gladstone	Vacant Land
20	16	15C	Old Chester Gladstone Rd	Vacant Land
25	19	15C	100 Cooper Ln	Tiger Brook Park
25.03	13	15C	168 Cooper Ln	Tiger Brook Park
25.03	16	15C	605 Route 206	Park

26	70	15C	26 South Rd	Evans - Park
***26**	**78.01**	**15C**	**120 North Rd**	**Telecordia - Park**
***26**	**78.02**	**15C**	**100 North Rd**	**Administrative Bldg.**
26	79	15C	50 North Rd	Dedicated Open Space
26.06	7	15C	345 Route 24	Leased To Cereb Pals
26.09	1	15C	245 Route 24	Dedicated Open Space
33	36	15C	275 North Rd	Game Preserve
33	72.02	15C	401 North Rd	Park
33	110.01	15C	246 Pleasant Hill Rd	Game Preserve
35	1	15C	Oakdale Rd	Open Space
40	12	15C	Pleasant Hill Rd	Game Preserve
41	1.01	15C	201 Route 206	Game Preserve
41	5.02	15C	Hillside Rd	Dedicated Open Space
41	13	15C	215 Route 206	Open Space
41	16.02	15C	225 Route 206	Open Space
42	10.01	15C	36 Furnace Rd	Vacant Land
42	31	15C	7 Tanners Brook Rd	Vacant Land
42	35	15C	Tanners Brook Rd	Game Preserve
42	35.01	15C	Tanners Brook Rd	Open Space
43	6	15C	Carlisle Ct	Open Space
43	8	15C	80 Tanners Brook Rd	Tannersbrk-Op Space
43	21	15C	25 Old Four Bridges Rd	Tannersbrk Open Sp
45	1	15C	Route 206	Road
52	18	15C	20 Golf Course Rd	Well
52	19	15C	65 Ironia Rd	Park
4	36	15D	2 Rogers Rd	Admin Bldg
9	20	15D	2 Mt Paul Rd	Conservation-Park
***9**	**20.01**	**15D**	**480 Route 24**	**Church**
***17**	**38**	**15D**	**50 Route 24**	**Church**
18	15.01	15D	30 Cherry Tree Ln	Residence
18	48	15D	83 Furnace Rd	Group Residence
33	2.02	15D	80/82 Pleasant Hill Rd	Church
33	126	15D	228 Pleasant Hill Rd	Residence
***33.01**	**10**	**15D**	**100 Oakdale Rd**	**Church**
9.01	1	15F	1 Benjamin Rd	Disabled Veteran
10.05	28	15F	398 Route 24	Disabled Veteran
18.02	12	15F	24 Chesterfield Dr	Disabled Veteran
19	4	15F	3 Daly Rd	Widow - Disabled Vet
20	2	15F	30 Wyckoff Way	Disabled Veteran
***26.07**	**6**	**15F**	**333 Route 24**	**Hall**
33	1	15F	138 Oakdale Rd	Disabled Veteran
33	47.08	15F	10 Horton Dr	Disabled Veteran
33	181	15F	3 Ann Ln	Disabled Veteran
39	5.03	15F	4 Furnace Rd	Widow - Disabled Vet
51	32	15F	9 Golf Course Rd	Disabled Veteran

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

Figure 10: Sites with Green Infrastructure Opportunities in Chester Township

HIGHLANDS RIDGE PARK

RAP ID: 1

Subwatershed: Burnett Brook

HUC14 ID 02030105060020

Site Area: 4,445,427 sq. ft.

Address: County Road 510
Chester, NJ 07930

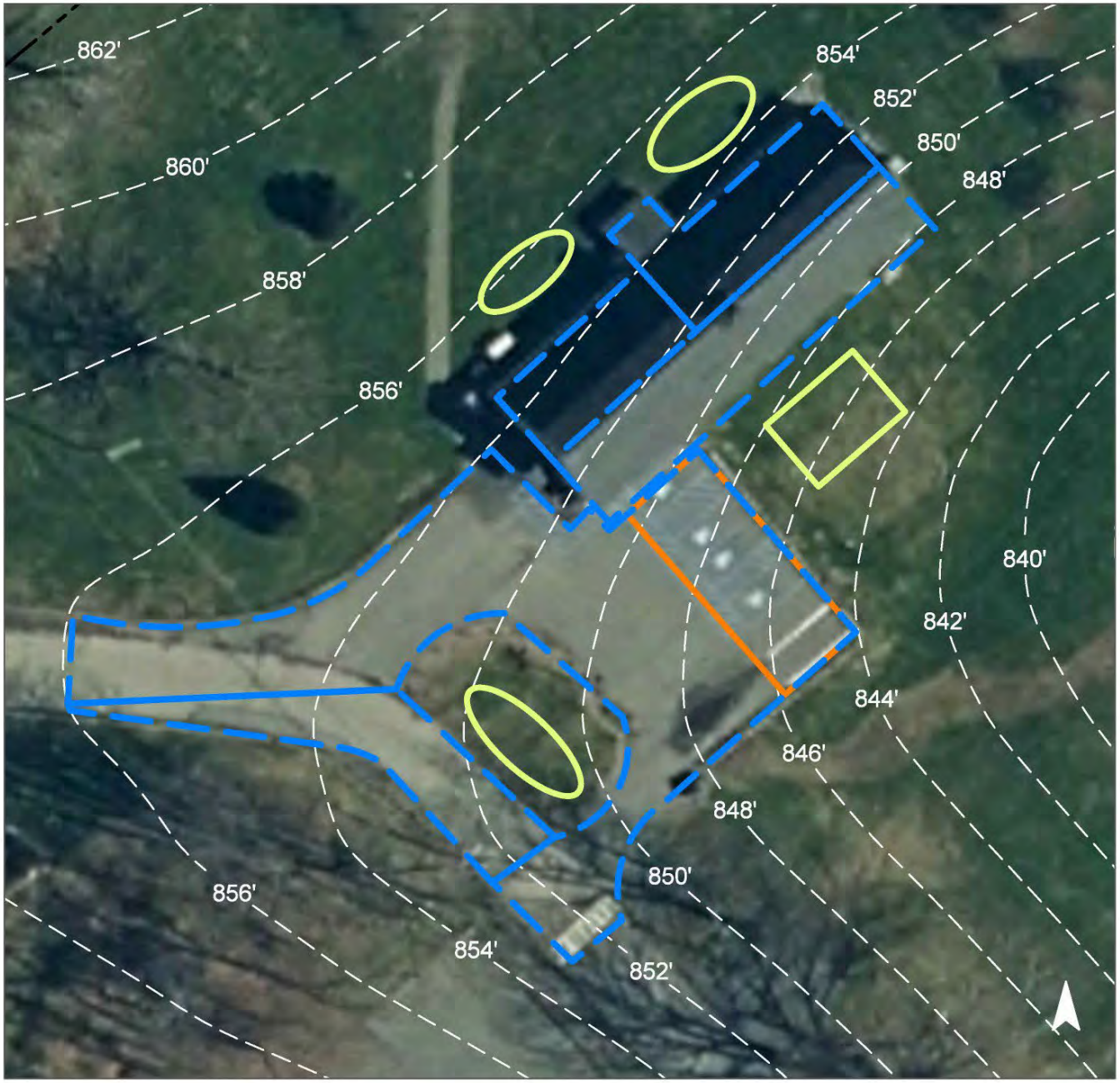
Block and Lot: Block 26, Lot 78.01

Rain gardens can be installed in multiple grass areas to capture, treat, and infiltrate the stormwater runoff from the building rooftop and from the asphalt driveway. This will require downspout disconnections. The existing parking spaces to the southeast of the park building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the 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 50"
4	188,825	9.1	95.4	867.0	0.147	5.89

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	6,930	0.205	30	14,450	0.54	1,735	$17,350
Pervious pavement	8,515	0.252	38	17,760	0.67	1,565	$39,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Highlands Ridge Park

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

0 20' 40'

NEW JERSEY HIGHLANDS COUNCIL

RAP ID: 2

Subwatershed: Burnett Brook

Site Area: 434,470 sq. ft.

Address: 100 North Road
Chester, NJ 07930

Block and Lot: Block 26, Lot 78.02

A rain garden can be installed south of the storage building to capture stormwater runoff from the parking lot and roadway. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
27	117,715	5.7	59.5	540.5	0.092	3.23

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	0.189	32	13,860	0.52	1,815	$9,075

GREEN INFRASTRUCTURE RECOMMENDATIONS

New Jersey Highlands Council

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

0 20' 40'

BLACK RIVER MIDDLE SCHOOL

RAP ID: 3

Subwatershed: Lamington River

HUC14 ID 02030105050030

Site Area: 1,716,100 sq. ft.

Address: 133 North Road
Chester, NJ 07930

Block and Lot: Block 33, Lot 17.02

Rain gardens can be installed near the northern and southern parking lots to capture, treat, and infiltrate the stormwater runoff from the asphalt. This will require downspout disconnections. Existing parking spaces in the northern and southern lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The basketball court to the north of the school can also be converted into pervious pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
18	301,365	14.5	152.2	1,383.7	0.235	9.39

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	10,080	0.298	44	21,030	0.79	2,520	$25,200
Pervious pavement	47,990	1.421	209	100,100	3.76	17,550	$438,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Black River Middle School

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

0 100' 200'

CHESTER TOWNSHIP MUNICIPAL BUILDING

RAP ID: 4

Subwatershed: Lamington River

Site Area: 90,055 sq. ft.

Address: 1 Parker Road
Chester, NJ 07930

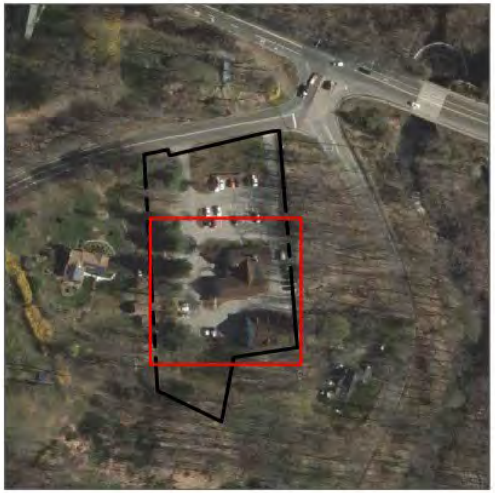
Block and Lot: Block 16, Lot 34

Pervious pavement can be installed in the parking spaces west of the building to capture and infiltrate stormwater. A rain garden can be installed to the northwest of the building to capture, treat, and infiltrate stormwater runoff from the roof. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
53	47,320	2.3	23.9	217.3	0.037	1.30

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	0.014	2	1,000	0.04	130	$650
Pervious pavement	0.044	7	3,190	0.12	490	$12,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Township Municipal Building

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

0 20' 40'

CHURCH OF THE MESSIAH

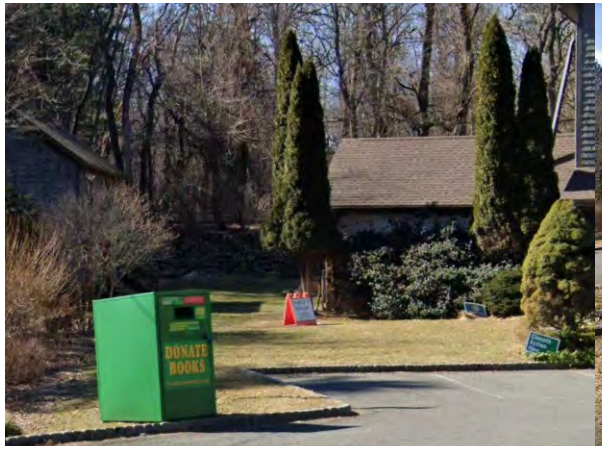
RAP ID: 5

Subwatershed: Lamington River

HUC14 ID 02030105050040

Site Area: 330,558 sq. ft.

Address: 50 County Highway 513
Chester, NJ 07930



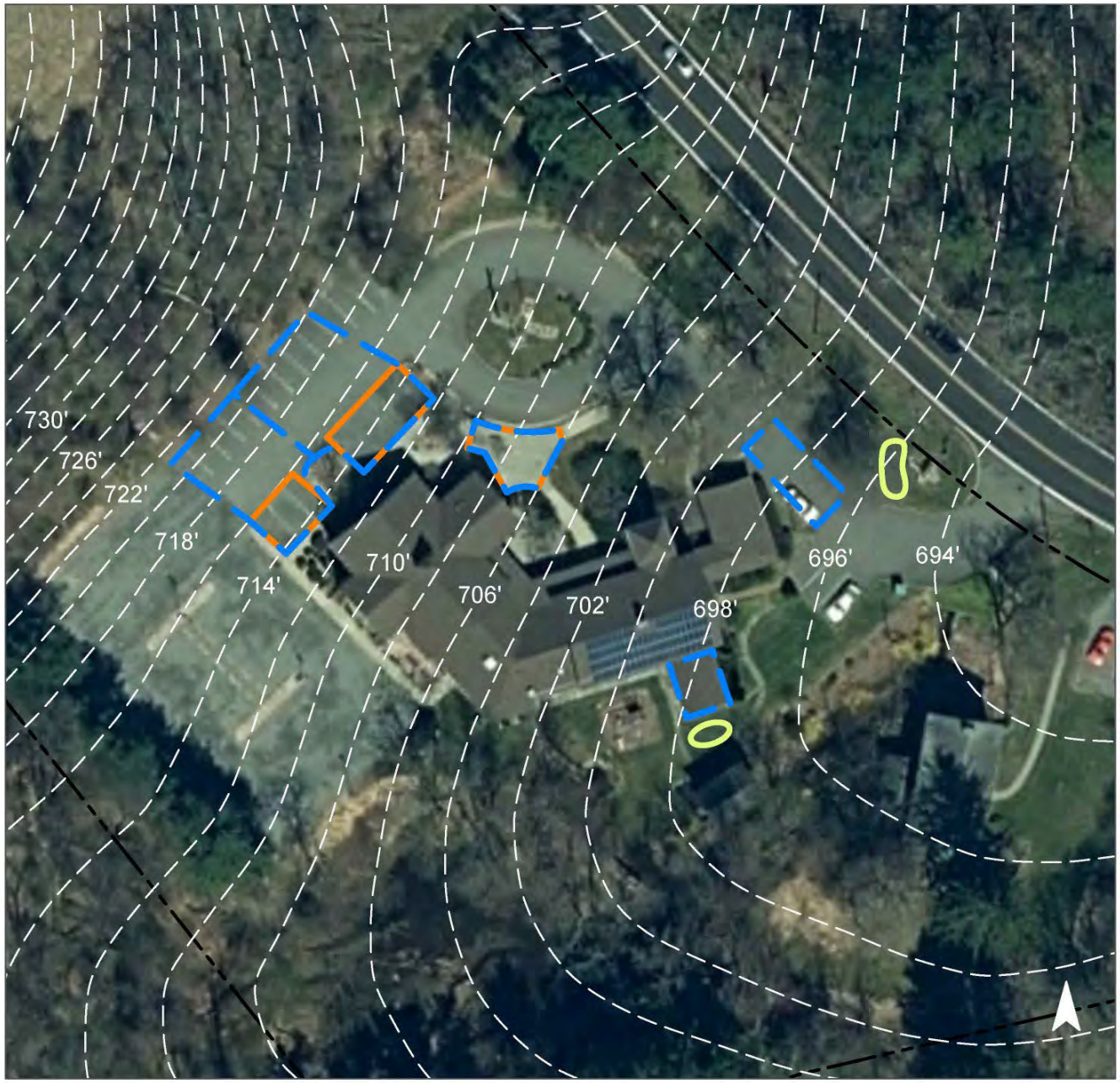
Block and Lot: Block 17, Lot 38

A rain garden can be installed near the south of the building using the disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. Another rain garden can be installed around an existing catch basin near the driveway entrance to capture, treat, and infiltrate the stormwater runoff from the asphalt. A trench drain will be needed to intercept and redirect the driveway runoff. Existing parking spaces to the northwest of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The concrete walkway near the building entrance can be replaced with permeable pavers. 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 50"
16	52,338	2.5	26.4	240.3	0.041	1.63

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	1,095	0.032	6	2,280	0.09	275	$2,750
Pervious pavement	5,190	0.154	23	10,820	0.41	1,910	$47,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Church of the Messiah

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

0 30' 60'

GRACE BIBLE CHAPEL

RAP ID: 6

Subwatershed: Lamington River

HUC14 ID 02030105050030

Site Area: 357,759 sq. ft.

Address: 100 Oakdale Road
Chester, NJ 07930

Block and Lot: Block 33.01, Lot 10

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftop and driveways. This may require downspout disconnections, trench drains, and curb cuts. Existing parking spaces to the east of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. This may require a trench drain. 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 50"
19	69,577	3.4	35.1	319.5	0.054	2.17

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	16,895	0.500	74	35,240	1.32	4,225	$42,250
Pervious pavement	13,315	0.394	59	27,770	1.04	5,450	$136,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Grace Bible Chapel

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

0 30' 60'

KAY ENVIRONMENTAL EDUCATION CENTER

RAP ID: 7

Subwatershed: Lamington River

Site Area: 24,177,870 sq. ft.

Address: 200 Pottersville Road
Chester, NJ 07930

Block and Lot: Block 15, Lot 1

Pervious pavement can be installed in the parking spaces to capture the stormwater runoff from the pavement. A rain garden can be installed to capture and infiltrate stormwater runoff from the building's rooftop. 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"
0.27	65,755	3.2	33.2	301.9	0.051	1.80

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	0.012	2	860	0.03	130	$650
Pervious pavement	0.078	13	5,740	0.22	600	$15,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Kay Environmental Education Center

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

0 25' 50'

AMERICAN LEGION POST 342

RAP ID: 8

Subwatershed: Peapack Brook

HUC14 ID 02030105060050

Site Area: 28,354 sq. ft.

Address: 333 County Highway 510
Chester, NJ 07930

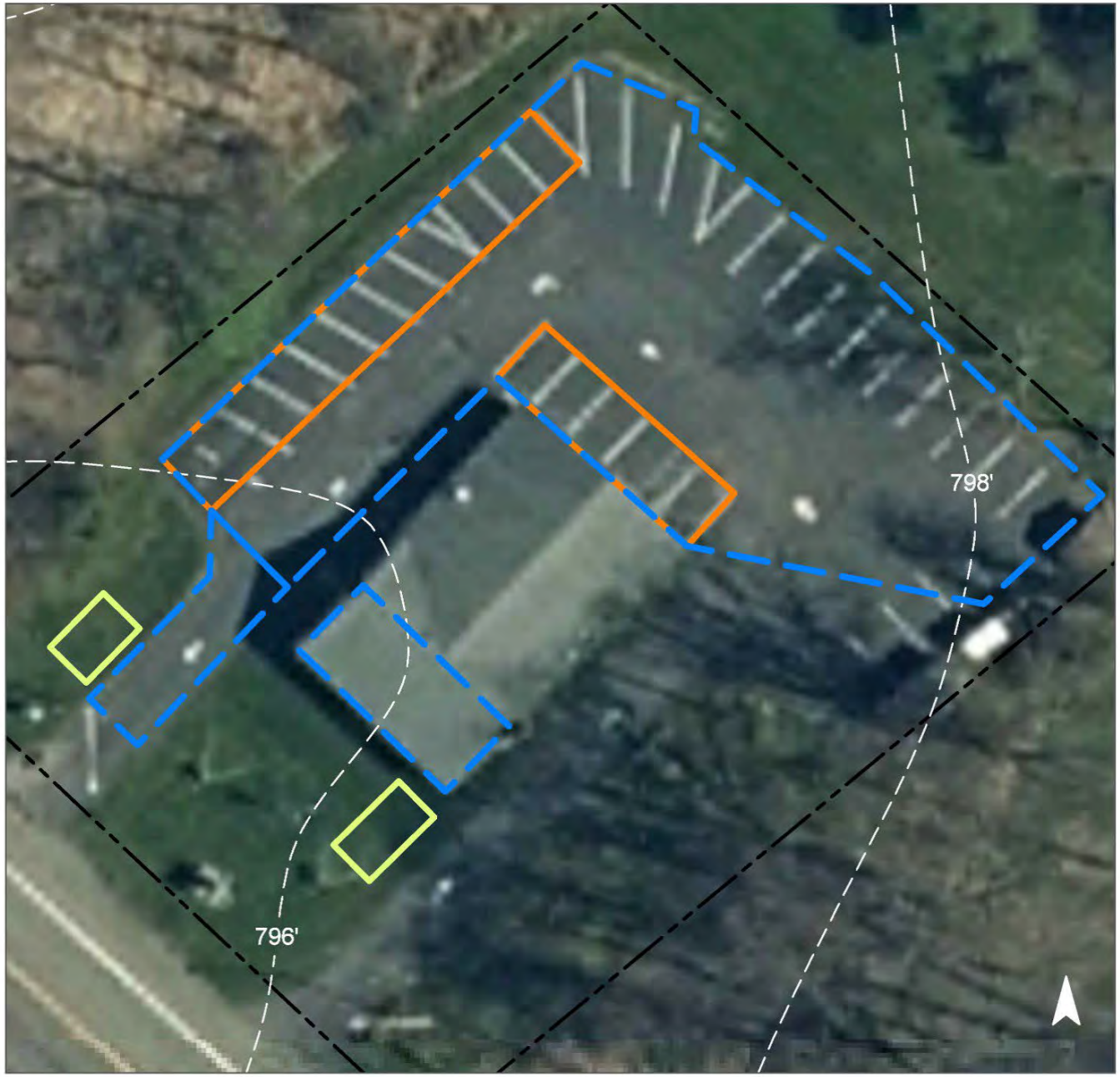
Block and Lot: Block 26.07, Lot 6

A rain garden can be installed to the south of the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require downspout disconnection. Another rain garden can be installed near the western driveway entrance to capture, treat, and infiltrate the stormwater runoff from the asphalt. This will require a trench drain. Existing parking spaces to the north and west of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the parking lot. This may require a trench drain. 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 50"
70	19,897	1.0	10.0	91.4	0.016	0.62

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	1,315	0.039	6	2,750	0.10	330	$3,300
Pervious pavement	9,555	0.283	42	19,930	0.75	2,100	$52,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



American Legion Post 342

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

0 15' 30'

BRAGG SCHOOL & DICKERSON SCHOOL

RAP ID: 9

Subwatershed: Peapack Brook

HUC14 ID 02030105060050

Site Area: 1,195,284 sq. ft.

Address: 250 State Route 24
Chester, NJ 07930

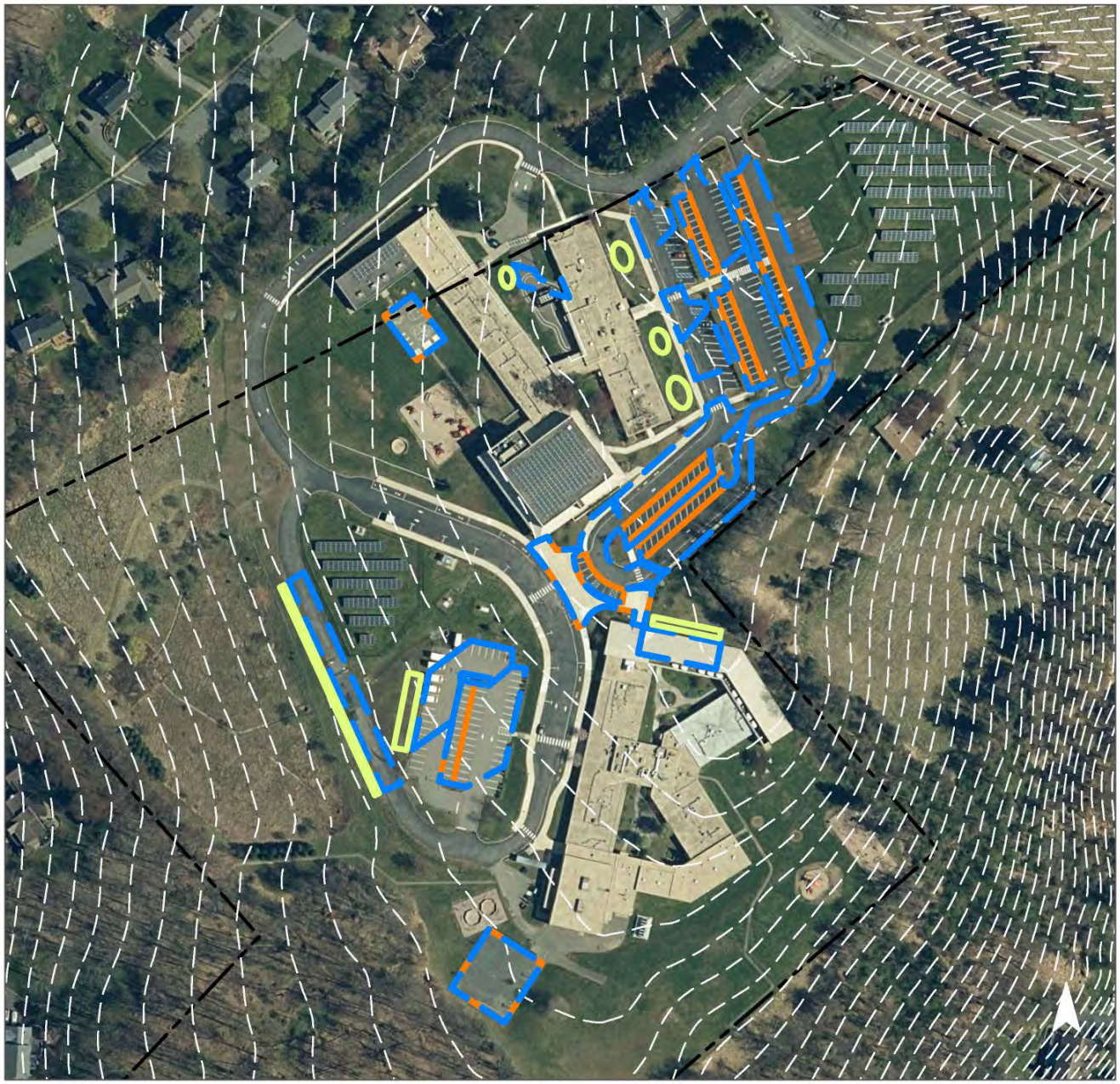
Block and Lot: Block 25.01, Lot 38.01

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops, parking lots, and driveways. This may require downspout disconnections, redirection of downspouts beneath sidewalks, trench drains, and curb cuts. Existing parking spaces in multiple lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. This may require trench drains in some locations. The basketball courts near each school building can also be converted into pervious pavement. The concrete walkway near the entrance of Bragg School can be replaced with permeable pavers. 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 50"
31	366,012	17.6	184.9	1,680.5	0.285	11.41

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	27,040	0.801	118	56,400	2.12	6,760	$67,600
Pervious pavement	87,420	2.588	382	182,340	6.85	34,685	$867,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

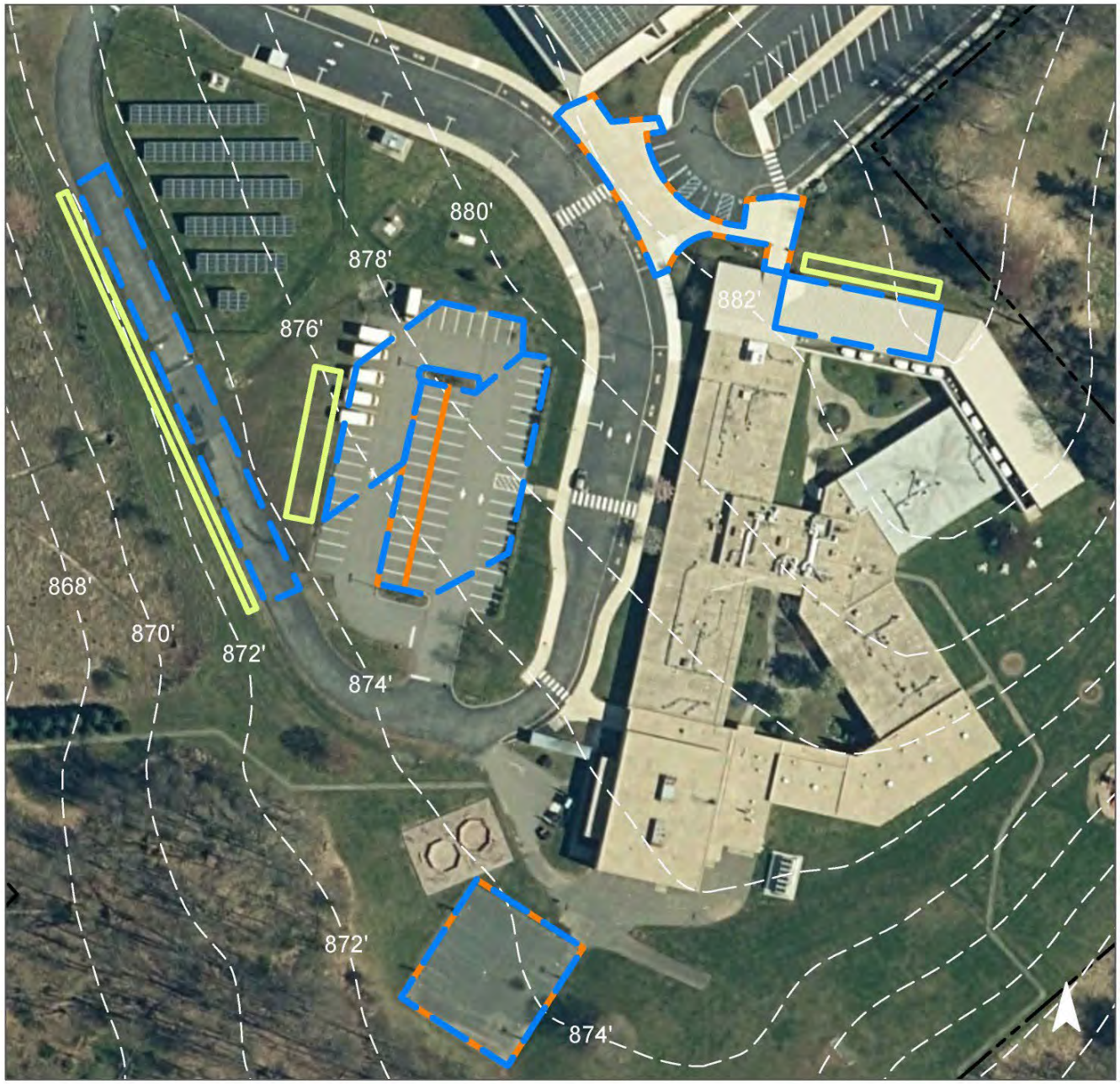


Bragg & Dickerson Schools Overall View

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

0 100' 200'

GREEN INFRASTRUCTURE RECOMMENDATIONS

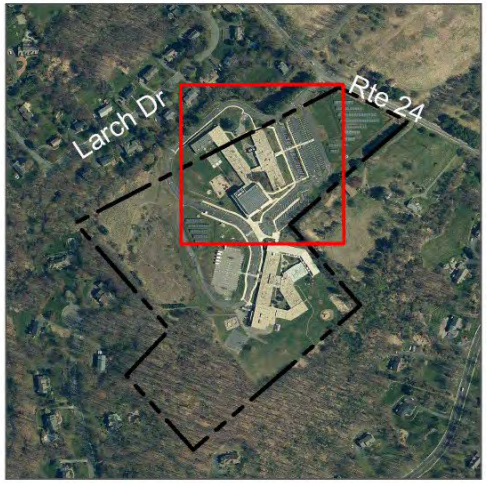


Bragg School

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

0 50' 100'

GREEN INFRASTRUCTURE RECOMMENDATIONS



Dickerson School

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

0 50' 100'

HUDSON CITY SAVINGS BANK

RAP ID: 10

Subwatershed: Peapack Brook

Site Area: 257,810 sq. ft.

Address: 385 Route 24
Chester, NJ 07930

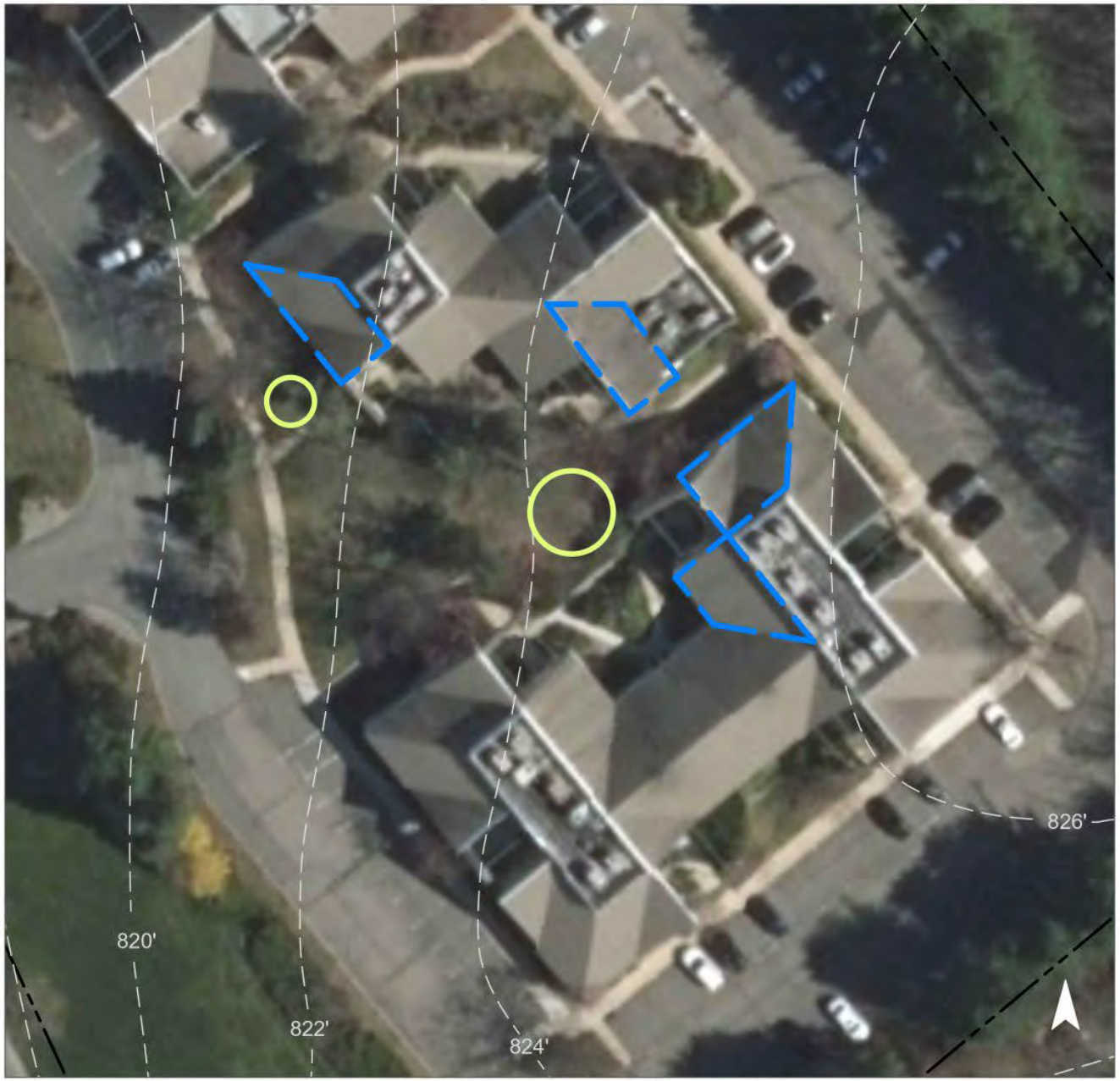
Block and Lot: Block 26.05, Lot 12

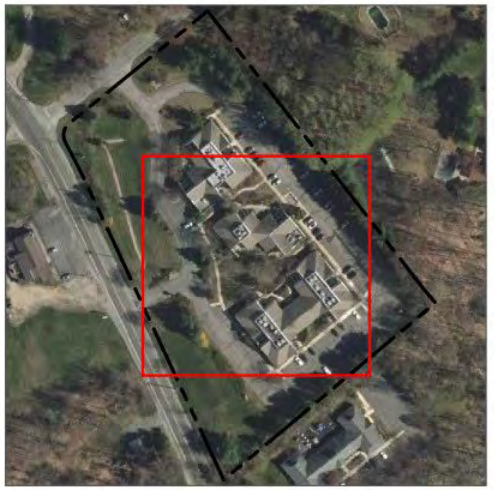
Rain gardens can be installed in the center courtyard and to the west of the building to capture rooftop runoff from multiple buildings. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
46	118,660	5.7	59.9	544.8	0.092	3.25

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.82	14	6,020	0.23	790	$3,950

GREEN INFRASTRUCTURE RECOMMENDATIONS





Hudson City Savings Bank

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

0 25' 50'

IANDOLI & EDENS ATTORNEYS AT LAW

RAP ID: 11

Subwatershed: Peapack Brook

Site Area: 104,110 sq. ft.

Address: 310 Route 24
Chester, NJ 07930

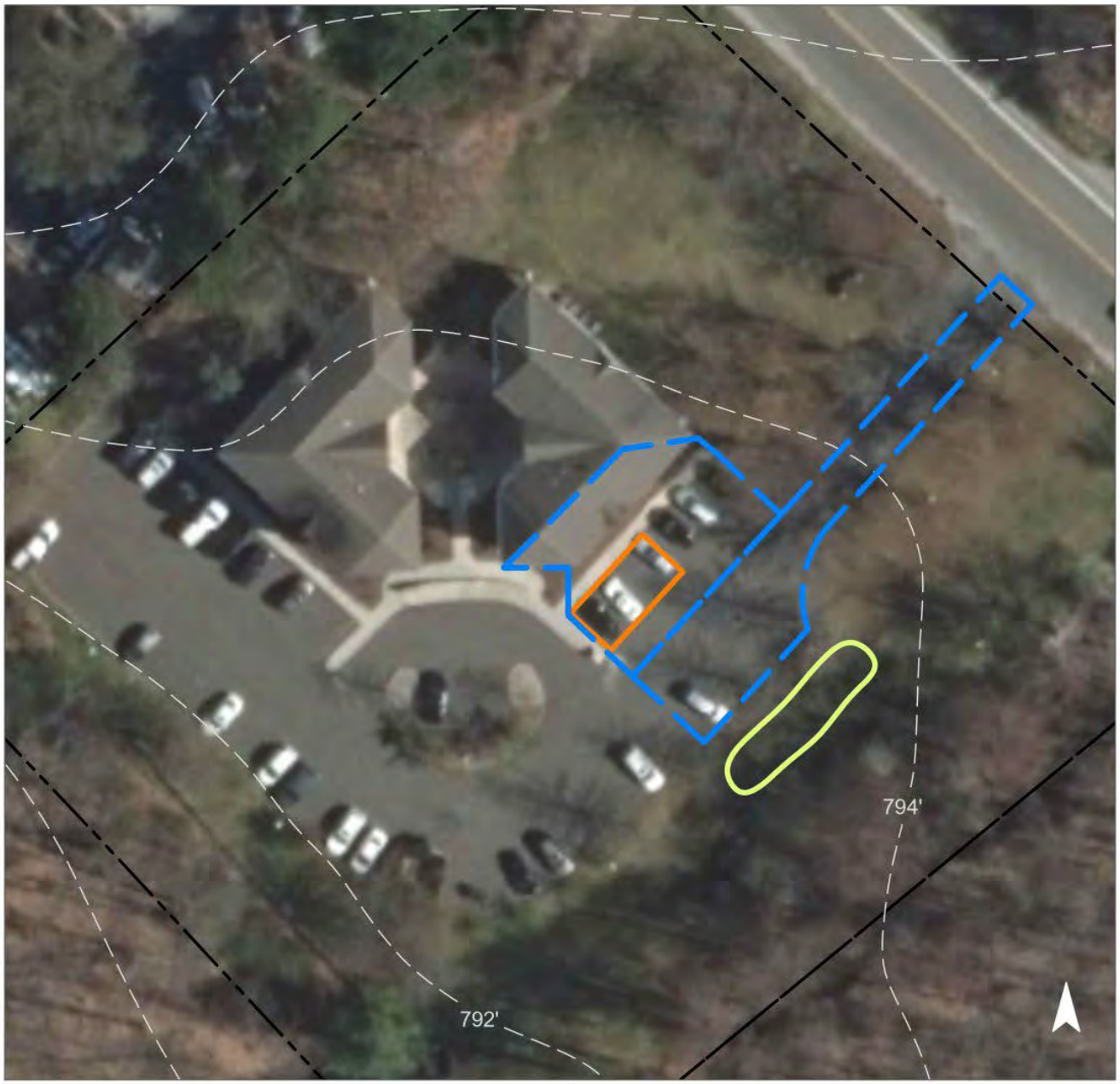
Block and Lot: Block 25, Lot 37.03

A rain garden can be installed to reduce the flooding that occurs east of the parking lot. Pervious pavement can be installed in the parking lot row directly west of the building to capture stormwater runoff from both the parking lot and the rooftop. 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"
32	33,470	1.6	16.9	153.7	0.026	0.92

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.093	16	6,810	0.26	890	$4,450
Pervious pavement	0.093	16	6,810	0.26	650	$16,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Iandoli & Edens
Attorneys at Law

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

0 25' 50'

PIZZA & BAGELS 24

RAP ID: 12

Subwatershed: Peapack Brook

Site Area: 132,295 sq. ft.

Address: 2631, 324 Route 24
Chester, NJ 07930

Block and Lot: Block 25, Lot 36

Pervious pavement can be installed in the western corner of the parking lot to capture and infiltrate stormwater runoff from the parking lot. A rain garden can be installed along the roadway south of the building to capture stormwater runoff from the pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
16	20,800	1.0	10.5	95.5	0.016	0.57

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	0.023	4	1,660	0.06	220	$1,375
Pervious pavement	0.140	23	10,240	0.38	970	$24,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Pizza & Bagels 24

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

0 25' 50'

MENDHAM ANIMAL HOSPITAL

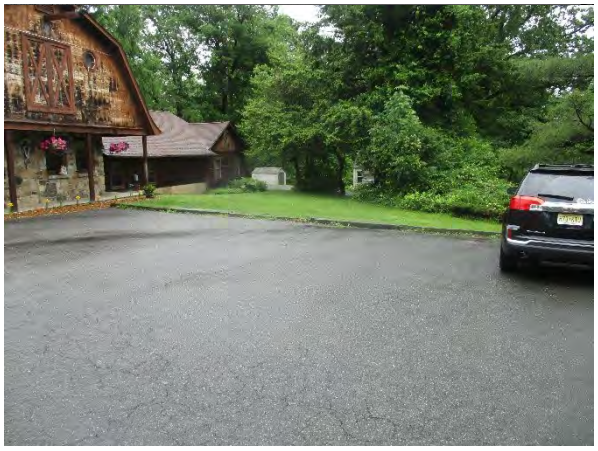
RAP ID: 13

Subwatershed: Raritan River North Branch

Site Area: 126,630 sq. ft.

Address: 571 Route 24
Mendham, NJ 07945

Block and Lot: Block 27, Lot 3



A rain garden can be installed south of the building to capture stormwater runoff from both the rooftop of the building as well as the parking lot. Downspout planter boxes can be installed in front of the building to capture the stormwater runoff from the western rooftop. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
14	17,580	0.8	8.9	80.7	0.014	0.48

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	0.029	5	2,090	0.08	275	$1,375
Planter boxes	N/A	2	N/A	N/A	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mendham Animal Hospital

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

0 15' 30'

MENDHAM HILLS COMMUNITY CHURCH

RAP ID: 14

Subwatershed: Raritan River North Branch

Site Area: 269,785 sq. ft.

Address: 480 Route 24
Chester, NJ 07930

Block and Lot: Block 9, Lot 20.01

A rain garden can be installed southwest of the building to capture, treat, and infiltrate the stormwater coming from the top of the building. Pervious pavement can be installed in the southeastern corner of the parking lot 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"
24	64,060	3.1	32.4	294.1	0.050	1.76

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	0.023	4	1,680	0.06	220	$1,100
Pervious pavement	0.142	24	10,420	0.39	1,620	$40,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mendham Hills Community Church

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

0 20' 40'

WESTMONT MONTESSORI SCHOOL

RAP ID: 15

Subwatershed: Raritan River North Branch

Site Area: 133,335 sq. ft.

Address: 577 Route 24
Mendham, NJ 07945

Block and Lot: Block 27, Lot 4

A rain garden can be installed south of the roadway to capture, treat, and infiltrate stormwater runoff from the pavement. Downspout planter boxes can be installed along the front, southern wall of the building to capture stormwater runoff from the rooftop. 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"
16	21,600	1.0	10.9	99.2	0.017	0.59

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.040	7	2,960	0.11	390	$1,950
Planter boxes	N/A	3	N/A	N/A	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Westmont Montessori School

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

0 20' 40'

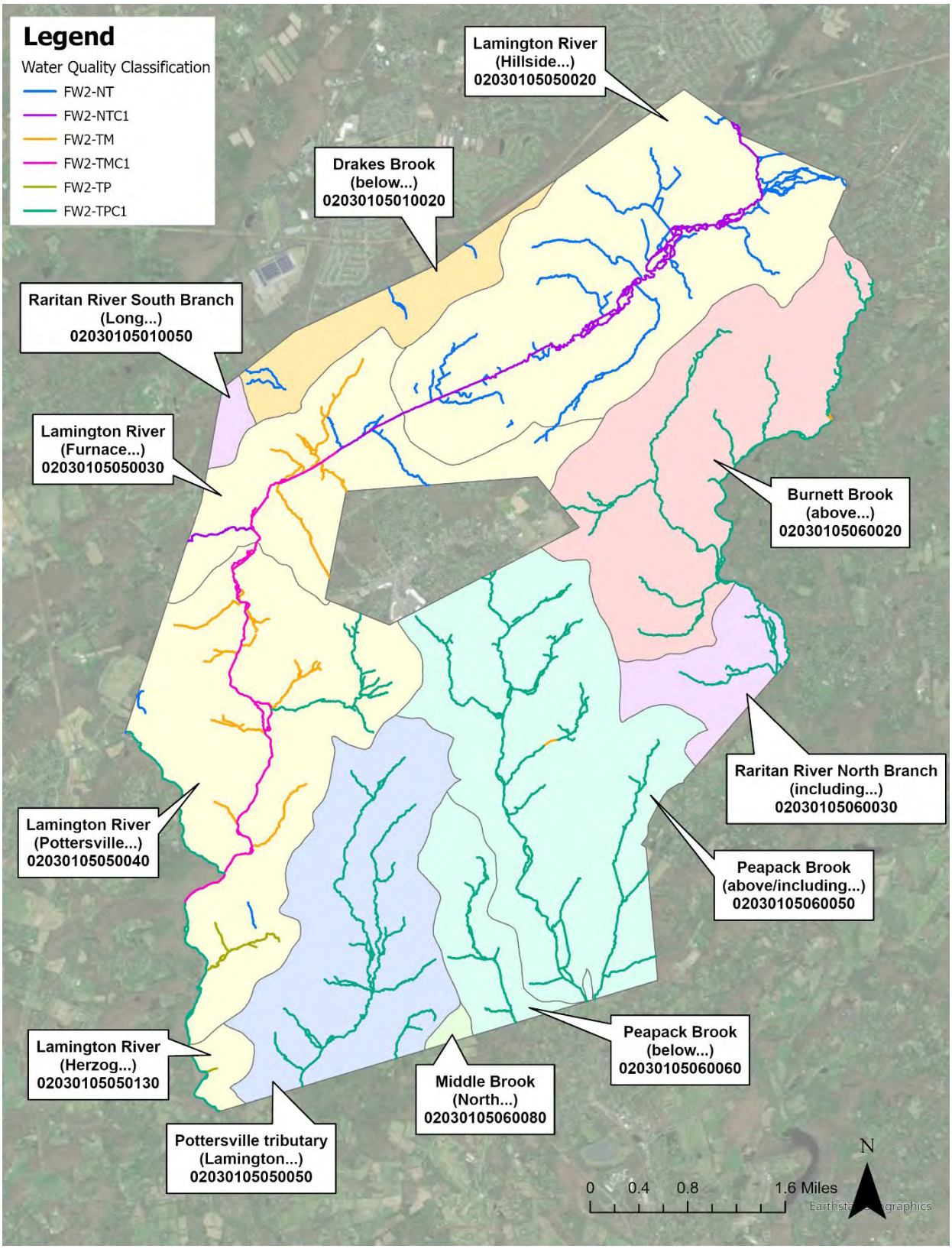


Figure 11. Water Quality Classification of Surface Waters in Chester Township

Table 9. Water Quality Classification of Surface Waters in Chester Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	19.1	18.4%
Freshwater 2, non-trout, Category One	FW2-NTC1	10.8	10.4%
Freshwater 2, trout production, Category One	FW2-TPC1	57.3	55.1%
Freshwater 2, trout maintenance	FW2-TM	9.0	8.6%
Freshwater 2, trout production	FW2-TP	1.4	1.4%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	6.4	6.1%

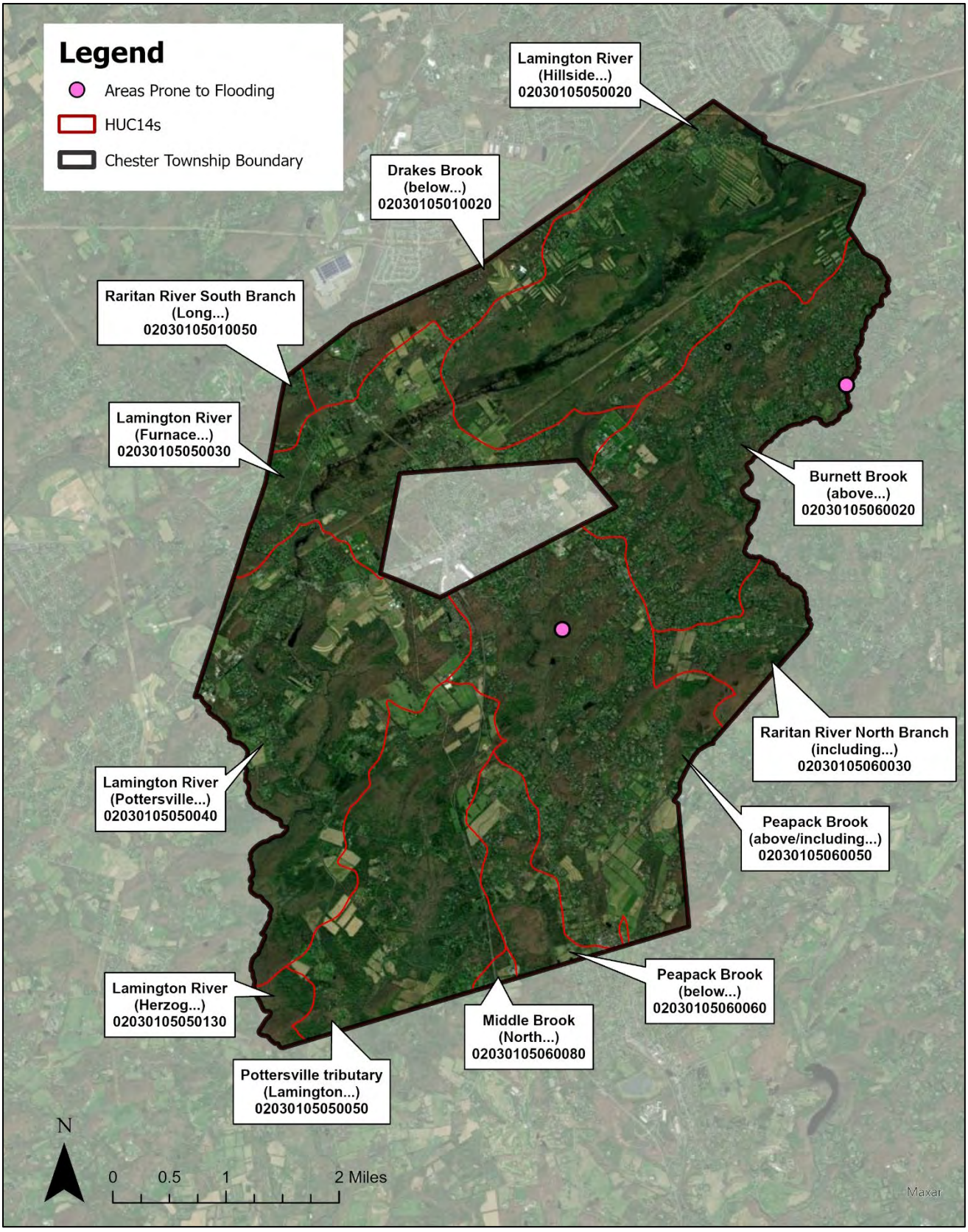


Figure 12. Areas Prone to Flooding in Chester Township

Mine Hill Township

Introduction

Located in Morris County in New Jersey, Mine Hill Township covers about 3.0 square miles. With a population of 4,015 (2020 United States Census), Mine Hill Township consists of 44.3% of urban land uses by area. Of that urban land use, approximately 38.7% 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 49.4% of Mine Hill Township.

Mine Hill Township contains portions of two subwatersheds (Table 1). There are approximately 7.1 miles of rivers and streams within the municipality; these include Jackson Brook and its tributaries, Lamington River and its tributaries, Spring Brook and its tributaries, and several uncoded tributaries. Mine Hill Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 6 (Upper Passaic, Whippany, and Rockaway) and 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Mine Hill Township

Subwatershed	HUC14
Rockaway River (74d 33m 30s to Stephens Brook)	02030103030070
Lamington River (above Route 10)	02030105050010

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Mine Hill Township. 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 Mine Hill Township'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 Mine Hill Township in relation to the study area. Figure 2 shows the portions of the two HUC14s in Mine Hill Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Mine Hill Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Mine Hill Township and is presented in Table 2. Figure 4 shows the impervious cover in Mine Hill Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Mine Hill Township and is presented in Table 3.

For the area of the municipality in the study area, a stormwater facilities analysis was completed. 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. No stormwater basins were identified in the study area within Mine Hill Township.

The Q-Farms in Mine Hill Township have been identified (see Figure 5). Table 4 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 Mine Hill Township have been identified (see Figure 6 and Table 5). 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 27.0 acres of agricultural land use in Mine Hill Township, of which, 20.5 acres lie within the study area for this Watershed Restoration and Protection Plan. There is one Q-Farm and a portion of one Q-Farm in the study area within Mine Hill Township, totaling 23.4 acres. Within the one Q-Farm and portion of one Q-Farm, there are approximately 18.6 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. For the Q-Farms in Mine Hill Township, no site visits were conducted.

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 (02030105050010). Within this one HUC14, there are 23.3 acres of buildings and 38.0 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 Mine Hill Township, approximately 1.5 acres of rooftop runoff would be managed with 0.29 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Mine Hill Township, approximately 3.8 acres of roadway would be managed, or 1.0 mile 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 Mine Hill Township are shown in Figure 9 and presented in Table 7. 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 8. Class 15E parcels were excluded from the assessment. Three of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 8 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 Mine Hill Township. Figure 12 depicts the water quality classifications of surface waters throughout Mine Hill Township and Table 9 summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

An administrator from Mine Hill Township has identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. Along Route 46, across from Cinders Wood Fire Grill restaurant, frequent flooding after heavy rainfall has been observed. The Frank Street Bridge above a tributary of the Lamington River has also been reported to flood when the tributary banks overflow, posing risks to nearby infrastructure and public safety. Figure 13 shows the locations of the aforementioned areas of concern.

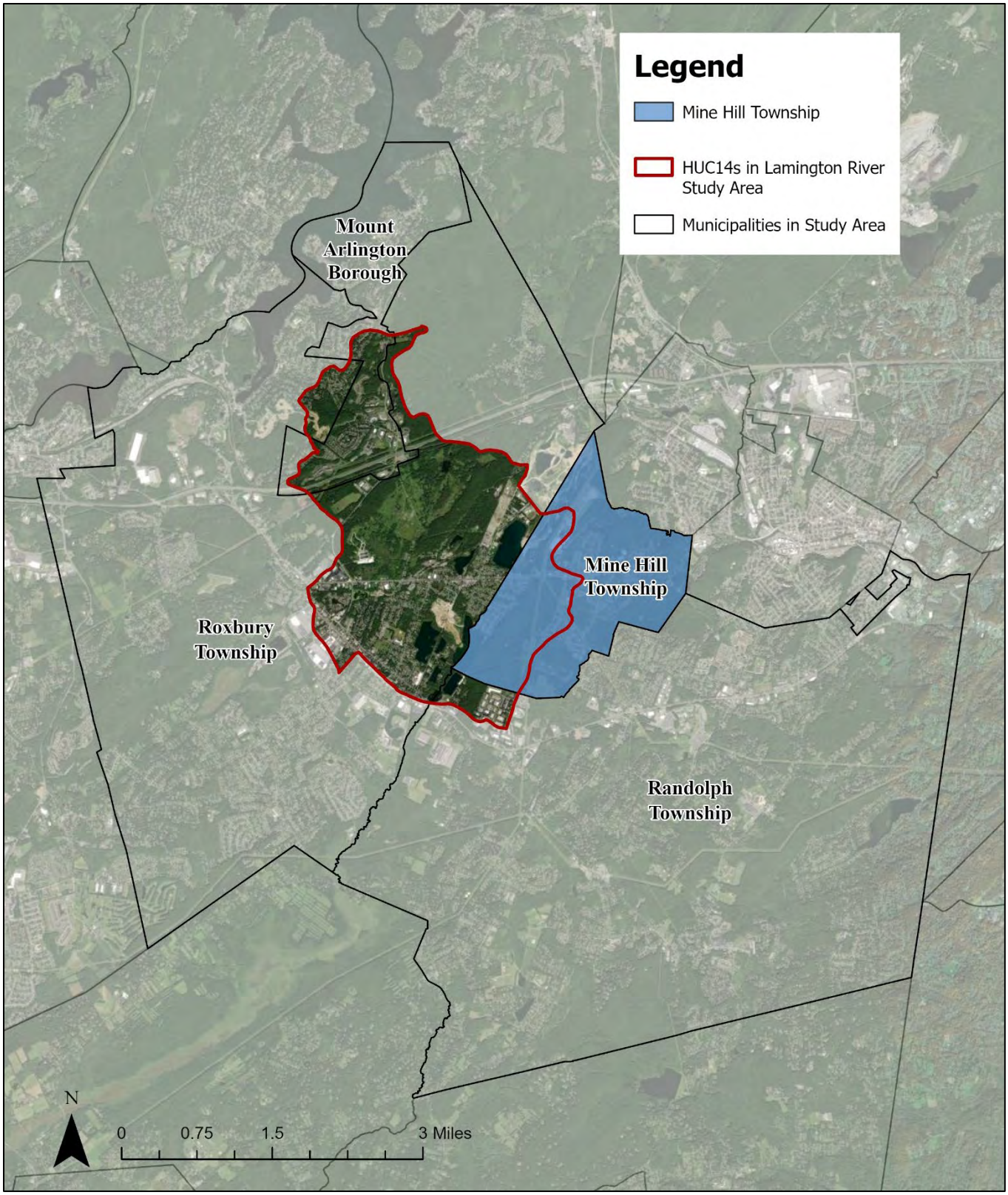


Figure 1: Municipalities in the Study Area

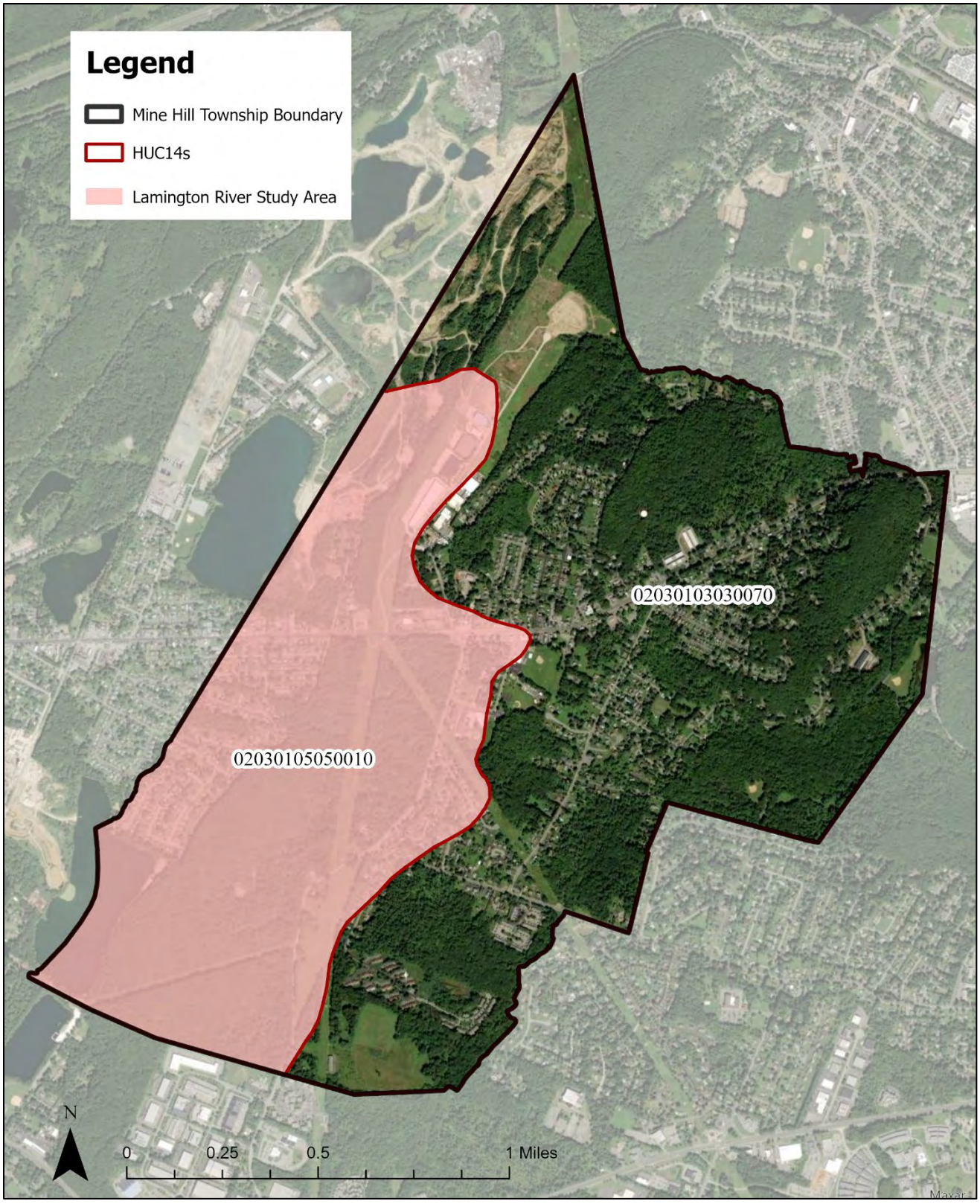


Figure 2: Portions of two HUC14s are in Mine Hill Township

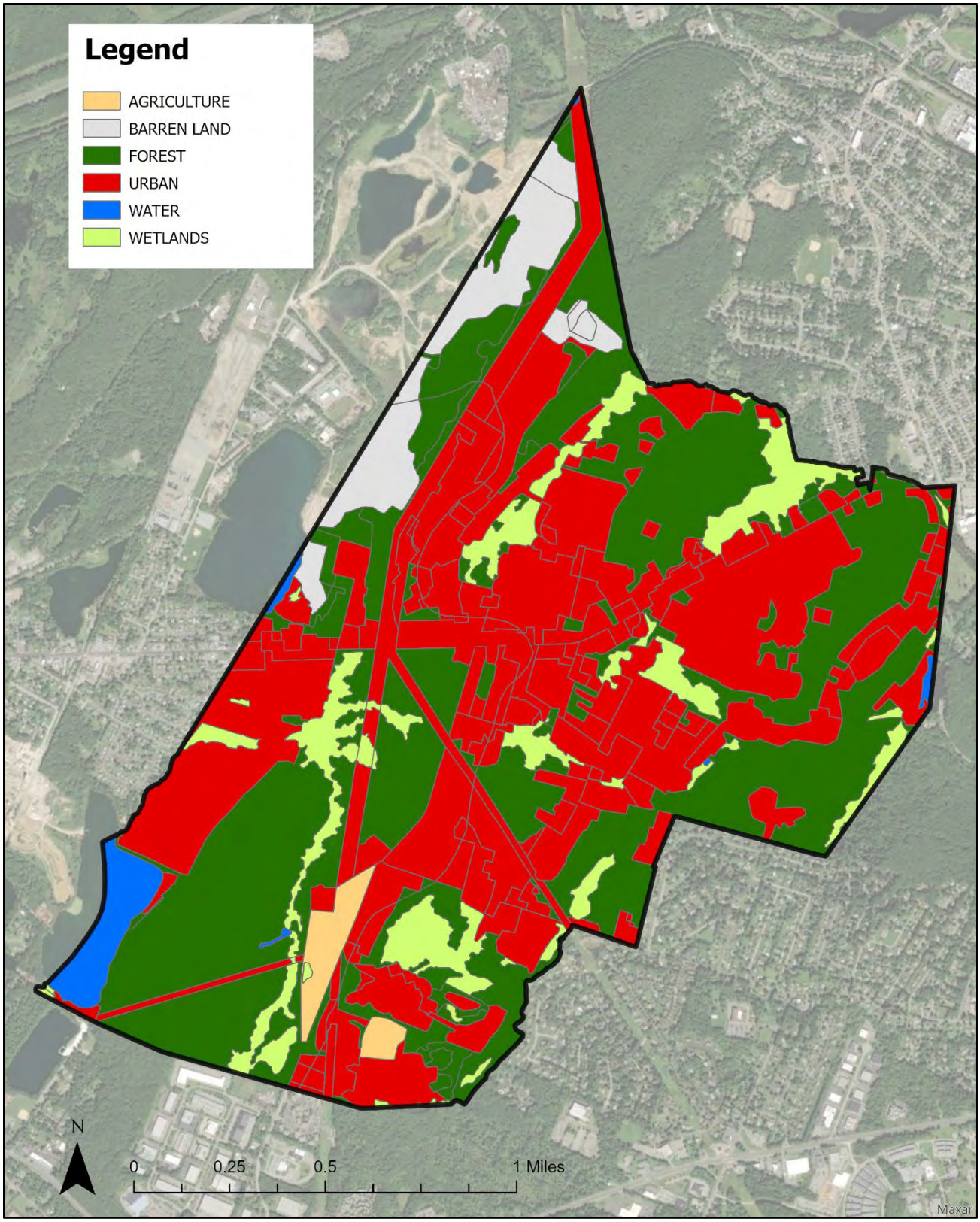


Figure 3: Land Use in Mine Hill Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Mine Hill Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103030070				
Agriculture	6.5	8.4	64.9	1,947.2
Barren Land	59.5	29.8	297.7	3,572.9
Forest	455.6	45.6	1,366.7	18,222.1
Urban	579.4	811.1	8,690.7	81,113.7
Water	2.3	0.2	6.8	90.3
Wetlands	113.0	11.3	338.9	4,518.7
TOTAL =	**1,216.2**	**906.4**	**10,765.7**	**109,464.7**
02030105050010				
Agriculture	20.5	26.6	204.8	6,144.4
Barren Land	34.3	17.1	171.4	2,057.1
Forest	295.9	29.6	887.6	11,834.6
Urban	270.1	378.1	4,050.8	37,807.0
Water	33.8	3.4	101.4	1,352.6
Wetlands	47.0	4.7	141.0	1,879.4
TOTAL =	**701.5**	**459.5**	**5,557.0**	**61,075.0**
All HUCs				
Agriculture	27.0	35.1	269.7	8,091.5
Barren Land	93.8	46.9	469.2	5,630.0
Forest	751.4	75.1	2,254.2	30,056.7
Urban	849.4	1,189.2	12,741.5	118,920.7
Water	36.1	3.6	108.2	1,442.9
Wetlands	160.0	16.0	479.9	6,398.0
TOTAL =	**1,917.7**	**1,365.9**	**16,322.7**	**170,539.8**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Mine Hill Township 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 Mine Hill Township. Based upon the NJDEP impervious surface data, Mine Hill Township has impervious cover totaling 16.5%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Mine Hill Township 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, Mine Hill Township'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.

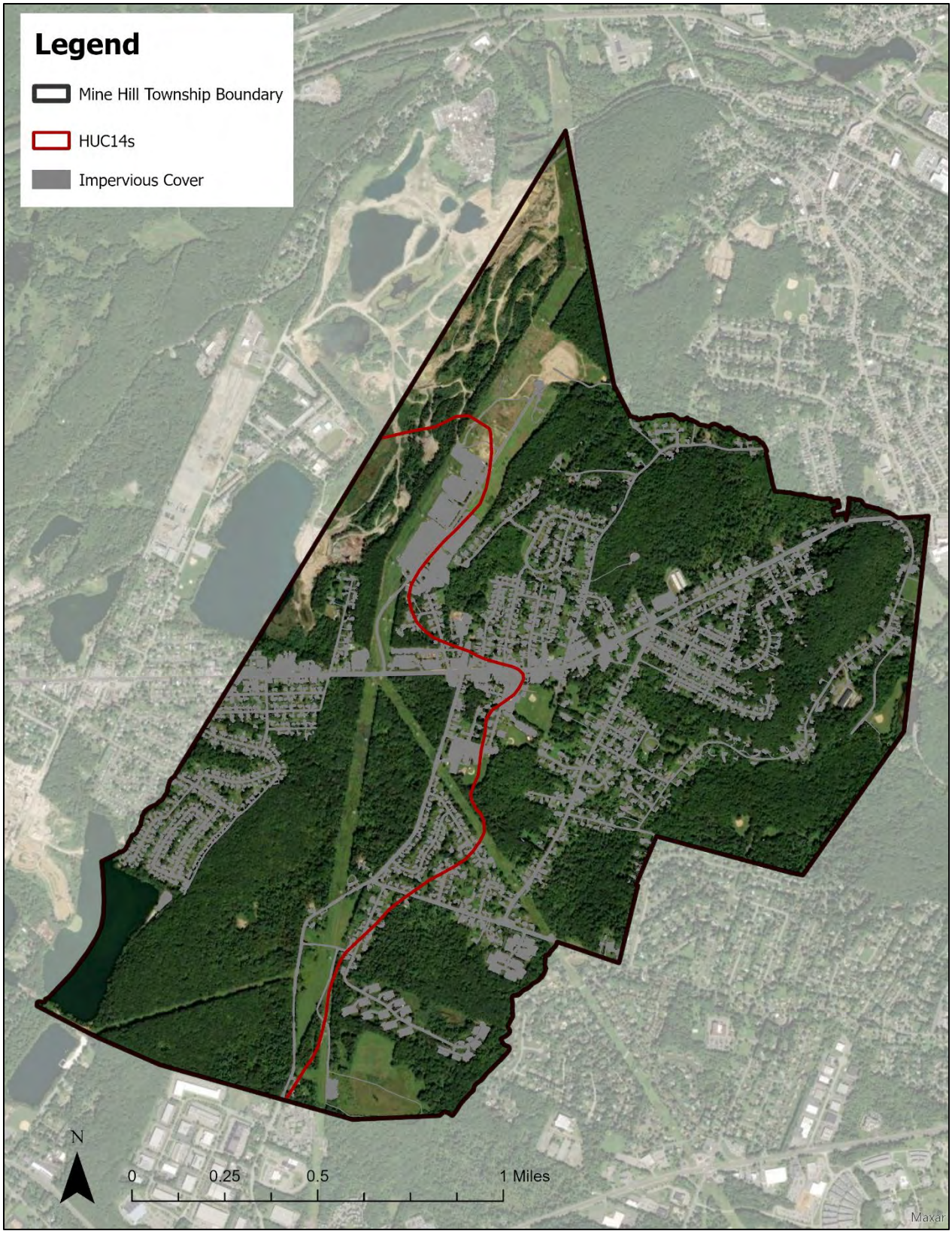


Figure 4: Impervious Cover in Mine Hill Township

Table 3: Impervious Cover Analysis by HUC14 for Mine Hill Township

Class	Area (acres)	HUC Impervious Cover (%)
02030103030070		
Building	41.18	
Other	87.61	
Road	71.26	
TOTAL =	**200.1**	**16.4%**
02030105050010		
Building	23.32	
Other	55.08	
Road	38.04	
TOTAL =	**116.4**	**16.6%**
All HUCs		
Building	64.50	
Other	142.69	
Road	109.30	
TOTAL =	**316.5**	**16.5%**

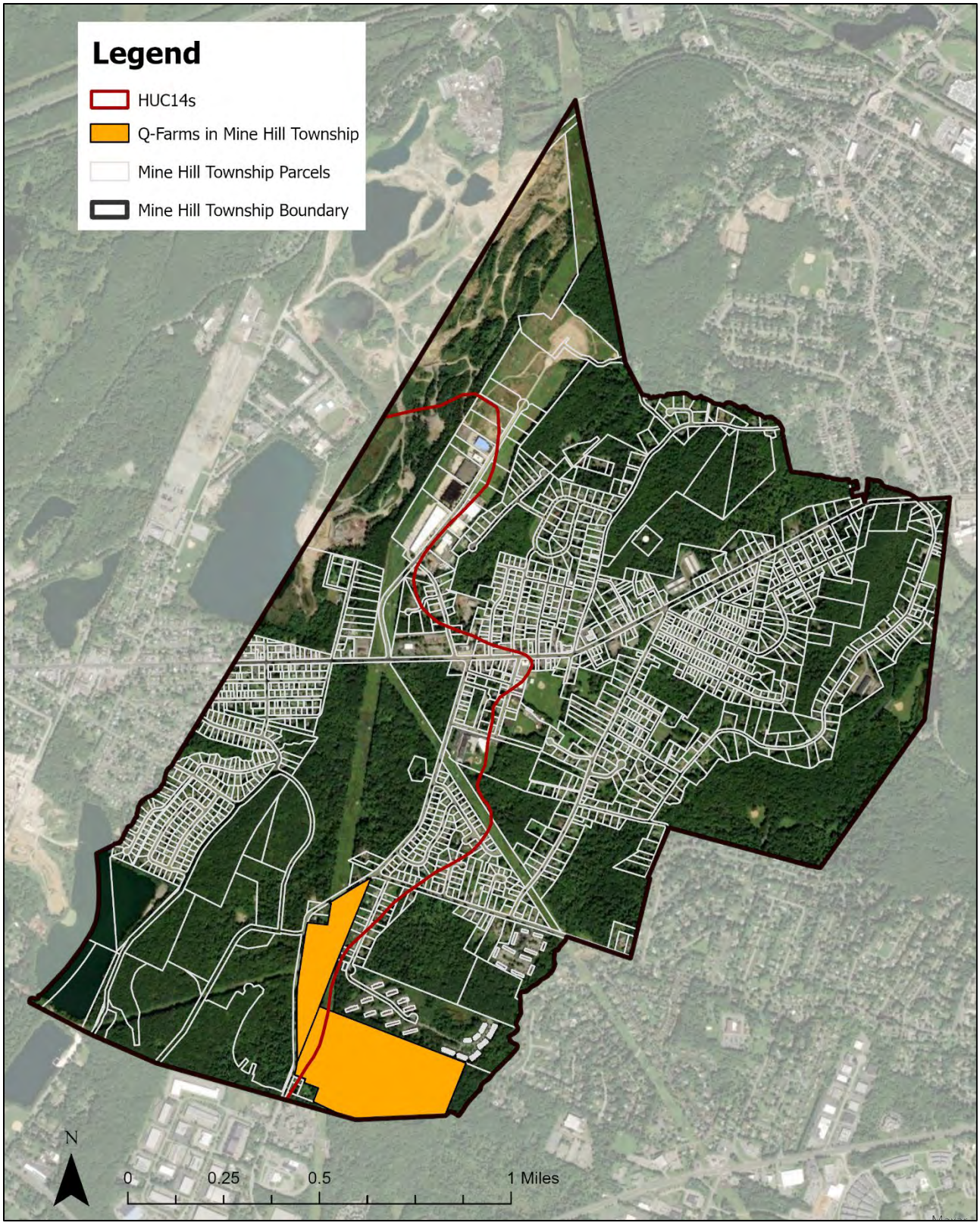


Figure 5: Q-Farm Parcels in Mine Hill Township

Table 4: Q-Farm Parcels in Mine Hill Township

Block	Lot	Q-Code	Prop Class	Location
1102	1	QFARM	3B	Canfield Ave
1502	1	QFARM	3B	Canfield Ave

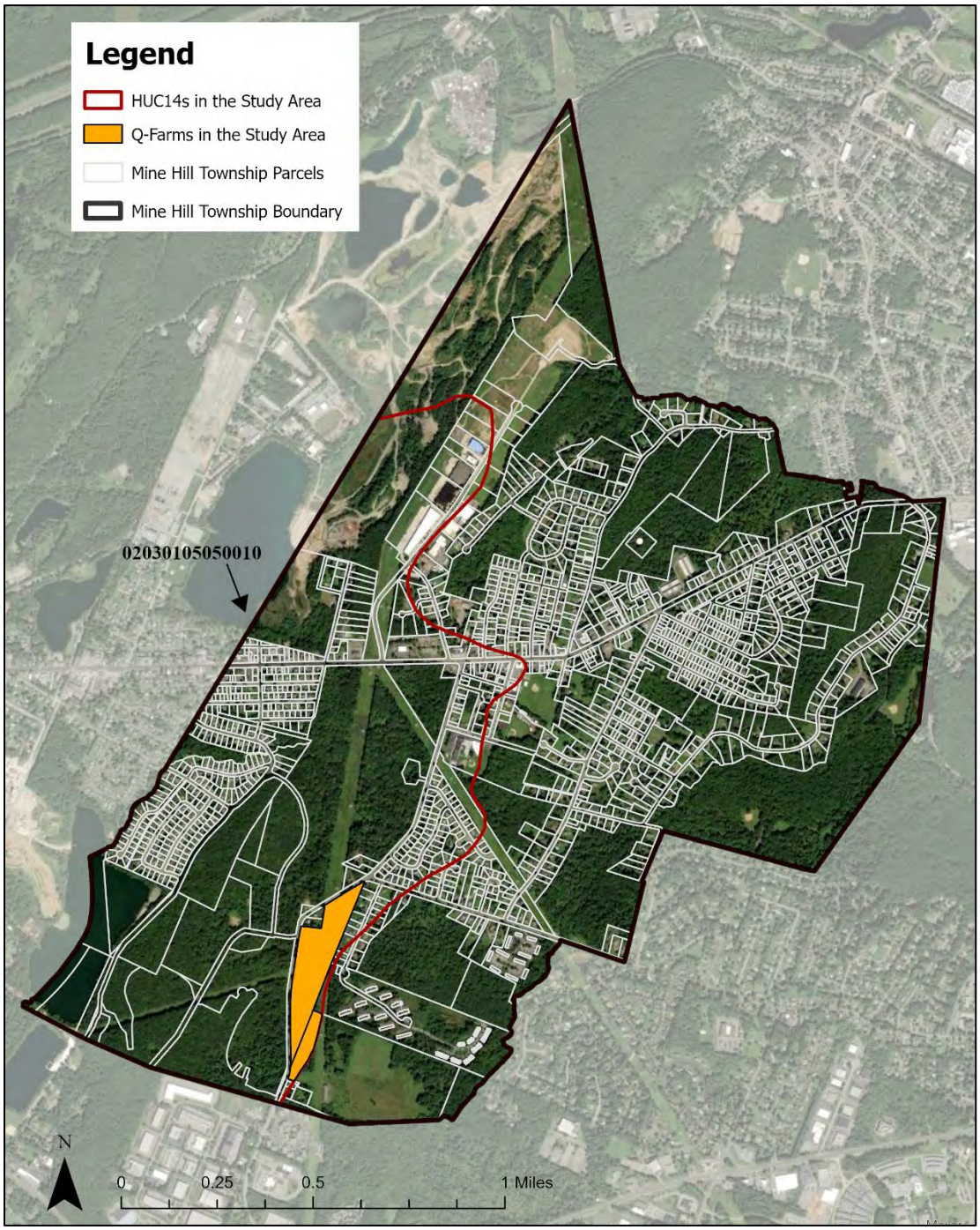


Figure 6: Q-Farm Parcels in the Study Area of Mine Hill Township

Table 5: Q-Farm Parcels in the Study Area of Mine Hill Township

Block	Lot	Q-Code	Prop Class	Location
1102	1	QFARM	3B	Canfield Ave
*1502	1	QFARM	3B	Canfield Ave

*Only a portion of the Q-Farm is within the study area

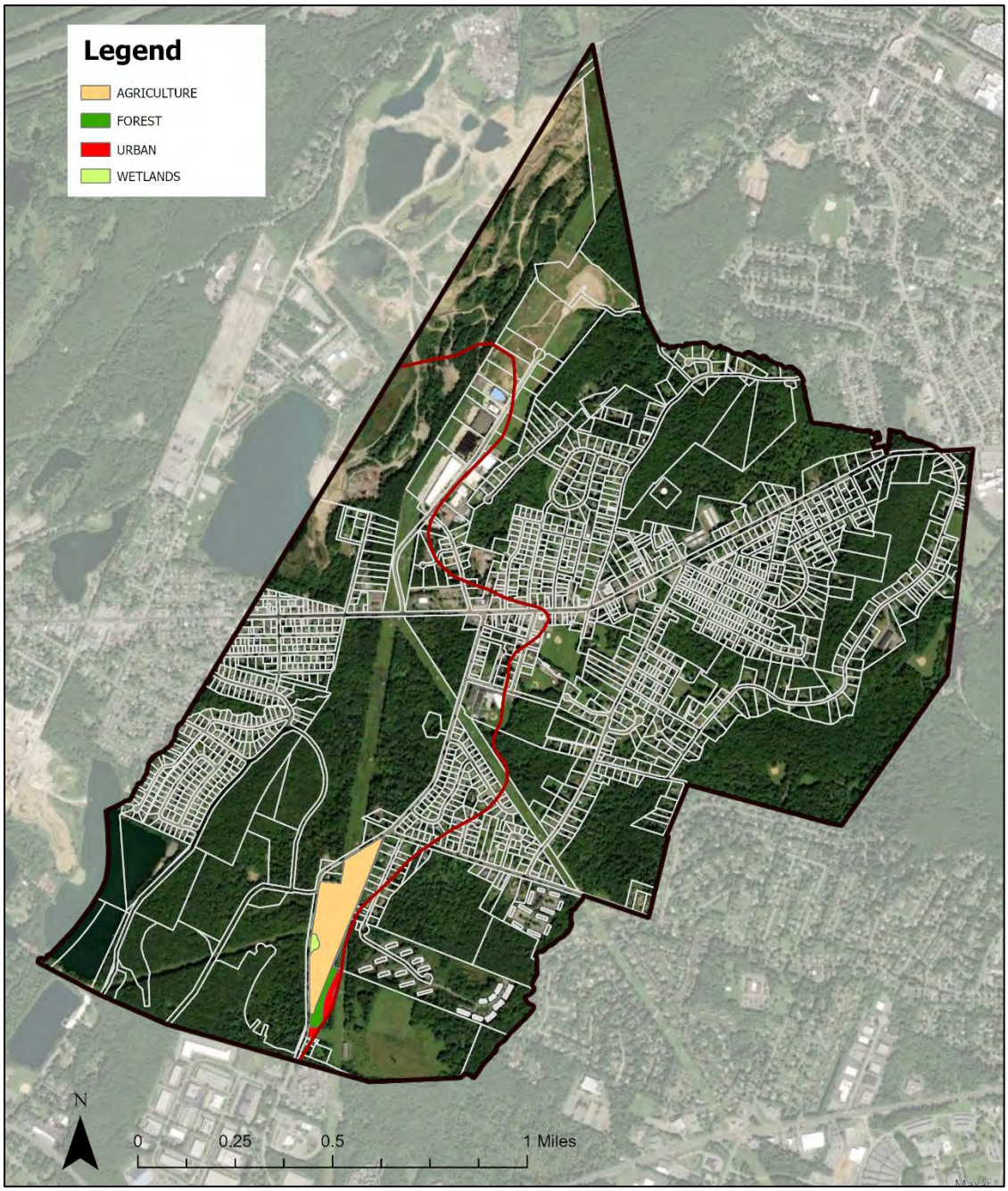


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Mine Hill Township

Table 6: Land Use on Q-Farms in the Study Area of Mine Hill Township

Land Use	Area (acres)
Agriculture	18.6
Barren Land	0.0
Forest	2.0
Urban	2.2
Water	0.0
Wetlands	0.5
Total:	**23.4**

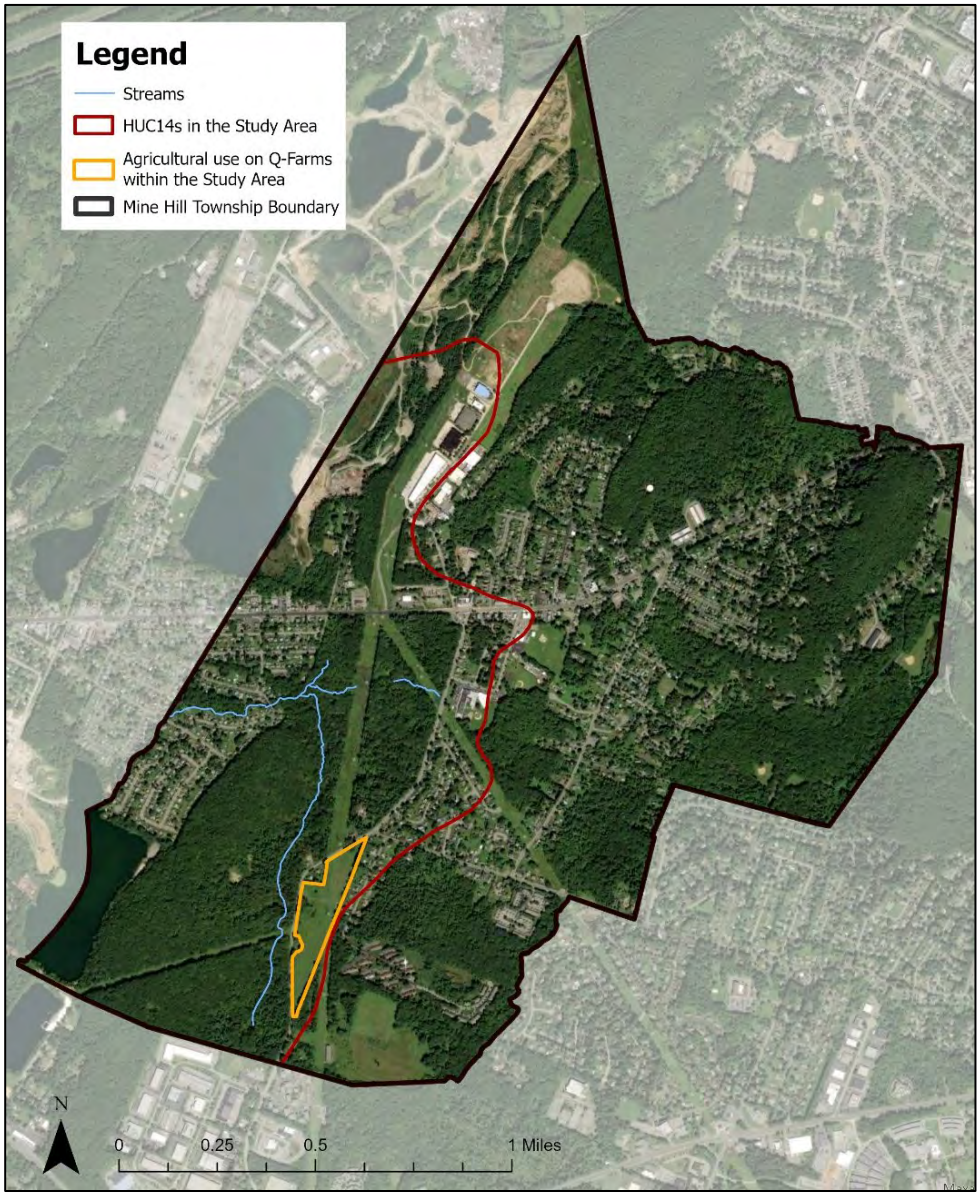


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Mine Hill Township

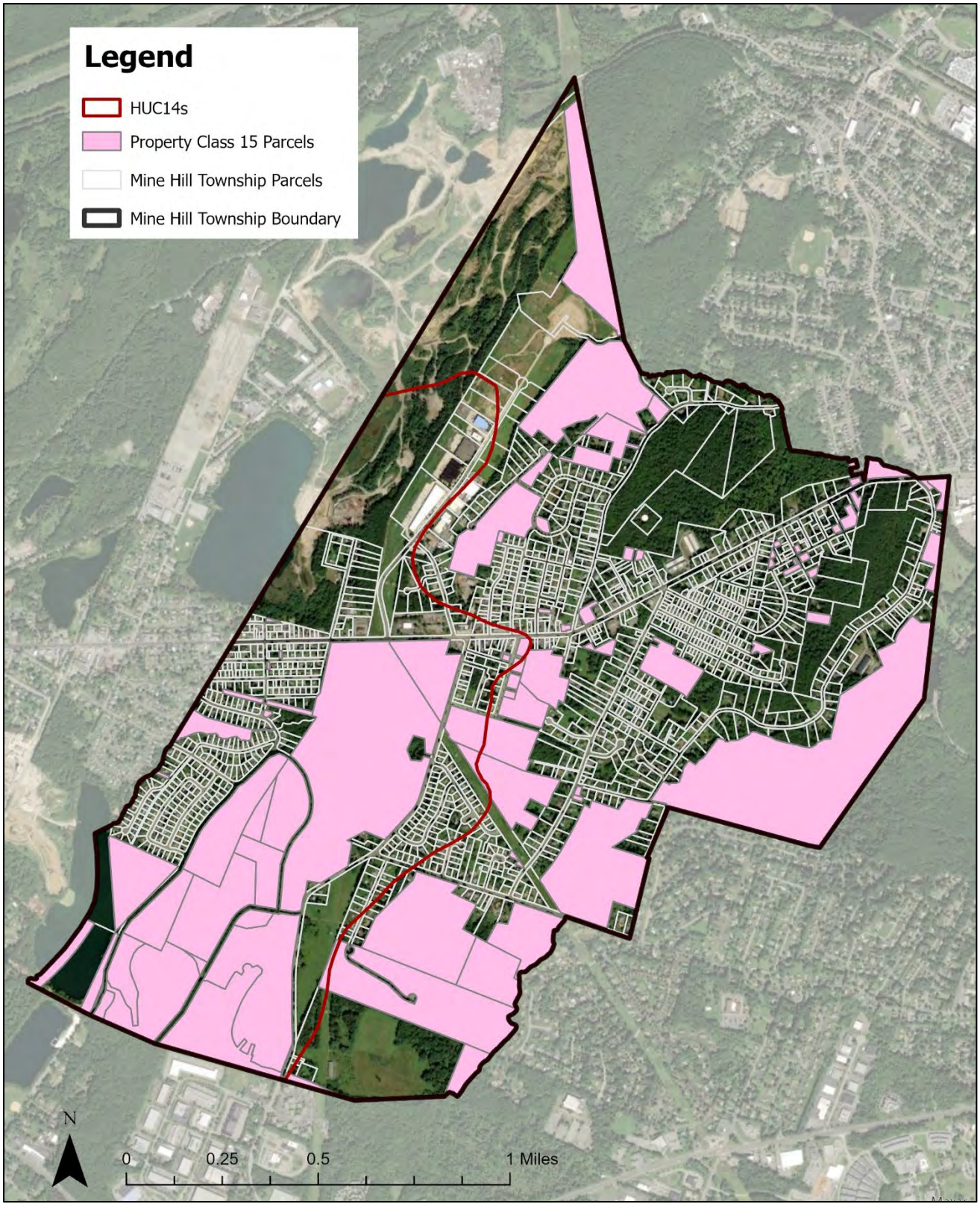


Figure 9: Property Class 15 Parcels in Mine Hill Township

Table 7: Property Class 15 Parcels in Mine Hill Township

Block	Lot	Prop Class	Location	Facility Type
1401	1	15A	42 Canfield Ave	Schools
101	1.02	15C	Iron Mountain Road-Rear	Vacant Land
201	1	15C	Replogle Ave	Vacant Land
303	2	15C	N First Ave	Vacant Land
403	3	15C	S First Ave	Vacant Land
405	17	15C	First Ave	Vacant Land
408	13	15C	South Third Ave	Vacant Land
409	6	15C	South Third Ave	Vacant Land
411	1.01	15C	Canfield Ave	Vacant Land
501	33	15C	19 Frank St	Vacant Land
506	7	15C	7 Zucker Ln	Land
508	1	15C	Green Rd	Water Shed
601	1	15C	Green Rd	Vacant Land
603	1	15C	Green Rd	Vacant Land
603	2	15C	Dickerson Mine Rd	Vacant Land
604	1	15C	Green Rd	Vacant Land
605	2	15C	Green Rd	Vacant Land
605	3	15C	Green Rd	Vacant Land
606	1.01	15C	Dickerson Mine Rd	Vacant Land
606	1.02	15C	Dickerson Mine Rd	Vacant Land
606	1.03	15C	Green Rd	Vacant Land
606	1.04	15C	Green Rd	Vacant Land
702	1	15C	Randall Ave	Vacant Land
703	12	15C	Randall Ave	Vacant Land
812	10	15C	2 Shawn St	Vacant Land
902	1	15C	Rt 46& Canfld Ave	Vacant Land
903	9	15C	Baker St	Recreation Center
903	10	15C	Gillen St	Tax Lien Foreclosure
1001	1	15C	Dickerson Mine Rd	Vacant Land
1001	2	15C	Dickerson Mine Rd	Vacant Land
1002	1	15C	Dickerson Mine Rd	Vacant Land
1005	1	15C	Dickerson Mine Rd	Vacant Land
1101	1.01	15C	Canfield Ave	Vacant Land
1101	1.02	15C	Canfield Ave	Vacant Land
1207	2	15C	Fairview Ave	Vacant Land
1208	1	15C	Fairview Ave	Vacant Land
1303	15	15C	Reynolds St	Vacant Land
1304	13	15C	1 Bassett St	Vacant Land
1304	14	15C	14 Baker St	Vacant Land
1304	15	15C	12 Baker St	Community Center
1304	16	15C	10 Baker St	Town Hall
1304	17	15C	Rt 46	Fire House
1307	1	15C	Chestnut St	Mine Hill Water Co
1401	8	15C	Randolph Ave	Vacant Land
1407	24	15C	Randolph Ave	Vacant Land
1501	5	15C	Off Irondale Rd	Vacant Land

1503	1.01	15C	Thomastown Rd	Tennis Courts
1504	1	15C	Randolph Ave	Park
1606	16	15C	Sixth Ave	Vacant Land
1606	19	15C	Bissell St	Vacant Land
1607	7	15C	Rt 46	Vacant Land
1608	1	15C	Bissell St	Vacant Land
1608	2	15C	Bissell St	Vacant Land
1608	15	15C	Park Ave	Vacant Land
1610	10	15C	Bissell St	Vacant Land
1612	4	15C	Second Ave	Vacant Land
1616	3	15C	First Ave	Vacant Land
1617	6	15C	Rt 46	Vacant Land
1619	2	15C	Fifth Ave	Vacant Land
1621	5	15C	Rt 46	Vacant Land
1622	6	15C	Garden Ave	Vacant Land
1806	1	15C	Randolph Ave	Vacant Land
1901	1	15C	Canfield Ave Rear	Parkland
1904	15	15C	Garden Ave	Right of Way
1905	23.02	15C	Rte 46	Tunnel
2101	1	15C	Oak St	Park
2619	8	15C	40 N First Ave	Vacant Land
802	18	15D	213 Route 46	Church
2007	6	15D	Hurd St	Cemeteries
2008	7	15D	Rte 46	Cemetery
412	7	15F	18 First St	Residence
801	12	15F	2 Crimson Ln	Vacant Land
802	5	15F	11 Pine St	Residence
811	6	15F	20 Autumn Dr	Vacant Land
813	25	15F	2 Crimson Ln	Vacant Land
1302	2	15F	195 Rt 46	Common Element
1502	1.01	15F	Canfield Ave	Common Element
1503	1	15F	402 Betty Ln	Residence
1503	1	15F	Thomastown Rd	Common Element
1504	1.01	15F	Randolph Ave	Vacant Land
1609	6	15F	41 Bissell St	Residence
1624	2	15F	30 Fifth Ave	Residence
1625	1	15F	Rt 46	Vacant Land
1704	33	15F	58 Hillside Ave	Residence
1802	1	15F	E Randolph Ave	Common Element
1803	9	15F	124 Randolph Ave	Mine Hill
1803	10	15F	49 Randolph Ave	Vacant Land
2008	8	15F	Main St	Vacant Land

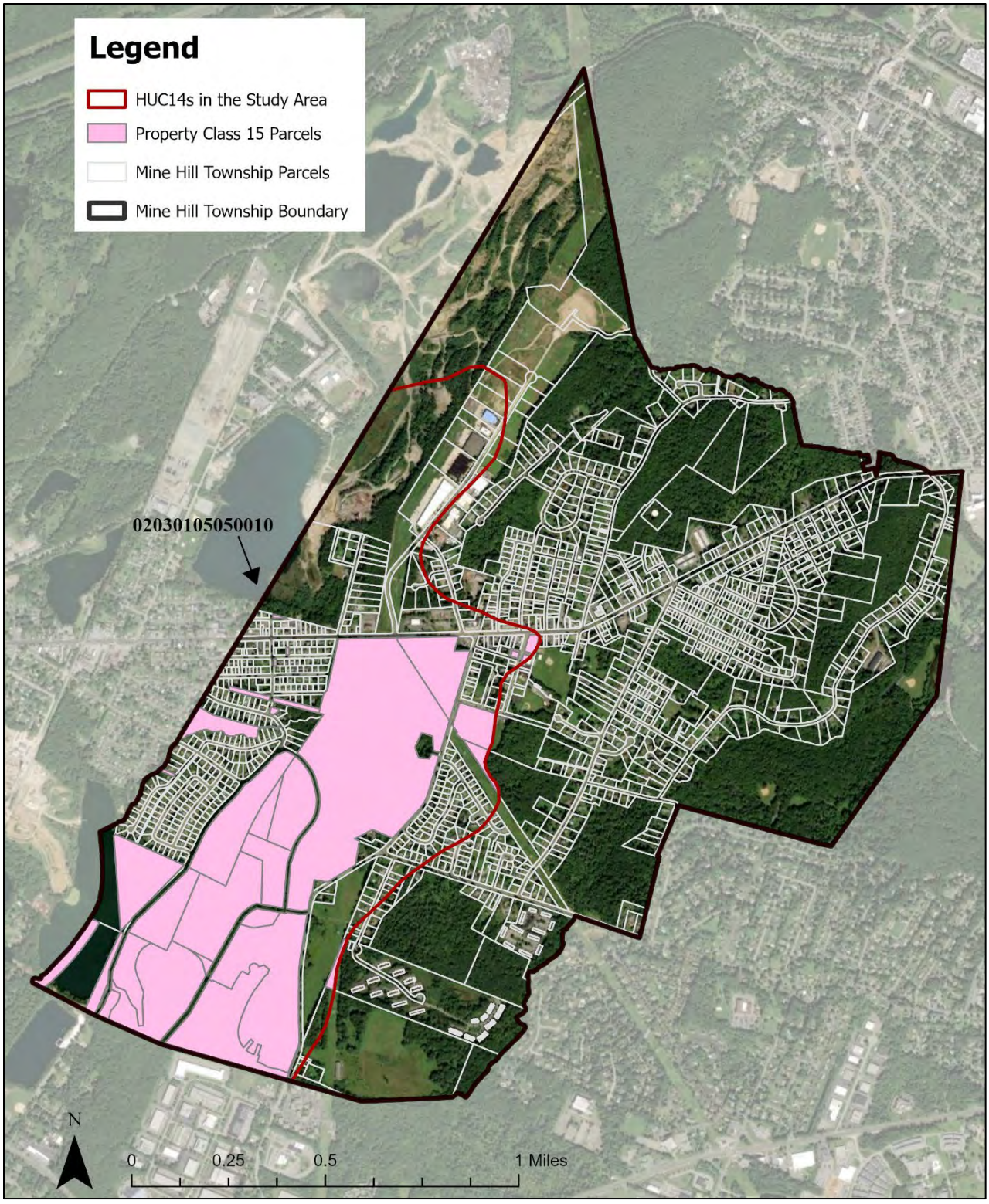


Figure 10: Property Class 15 parcels in the Study Area of Mine Hill Township

Table 8: Property Class 15 Parcels in the Study Area of Mine Hill Township

Block	Lot	Prop Class	Location	Facility Type
***1401[1]**	**1**	**15A**	**42 Canfield Ave**	**Schools**
303	2	15C	N First Ave	Vacant Land
403	3	15C	S First Ave	Vacant Land
405	17	15C	First Ave	Vacant Land
408	13	15C	South Third Ave	Vacant Land
409	6	15C	South Third Ave	Vacant Land
411	1.01	15C	Canfield Ave	Vacant Land
501	33	15C	19 Frank St	Vacant Land
506	7	15C	7 Zucker Ln	Land
508	1	15C	Green Rd	Water Shed
601	1	15C	Green Rd	Vacant Land
603	1	15C	Green Rd	Vacant Land
603	2	15C	Dickerson Mine Rd	Vacant Land
604	1	15C	Green Rd	Vacant Land
605	2	15C	Green Rd	Vacant Land
605	3	15C	Green Rd	Vacant Land
606	1.01	15C	Dickerson Mine Rd	Vacant Land
606	1.02	15C	Dickerson Mine Rd	Vacant Land
606	1.03	15C	Green Rd	Vacant Land
606	1.04	15C	Green Rd	Vacant Land
902	1	15C	Rt 46& Canfld Ave	Vacant Land
903	9	15C	Baker St	Recreation Center
903	10	15C	Gillen St	Tax Lien Foreclosure
1001	1	15C	Dickerson Mine Rd	Vacant Land
1001	2	15C	Dickerson Mine Rd	Vacant Land
1002	1	15C	Dickerson Mine Rd	Vacant Land
1005	1	15C	Dickerson Mine Rd	Vacant Land
1101	1.01	15C	Canfield Ave	Vacant Land
1101	1.02	15C	Canfield Ave	Vacant Land
***1304[1]**	**16**	**15C**	**10 Baker St**	**Town Hall**
***1304[1]**	**17**	**15C**	**Rt 46**	**Fire House**
1401[1]	8	15C	Randolph Ave	Vacant Land
2619	8	15C	40 N First Ave	Vacant Land
412	7	15F	18 First St	Residence
1502[1]	1.01	15F	Canfield Ave	Common Element
1503[1]	1	15F	Thomastown Rd	Common Element

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

[1]Only a portion of the parcel is within the study area

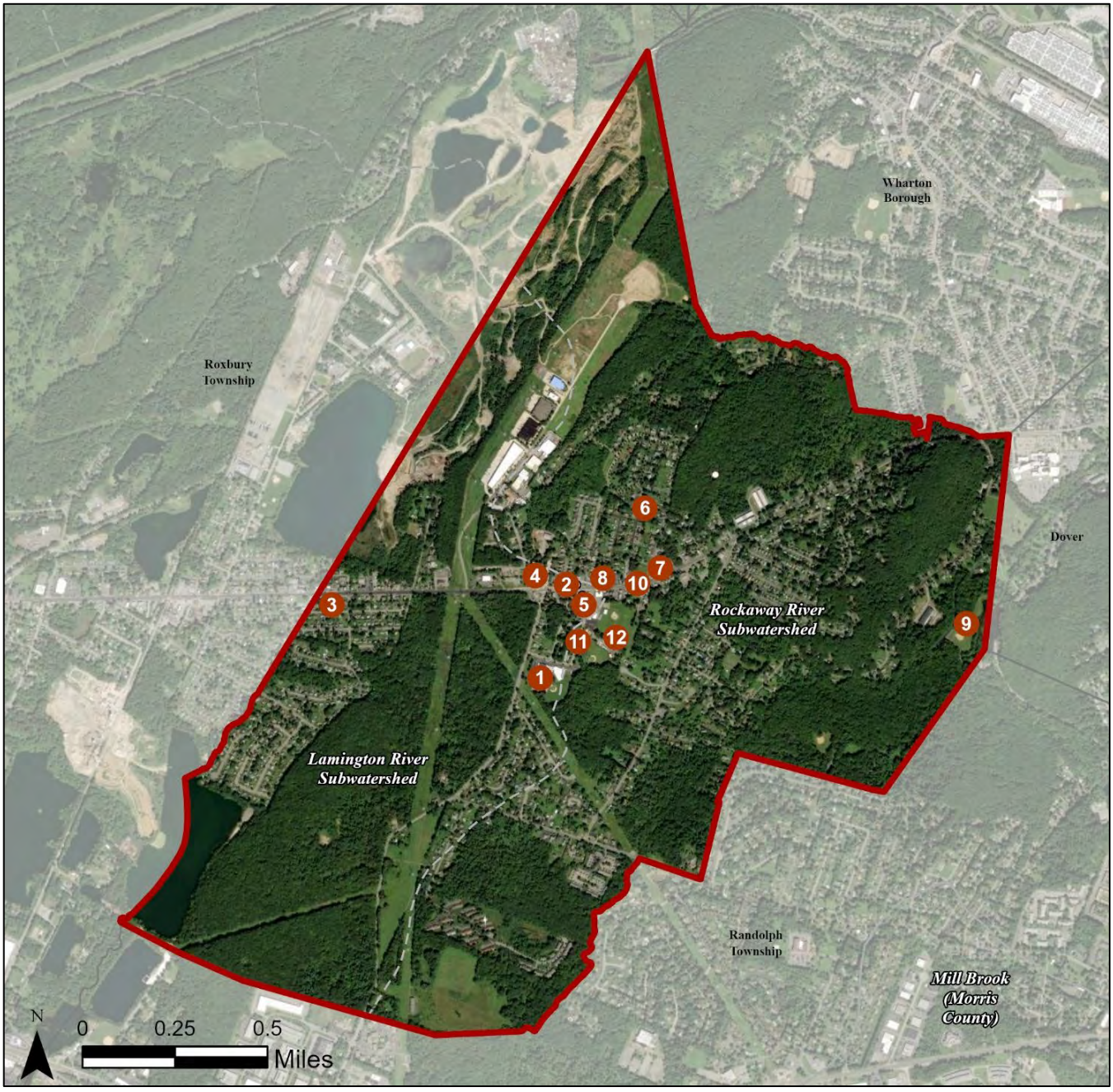


Figure 11: Sites with Green Infrastructure Opportunities in Mine Hill Township

CANFIELD AVENUE ELEMENTARY SCHOOL

RAP ID: 1

Subwatershed: Lamington River

Site Area: 633,014 sq. ft.

Address: 42 Canfield Avenue
Mine Hill, NJ 07803

Block and Lot: Block 1401, Lot 1

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

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
25	155,613	7.5	78.6	714.5	0.121	4.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.347	58	25,480	0.96	3,330	$16,650

GREEN INFRASTRUCTURE RECOMMENDATIONS

Canfield Avenue Elementary School

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

0 25' 50'

COCO'S CHATEAU

RAP ID: 2

Subwatershed: Lamington River

Site Area: 35,723 sq. ft.

Address: 247 US-46
Mine Hill, NJ 07803

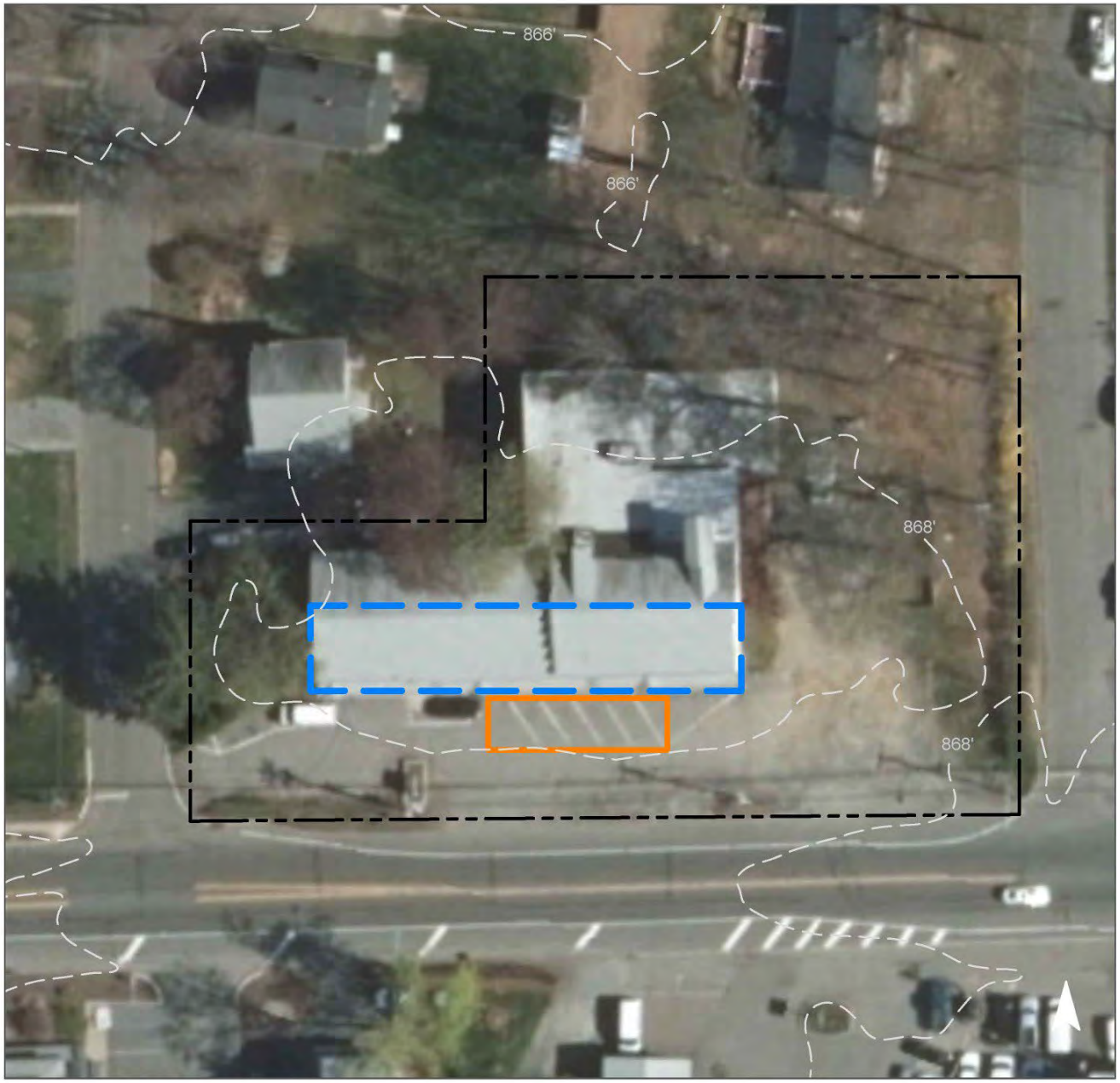
Block and Lot: Block 805, Lot 1

Pervious pavement can be installed on a parking strip south of the building to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
60	21,483	1.0	10.8	98.6	0.017	0.59

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.103	17	7,570	0.28	1,000	$25,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Coco's Chateau

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

0 25' 50'

COUNTRY LAKES ANIMAL CLINIC

RAP ID: 3

Subwatershed: Lamington River

Site Area: 33,664 sq. ft.

Address: 378 US-46
Mine Hill, NJ 07803

Block and Lot: Block 404, Lot 3-4,8

Parking spaces south of the building can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
82	27,664	1.3	14.0	127.0	0.022	0.76

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	0.169	28	12,420	0.47	1,770	$44,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Country Lakes Animal Clinic

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

0 25' 50'

HODES VETERINARY GROUP

RAP ID: 4

Subwatershed: Lamington River

Site Area: 23,156 sq. ft.

Address: 265 US-46
Mine Hill, NJ 07803

Block and Lot: Block 806, Lot 1

Pervious pavement can be installed on the north side of the building to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
60	13,897	0.7	7.0	63.8	0.011	0.38

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	0.100	17	7,300	0.27	1,620	$40,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hodes Veterinary Group

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

0 20' 40'

MINE HILL FIRE DEPARTMENT

RAP ID: 5

Subwatershed: Lamington River

Site Area: 410,173 sq. ft.

Address: 230 US-46
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 17

A rain garden can be installed on the west side of the building to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed on the south parking strip to store stormwater runoff and allow it to slowly infiltrate into the ground. A cistern can be installed on the east side of the building near a disconnected downspout so the water can be used for watering gardens, washing vehicles, or for other non-potable uses. 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"
13	52,163	2.5	26.3	239.5	0.041	1.43

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 system	0.094	16	6,880	0.26	900	$4,500
Pervious pavement	0.190	32	13,920	0.52	1,300	$32,500
Rainwater harvesting	0.030	5	900	0.03	900 (gal)	$1,800

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mine Hill Fire Department

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

0 25' 50'

AMERICAN LEGION

RAP ID: 6

Subwatershed: Rockaway River

Site Area: 41,017 sq. ft.

Address: 391 Maple Avenue
Mine Hill, NJ 07803

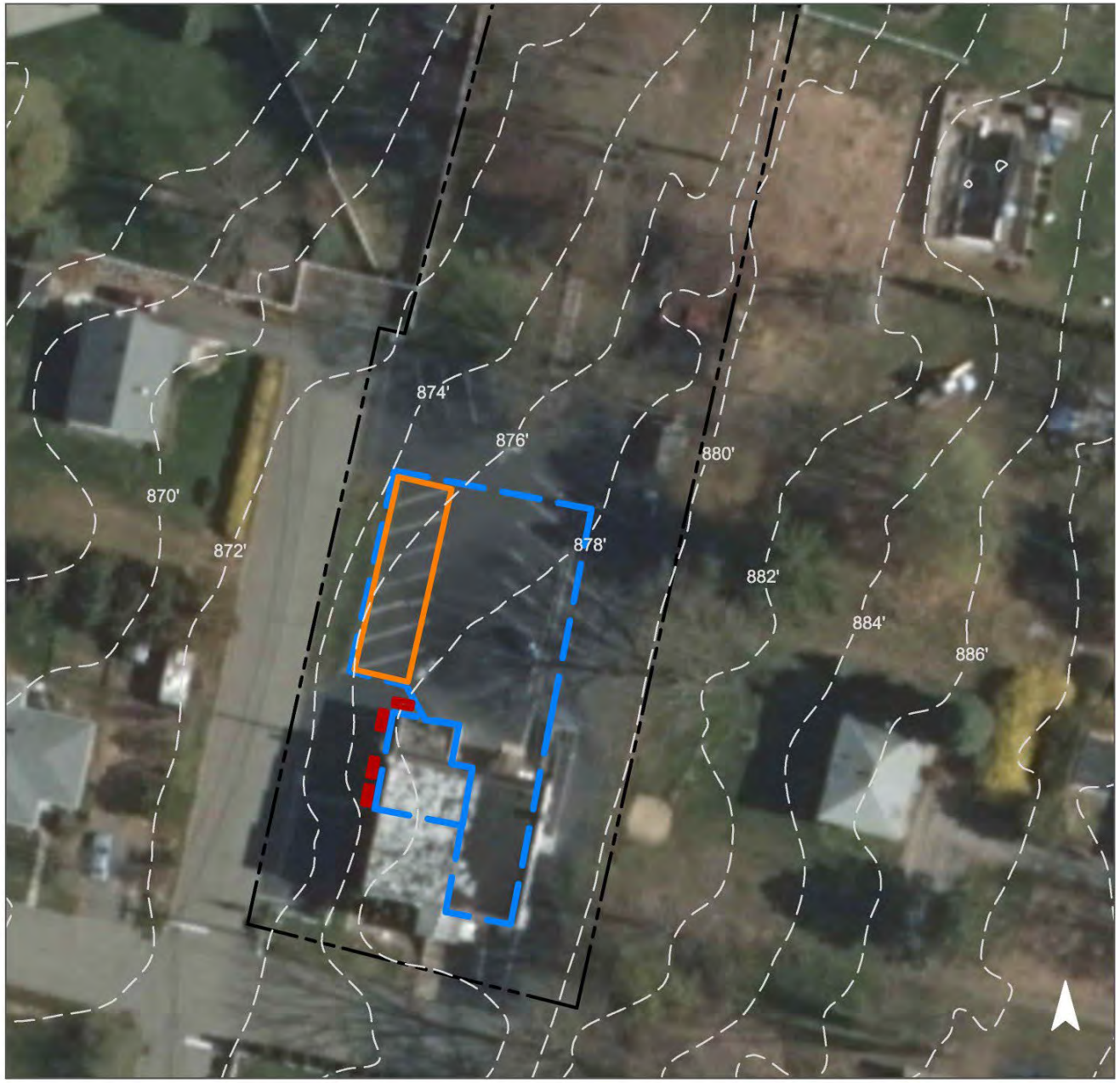
Block and Lot: Block 802, Lot 1

Half of the building's rooftop runoff and part of the parking lot runoff, can be treated with pervious pavement in the east strip of 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"
55	22,421	1.1	11.3	102.9	0.017	0.61

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
Planter boxes	0.022	4	n/a	n/a	4 (boxes)	$4,000
Pervious pavement	0.170	28	12,480	0.47	1,165	$29,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



American Legion

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

0 25' 50'

ATRIUM PROFESSIONAL CENTER

RAP ID: 7

Subwatershed: Rockaway River

HUC14 ID: 02030103030070

Site Area: 45,985 sq. ft.

Address: 195 US-46 #101
Mine Hill Township, NJ
07803

Block and Lot: Block 1302, Lot 2

Existing parking spaces to the north and west of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the parking lot. A trench drain may be required. 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 50"
85	38,950	1.9	19.7	178.8	0.030	1.21

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
Pervious pavement	17,575	0.520	76	36,660	1.38	4,030	$100,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Atrium Professional Center

- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 25' 50'

BENDER'S BAGELS ON THE HILL

RAP ID: 8

Subwatershed: Rockaway River

Site Area: 20,596 sq. ft.

Address: 231 US-46
Mine Hill, NJ 07803

Block and Lot: Block 804, Lot 23

Pervious pavement can be installed south of the building to store stormwater runoff and allow it to slowly 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"
64	13,238	0.6	6.7	60.8	0.010	0.36

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.062	10	4,550	0.17	630	$15,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bender's Bagels On The Hill

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

0 20' 40'

HEDDEN PARK

RAP ID: 9

Subwatershed: Rockaway River

Site Area: 4,453,779 sq. ft.

Address: 18 Ford Street
Mine Hill, NJ 07803

Block and Lot: Block 2101, Lot 1

A rain garden can be installed in the turfgrass area on the north side of the park to capture, treat, and infiltrate stormwater runoff from the parking/roadway area. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
2	88,704	4.3	44.8	407.3	0.069	2.43

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 system	0.057	10	4,200	0.16	550	$2,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hedden Park

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

0 25' 50'

MINE HILL PRESBYTERIAN CHURCH

RAP ID: 10

Subwatershed: Rockaway River

Site Area: 65,848 sq. ft.

Address: 213 Route 46
Mine Hill, NJ 07803

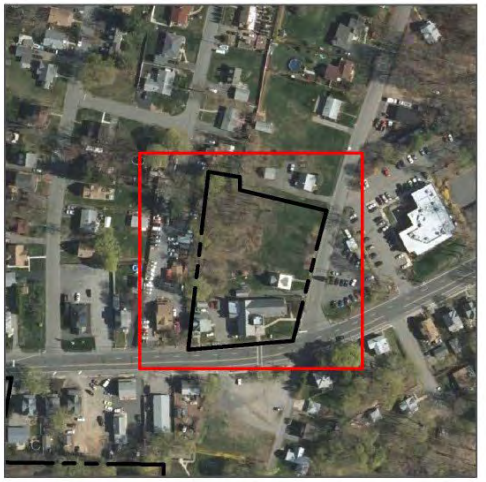
Block and Lot: Block 8002, Lot 17-18

Rain gardens can be installed on the north, southeast, and south sides of the building near disconnected downspouts to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
41	26,839	1.3	13.6	123.2	0.021	0.74

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	0.073	12	5,330	0.20	700	$3,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mine Hill Presbyterian Church

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

0 25' 50'

MINE HILL RECREATION CENTER

RAP ID: 11

Subwatershed: Rockaway River

Site Area: 285,271 sq. ft.

Address: 19 Baker Street
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 13-14

A rain garden can be installed south of the gazebo to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed on the basketball court to store stormwater runoff and allow it to slowly infiltrate into the ground. 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"
28	79,516	3.8	40.2	365.1	0.062	2.18

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	0.013	2	970	0.04	125	$625
Pervious pavement	0.358	60	26,280	0.99	13,750	$343,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mine Hill Recreation Center

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

0 25' 50'

MINE HILL TOWN HALL

RAP ID: 12

Subwatershed: Rockaway River

Site Area: 29,100 sq. ft.

Address: 10 Baker Street
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 16

A rain garden can be installed in the turfgrass area near the building to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
64	18,491	0.9	9.3	84.9	0.014	0.51

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.123	21	9,010	0.34	376	$1,880

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mine Hill Town Hall

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

0 25' 50'

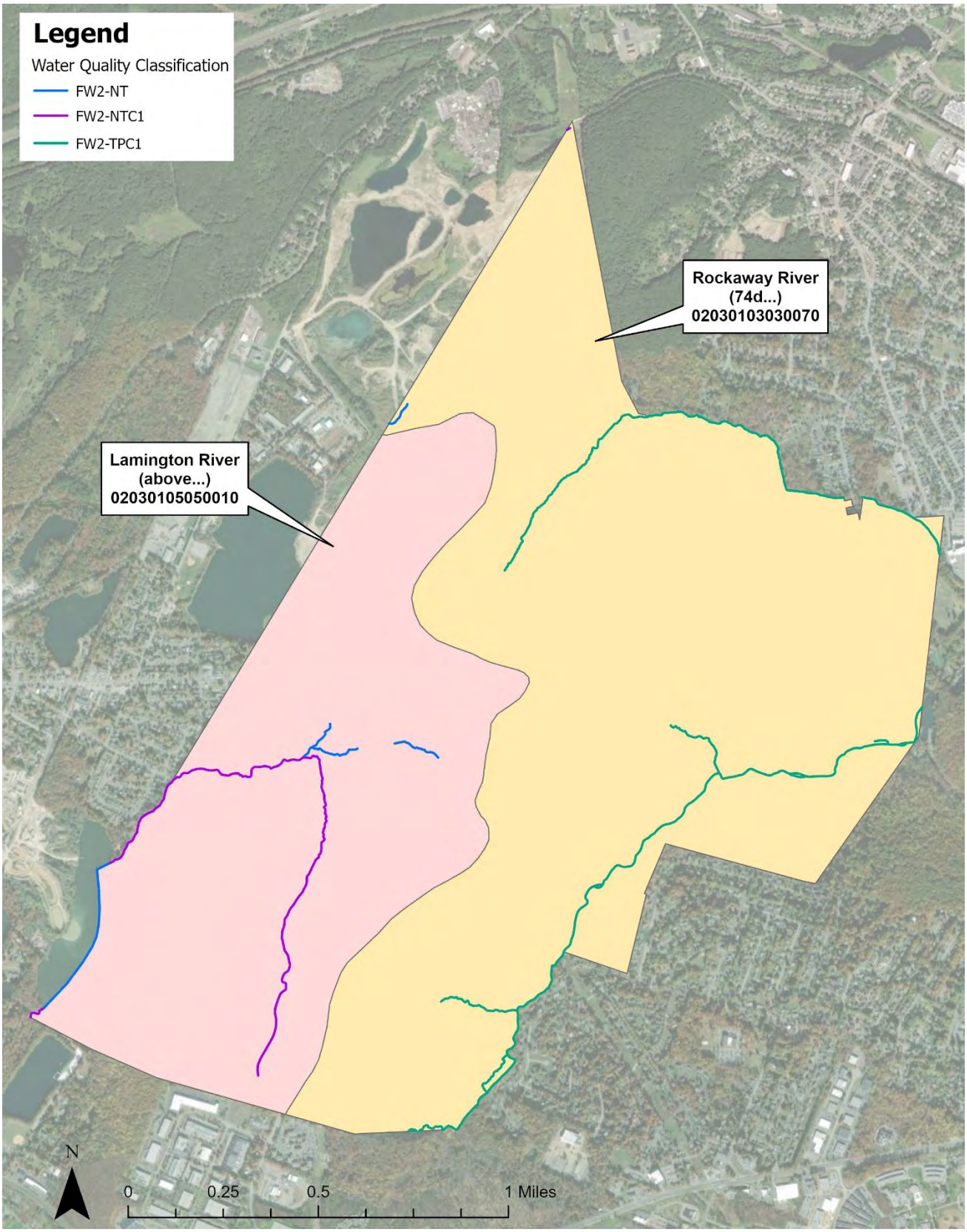


Figure 12. Water Quality Classification of Surface Waters in Mine Hill Township

Table 9. Water Quality Classification of Surface Waters in Mine Hill Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	0.9	13.1%
Freshwater 2, non-trout, Category One	FW2-NTC1	1.7	24.3%
Freshwater 2, trout production, Category One	FW2-TPC1	4.4	62.6%

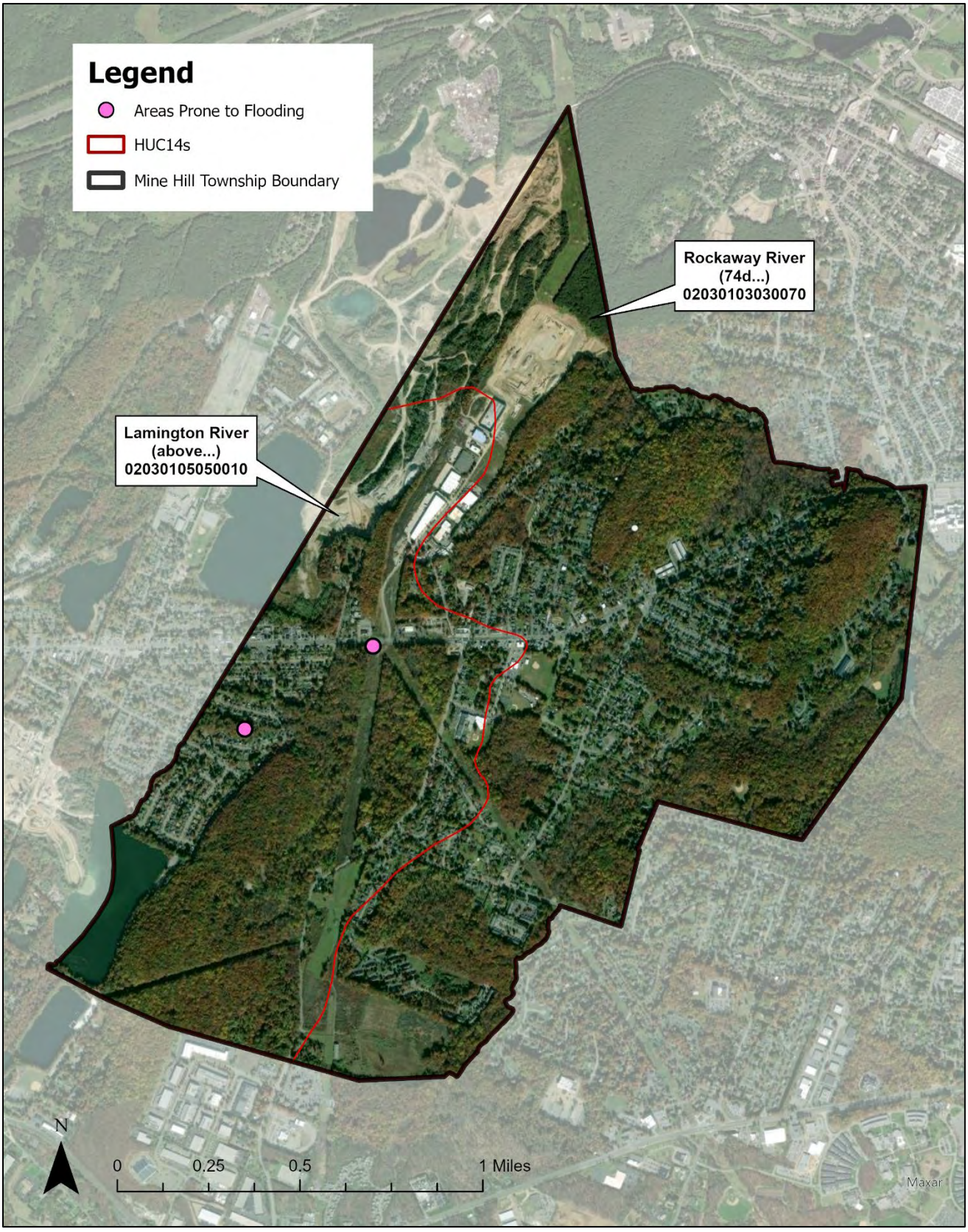


Figure 13. Areas Prone to Flooding in Mine Hill Township

Mount Arlington Borough

Introduction

Located in Morris County in New Jersey, Mount Arlington Borough covers about 2.9 square miles. With a population of 5,909 (2020 United States Census), Mount Arlington Borough consists of 50.0% of urban land uses by area. Of that urban land use, approximately 42.7% 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 49.7% of Mount Arlington Borough.

Mount Arlington Borough contains portions of four subwatersheds (Table 1). There are approximately 5.9 miles of rivers and streams within the municipality; these include tributaries to the Musconetcong River and several uncoded tributaries. Mount Arlington Borough is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 1 (Upper Delaware), 6 (Upper Passaic, Whippany, and Rockaway), and 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Mount Arlington Borough

Subwatershed	HUC14
Rockaway River (Stephens Brook to Longwood Lake)	02030103030040
Drakes Brook (above Eyland Avenue)	02030105010010
Lamington River (above Route 10)	02030105050010
Lake Hopatcong	02040105150020

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Mount Arlington 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 Mount Arlington 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 Mount Arlington Borough in relation to the study area. Figure 2 shows the portions of the four HUC14s in Mount Arlington Borough and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Mount Arlington Borough. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Mount Arlington Borough and is presented in Table 2. Figure 4 shows the impervious cover in Mount Arlington Borough based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Mount Arlington 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". Only detention basins and naturalized detention basins were identified in Mount Arlington Borough within the study area.

Q-Farms are the parcels that have been qualified for farmland tax assessment. There are no Q-Farms located within Mount Arlington Borough.

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. Two HUC14s are included in the study area (02030105010010, 02030105050010). Within these two HUC14s, there are 35.3 acres of buildings and 82.8 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 Mount Arlington Borough, approximately 2.2 acres of rooftop runoff would be managed with 0.44 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Mount Arlington Borough, approximately 8.3 acres of roadway would be managed, or 2.3 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 Mount Arlington Borough are shown in Figure 6 and presented in Table 5. 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 7). Available information for each parcel in the study area is presented in Table 6. Class 15E parcels were excluded from the assessment. One of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. This property is identified in Table 6 and represents a watershed improvement project that can be included in the municipality's Watershed Improvement Plan. Figure 8 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 two classifications that apply to the streams in Mount Arlington Borough. Figure 9 depicts the water quality classifications of surface waters throughout Mount Arlington Borough and Table 7 summarizes the total miles and percentage of each surface water quality classification in the municipality.

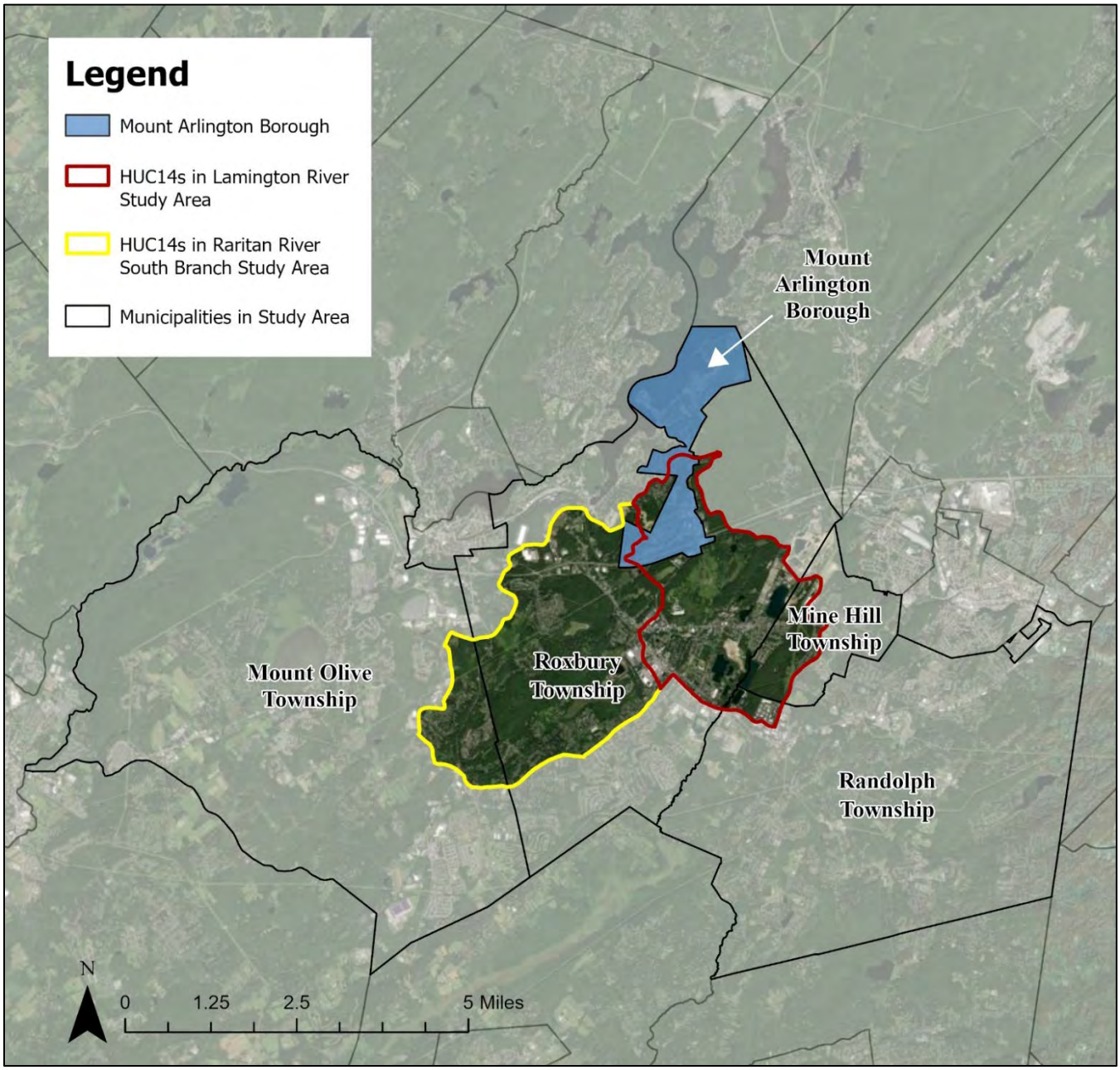


Figure 1: Municipalities in the Study Area

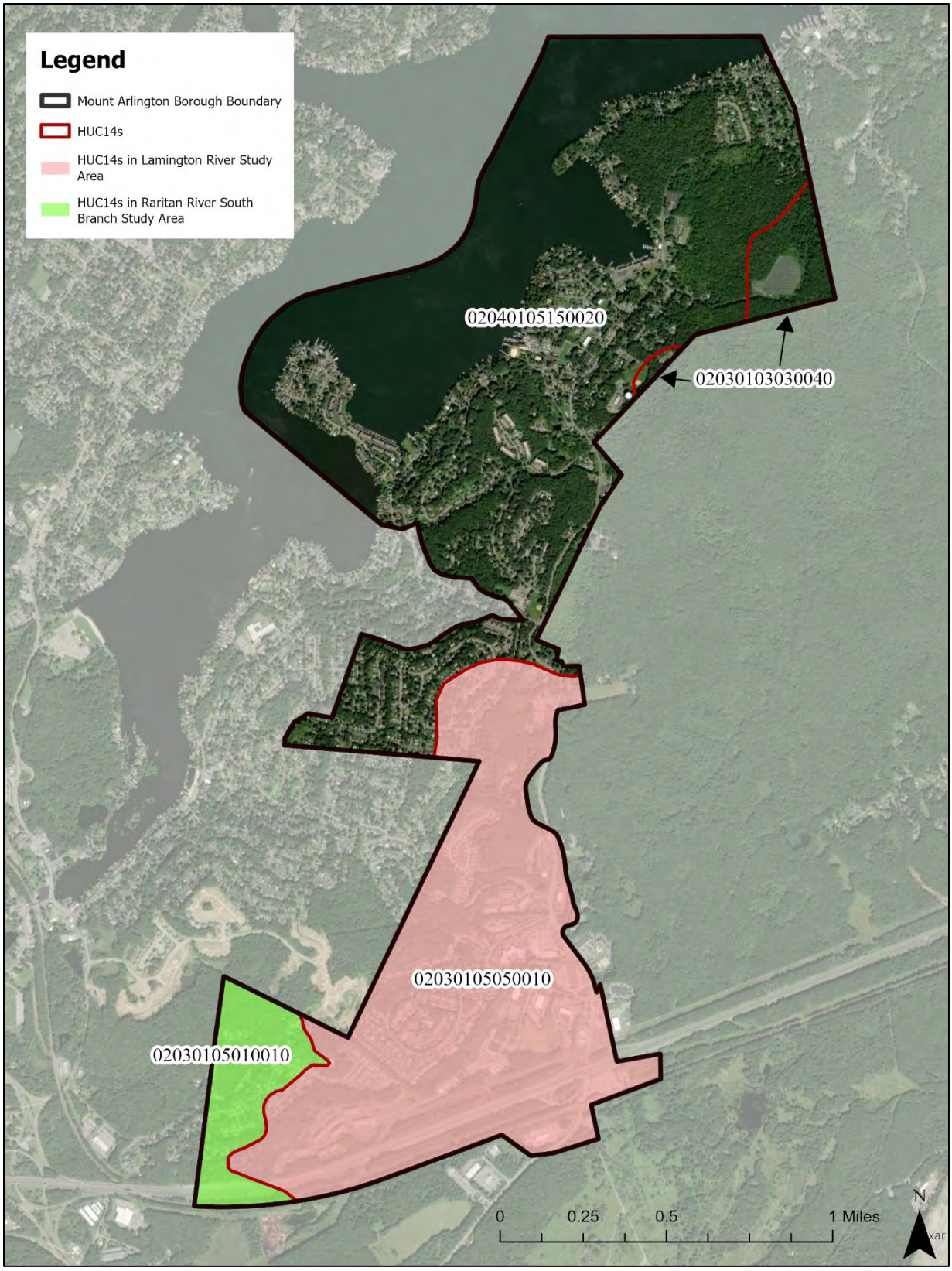


Figure 2: Portions of four HUC14s are in Mount Arlington Borough

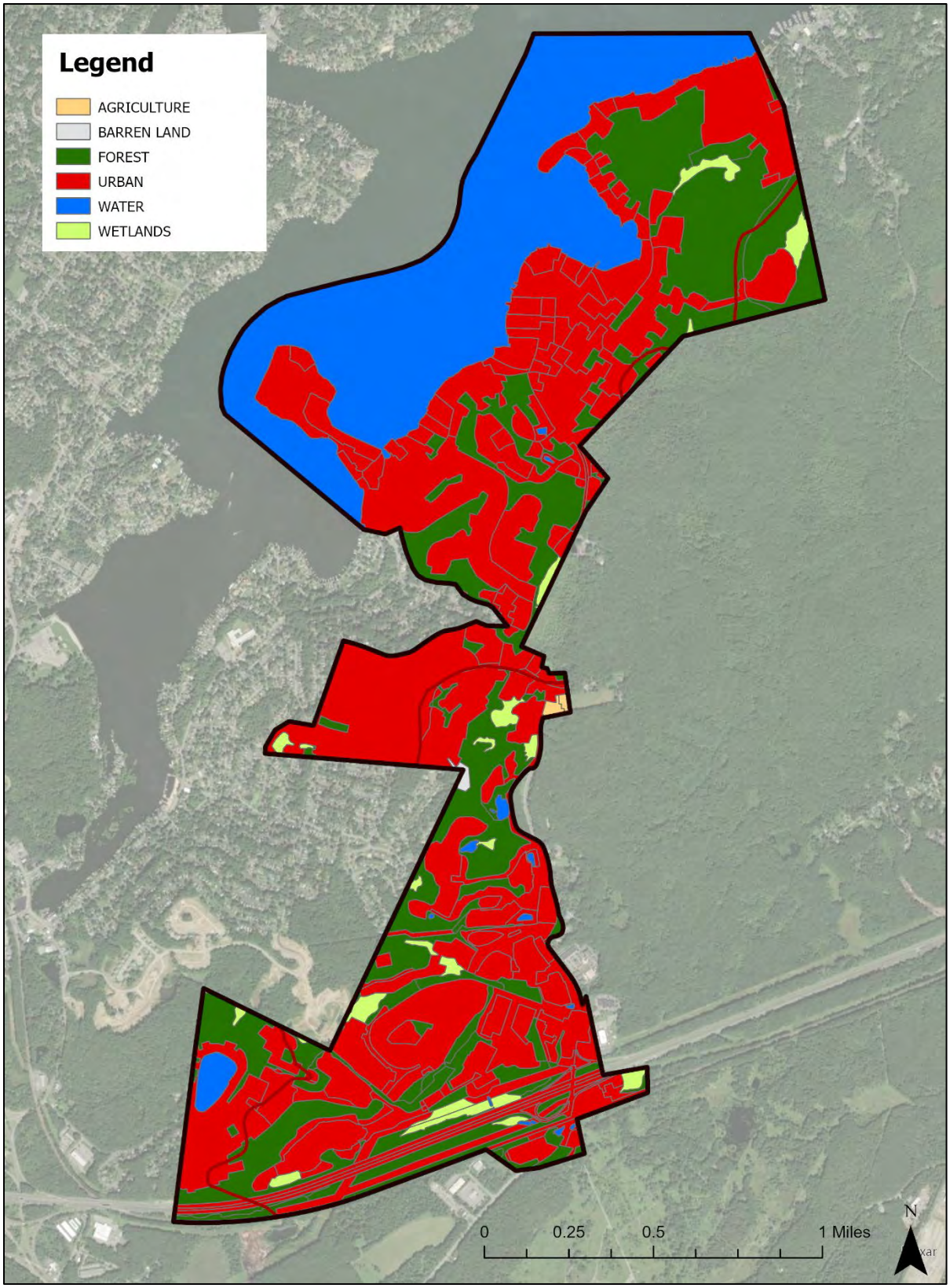


Figure 3: Land Use in Mount Arlington Borough

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Mount Arlington Borough

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103030040				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	31.5	3.1	94.4	1,258.2
Urban	13.8	19.4	207.7	1,938.8
Water	0.0	0.0	0.0	0.0
Wetlands	4.4	0.4	13.2	175.6
TOTAL =	**49.7**	**23.0**	**315.3**	**3,372.7**
02030105010010				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.2	0.1	0.8	9.3
Forest	30.9	3.1	92.7	1,236.5
Urban	48.2	67.5	722.7	6,745.1
Water	8.9	0.9	26.8	357.0
Wetlands	0.8	0.1	2.4	32.2
TOTAL =	**89.0**	**71.6**	**845.4**	**8,380.1**
02030105050010				
Agriculture	2.4	3.1	23.9	716.1
Barren Land	1.7	0.9	8.5	102.6
Forest	177.6	17.8	532.9	7,105.1
Urban	361.3	505.9	5,419.9	50,585.9
Water	4.2	0.4	12.5	166.6
Wetlands	25.5	2.5	76.5	1,019.7
TOTAL =	**572.7**	**530.5**	**6,074.2**	**59,696.0**
02040105150020				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	201.5	20.2	604.6	8,061.8
Urban	474.6	664.5	7,119.2	66,446.2
Water	398.2	39.8	1,194.7	15,929.7
Wetlands	8.9	0.9	26.7	355.9
TOTAL =	**1,083.3**	**725.3**	**8,945.3**	**90,793.7**
All HUCs				
Agriculture	2.4	3.1	23.9	716.1
Barren Land	1.9	0.9	9.3	111.9
Forest	441.5	44.2	1,324.6	17,661.6
Urban	898.0	1,257.2	13,469.6	125,716.1
Water	411.3	41.1	1,234.0	16,453.4
Wetlands	39.6	4.0	118.8	1,583.4

TOTAL =	**1,794.7**	**1,350.4**	**16,180.1**	**162,242.4**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Mount Arlington 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 Mount Arlington Borough. Based upon the NJDEP impervious surface data, Mount Arlington Borough has impervious cover totaling 23.8 %. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Mount Arlington 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, Mount Arlington Borough's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contribute to the degradation of the state's surface water quality standards.

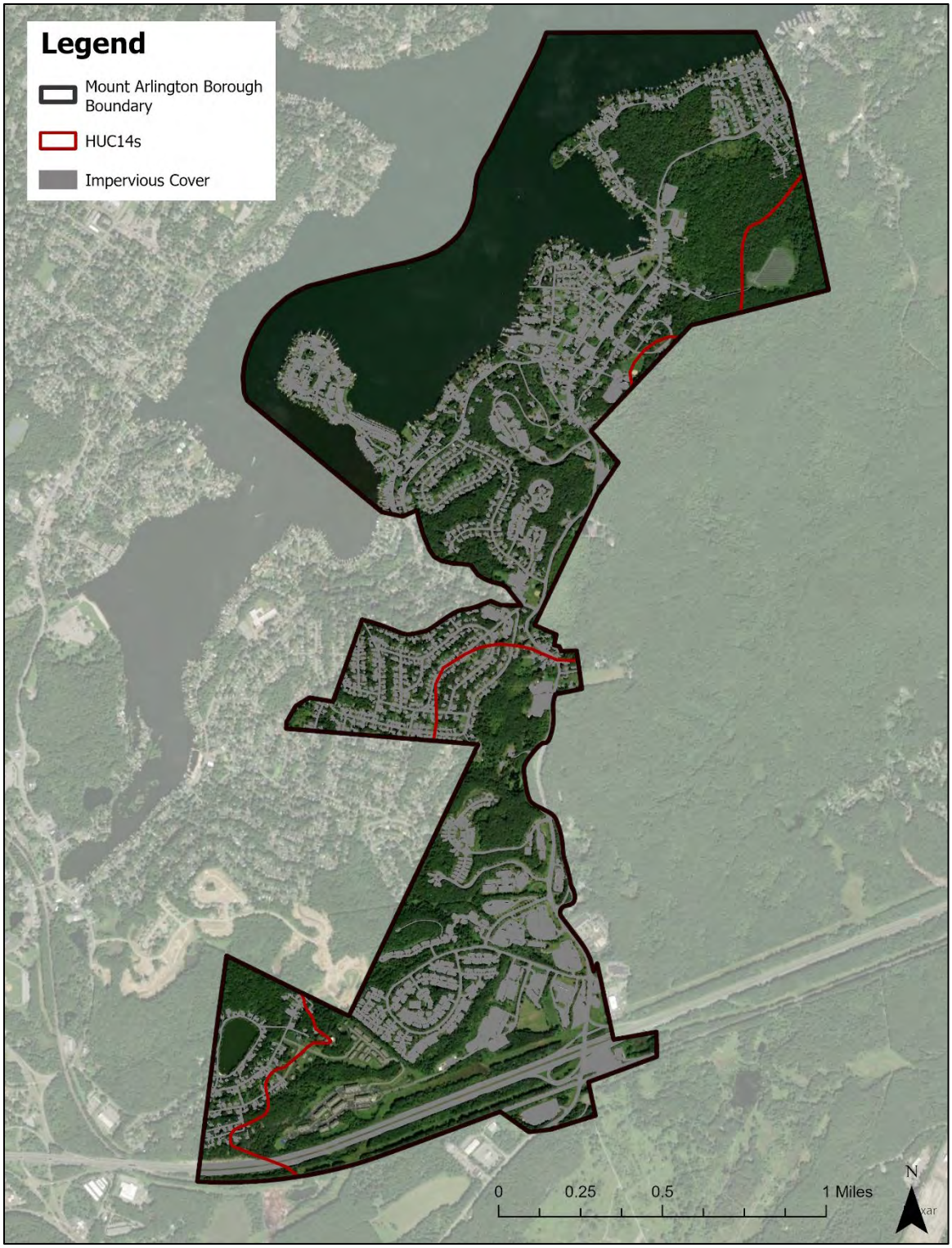


Figure 4: Impervious Cover in Mount Arlington Borough

Table 3: Impervious Cover Analysis by HUC14 for Mount Arlington Borough

Class	Area (acres)	HUC Impervious Cover (%)
02030103030040		
Building	0.07	
Other	0.29	
Road	0.46	
TOTAL =	**0.8**	**1.7%**
02030105010010		
Building	3.89	
Other	7.61	
Road	11.25	
TOTAL =	**22.8**	**25.6%**
02030105050010		
Building	31.37	
Other	67.07	
Road	71.53	
TOTAL =	**170.0**	**29.7%**
02040105150020		
Building	52.29	
Other	104.34	
Road	76.93	
TOTAL =	**233.6**	**21.6%**
All HUCs		
Building	87.62	
Other	179.31	
Road	160.17	
TOTAL =	**427.1**	**23.8%**

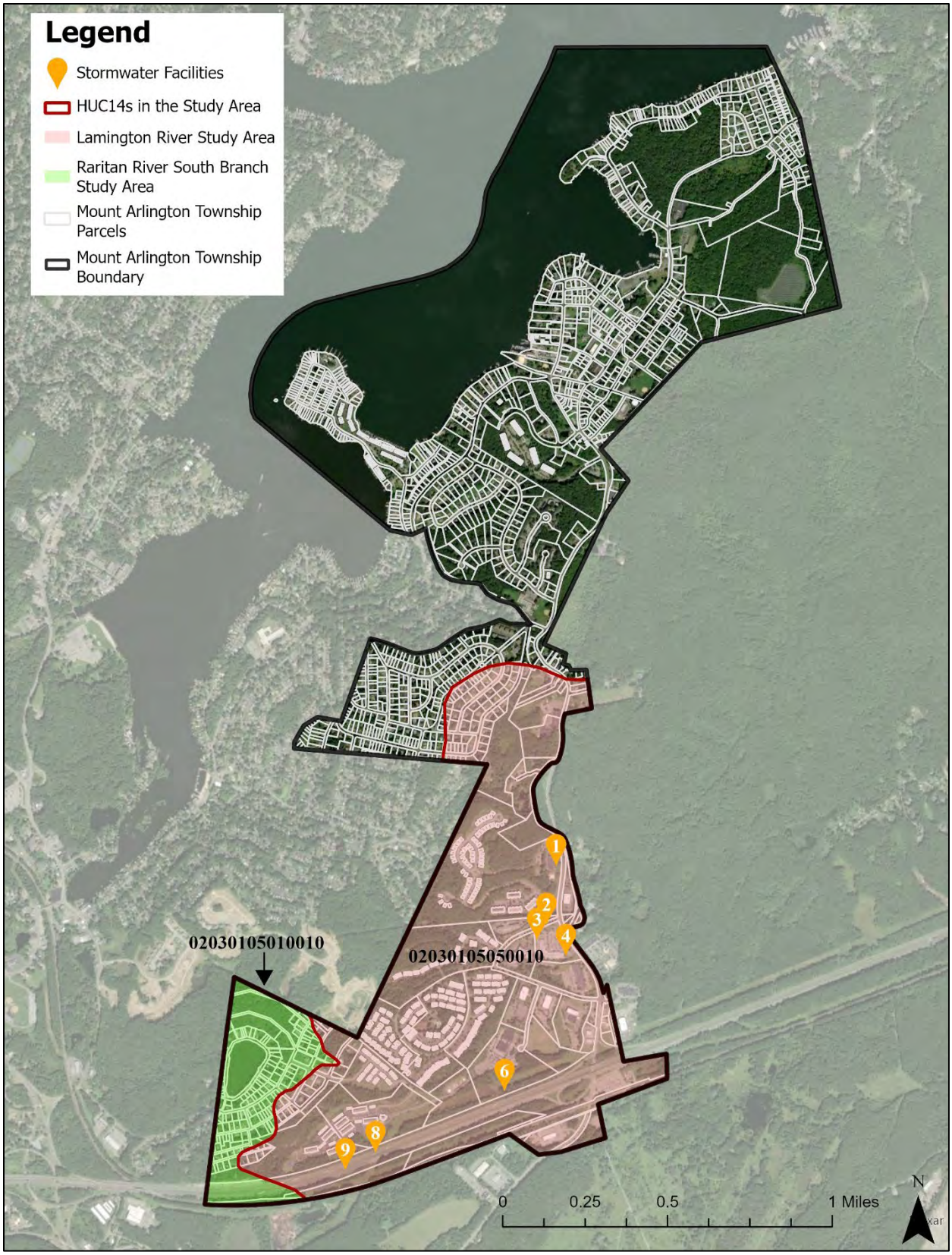


Figure 5: Stormwater Facilities in the Study Area of Mount Arlington Borough

Table 4: Location of Stormwater Facilities in the Study Area of Mount Arlington Borough

Lamington River Study Area		
ID	**Address**	**Type**
1	125 Howard Blvd	N
2	125 Howard Blvd	N
3	2 Hillside Dr	D
4	181 Howard Blvd	N
6	400 Valley Rd	N
8	500 Valley Rd	N
9	Woodmont Court	D

"D" = Detention, "N" = Naturalized

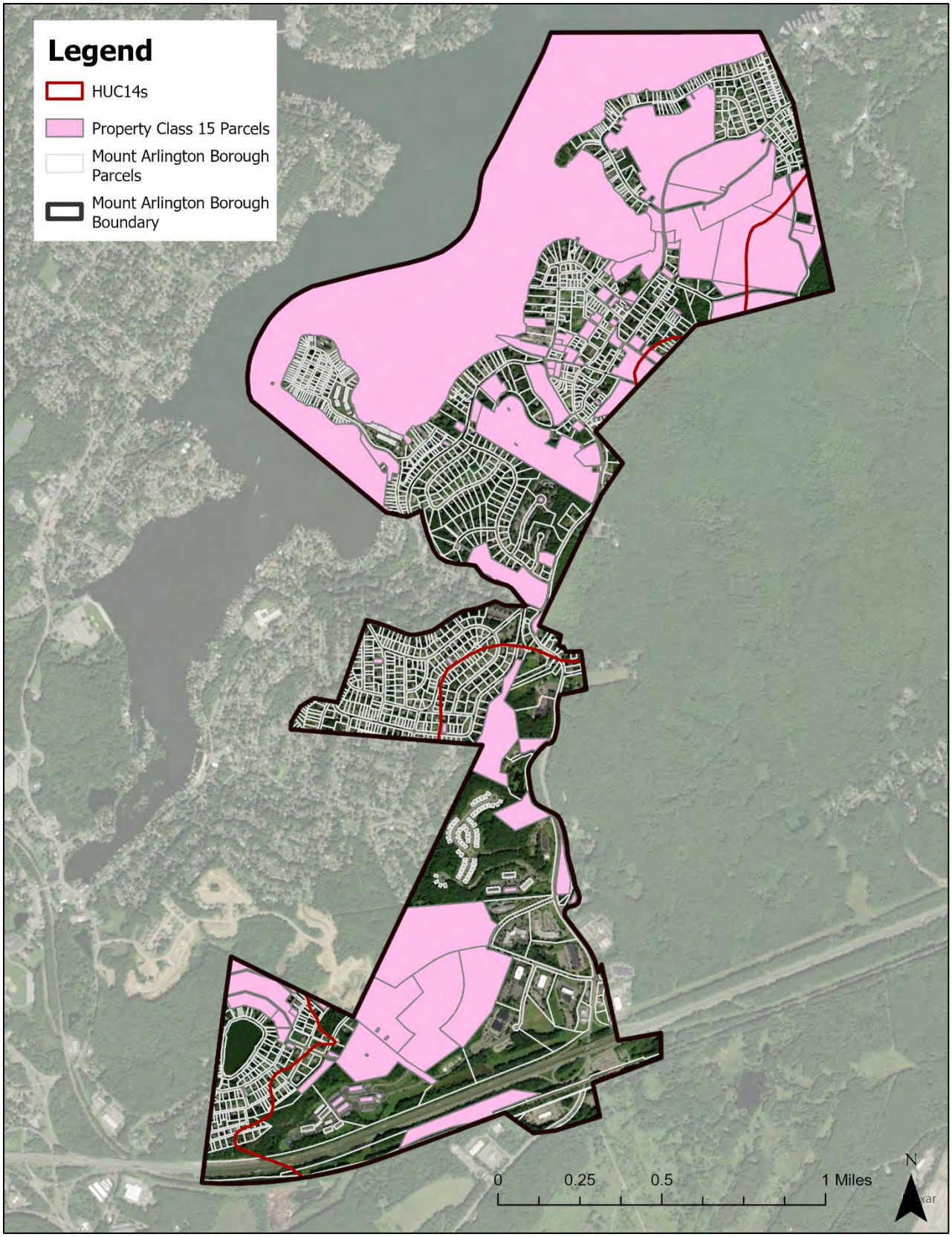


Figure 6: Property Class 15 Parcels in Mount Arlington Borough

Table 5: Property Class 15 Parcels in Mount Arlington Borough

Block	Lot	Prop Class	Location	Facility Type
8	5.01	15A	446 Howard Blvd	School
121	59	15A	44 Kadel Dr	Schools
2	42	15C	Mcgregor Ave	Parkland
2	44	15C	124 Mcgregor Ave	Tax Lien Foreclosure
5	15	15C	Southard Rd	Vacant Land
5	16	15C	Southard Rd	Vacant Land
7	1	15C	Lake Hopatcong	Lake Hopatcong
8	2	15C	Zuck Rd	Vacant Land
8	3	15C	Berkshire Ave	Garage
8	4	15C	Zuck Rd	Vacant Land
8	5	15C	Littell Way	Parkland
8	6	15C	Littell Way	Vacant Land
8	10.01	15C	444 Howard Blvd	Recreation Center
8	10.02	15C	442 Howard Blvd	Recreation Center
8	17.01	15C	Berkshire Ave	Vacant Land
9	2	15C	Howard Blvd	Parkland
9	3	15C	Littell Way	Tax Lien Foreclosure
10	67	15C	447-451 Howard Blvd	Maintenance Bldg.
10	68	15C	Howard Blvd	Docks&Beach
10	70	15C	Hopatcong Ave	Dock Bulkhead
10	77	15C	Edgemere Ave	Parking Area
10	78	15C	419 Howard Blvd	Muncipal Bldg
12	1	15C	Berkshire Ave	Tax Lien Foreclosure
18	12	15C	Windemere Ave	Beach
20	5	15C	Howard Blvd	Parking Area
22	1	15C	Mountainview Ave	Vacant Land
22	16	15C	Summit Ave	Tax Lien Foreclosure
22	20	15C	Summit Ave	Vacant Land
25	4	15C	407 Howard Blvd	Fire House
30	16	15C	Mountainview Ave	Administrative Bldg.
31	2	15C	Altenbrand&Summit Av	Vacant Land
33	1	15C	18 No Glen Ave	Community Center
33	2	15C	520 Altenbrand Ave	Vacant
33	4	15C	526 Altenbrand Ave	Administrative Bldg
35	9	15C	Summit&Altenbrand Av	Vacant Land
35	18	15C	Summit Ave	Vacant Land
36	1	15C	1 Altenbrand Ave	Maintenance Bldg
39	8.02	15C	475 Windemere Ave	Tower
39	46	15C	Hillard Rd	Tax Lien Foreclosure
39	69	15C	Windemere Ave	Vacant Land
43	1	15C	302 Howard Blvd	Tax Lien Foreclosure
44	1	15C	Memorial Park	Playground
47	1	15C	333 Howard Blvd	Tax Lien Foreclosure
61	17.01	15C	621 Sandra Dr	Vacant Land
61	18	15C	195 Howard Blvd	Right of Way
61	21	15C	165 Howard Blvd	Berkshire Valley

61.03	33.02	15C	Howard Blvd	Right of Way
63	2	15C	Howard Blvd	Vacant Land
67	1	15C	Howard Blvd	Vacant Land
69	4	15C	200 Stierli Ct	Vacant Land
72.01	3	15C	15 Dawes Way	Vacant Land
80	1	15C	Orben Dr	Tax Lien Foreclosure
83	9	15C	156 Orben Dr	Park
85.01	1	15C	Coolidge Trl	Tax Lien Foreclosure
85.01	2	15C	Coolidge Trl	Park
86	5	15C	Coolidge Trl	Park
87	6	15C	171 Orben Dr	Fire House
87	7	15C	Coolidge Trl	Park
88	1	15C	Milford&Rogerene Way	Park
89	16	15C	Rogerene Way	Park
89	22	15C	Milford Trl	Park
90	13	15C	Orben Dr	Park
121	47.01	15C	Robert Ter	Park
124	1	15C	10 Schmitz Ter	Vacant Land
11802	1	15C	501 Edith Rd	Vacant Land
13201	1	15C	250 Howard Blvd	Vacant Land
9	2.01	15D	450 Howard Blvd	Church
17	18	15D	Prospect St	Schools
19	5	15D	Arlington Ave	Meeting Hall
20	1	15D	Arlington Ave	Church
26	3	15D	Windemere Ave	Church
26	4	15D	10 Windemere Ave	Parish House
26	5	15D	16 Windemere Ave	Church Parking
26	16	15D	1 Park Ave Cor Altenbrand	Rectory
8	15	15F	434 Howard Blvd	Disabled Veteran
18	7	15F	19 Windemere Ave	Common Element
24	1	15F	3 Prospect St	Common Element
29	2.01	15F	535 Altenbrand Ave	Rabbi Residence
39	12	15F	42 Lakeshore Dr	Disabled Veteran
39	12	15F	4 Catamaran Ct	Disabled Veteran
41	6	15F	355 Howard Blvd	Common Element
45	1	15F	28 Sunset Ter	Common Element
49	1	15F	Ridgeview Ln Clubhouse	Common Element
49.01	21	15F	21 Ridgeview Ln	Disabled Veteran
49.03	62	15F	62 Ridgeview Ln	Disabled Veteran
51	9	15F	71 N Bertrand Rd	Disabled Vet
57	1	15F	41 Bertrand Isl Rd	Common Element
58.02	41	15F	41 Zachary Way	Disabled Veteran
58.02	47	15F	47 Zachary Way	Disabled Veteran
61	23.09	15F	Seasons Dr	Common Element
61	23.1	15F	Seasons Dr	Common Element
61	23.11	15F	Seasons Dr	Common Element
61	23.11	15F	14 Mulberry Ln	Disabled Veteran
61	23.11	15F	22 Mulberry Ln	Disabled Veteran
61	23.12	15F	Seasons Dr	Common Element

61	42.01	15F	500 Valley Rd	Residence
61	42.03	15F	Woodland Way	Common Element
61	42.03	15F	10 Shadetree Ln	Disabled Veteran
61.01	1	15F	22 Howard Blvd	Common Element
97	30	15F	567 Eric Ln	Disabled Veteran
106	9	15F	677 Henmar Dr	Disabled Veteran
113	28	15F	626 Bensel Dr	Disabled Veteran
123	1.02	15F	Henry Ct	Common Element
123	66	15F	482 Windemere Ave	Disabled Veteran

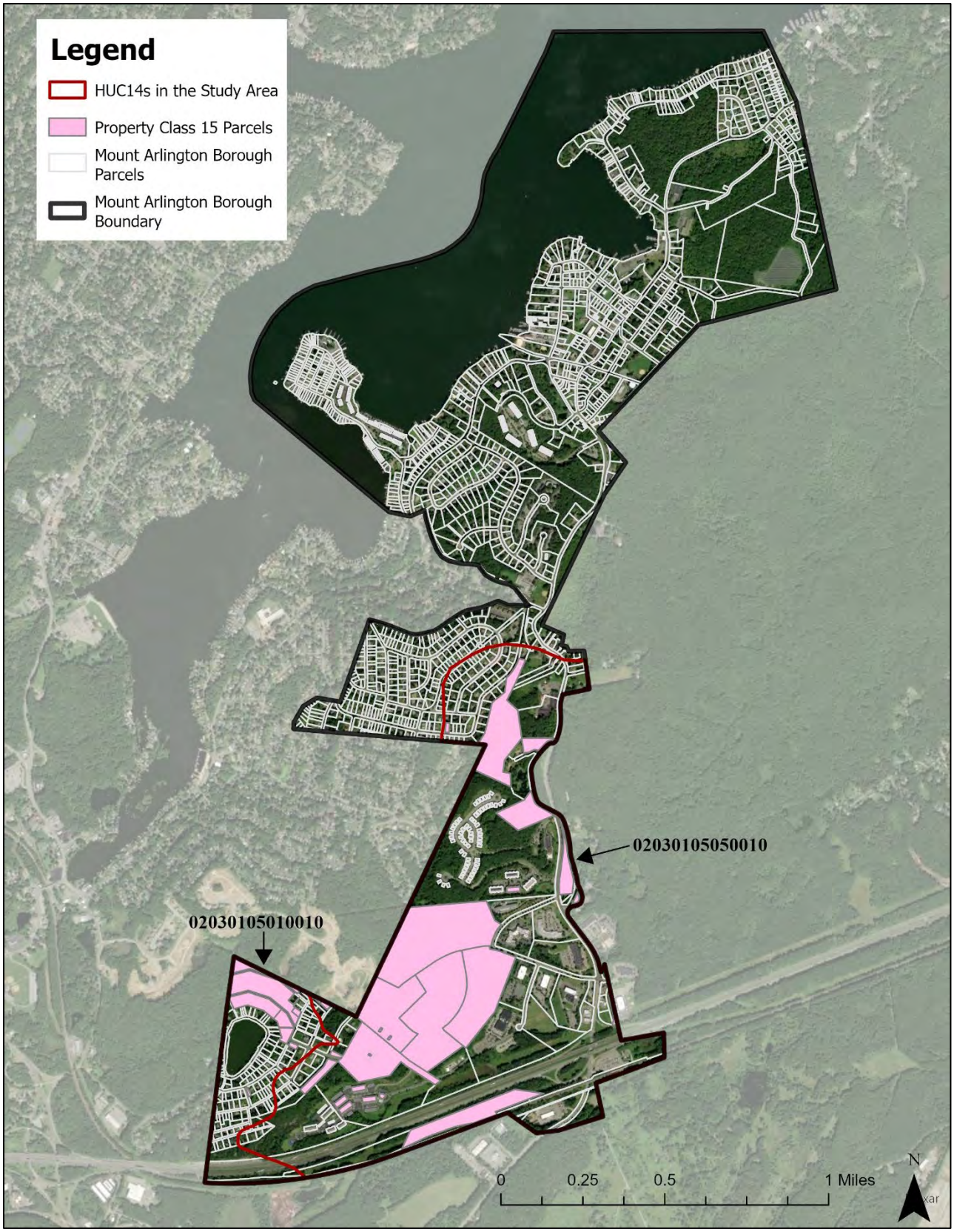


Figure 7: Property Class 15 parcels in the Study Area of Mount Arlington Borough

Table 6: Property Class 15 Parcels in the Study Area of Mount Arlington Borough

Block	Lot	Prop Class	Location	Facility Type
61	17.01	15C	621 Sandra Dr	Vacant Land
61	18	15C	195 Howard Blvd	Right of Way
61	21	15C	165 Howard Blvd	Berkshire Valley
61.03	33.02	15C	Howard Blvd	Right of Way
67	1	15C	Howard Blvd	Vacant Land
69	4	15C	200 Stierli Ct	Vacant Land
72.01	3	15C	15 Dawes Way	Vacant Land
80	1	15C	Orben Dr	Tax Lien Foreclosure
83	9	15C	156 Orben Dr	Park
85.01	1	15C	Coolidge Trl	Tax Lien Foreclosure
85.01	2	15C	Coolidge Trl	Park
86	5	15C	Coolidge Trl	Park
***87**	**6**	**15C**	**171 Orben Dr**	**Fire House**
87	7	15C	Coolidge Trl	Park
88	1	15C	Milford&Rogerene Way	Park
89	16	15C	Rogerene Way	Park
89	22	15C	Milford Trl	Park
90	13	15C	Orben Dr	Park
13201	1	15C	250 Howard Blvd	Vacant Land
58.02	41	15F	41 Zachary Way	Disabled Veteran
58.02	47	15F	47 Zachary Way	Disabled Veteran
61	23.09	15F	Seasons Dr	Common Element
61	23.1	15F	Seasons Dr	Common Element
61	23.11	15F	Seasons Dr	Common Element
61	23.11	15F	14 Mulberry Ln	Disabled Veteran
61	23.11	15F	22 Mulberry Ln	Disabled Veteran
61	23.12	15F	Seasons Dr	Common Element
61	42.01	15F	500 Valley Rd	Residence
61	42.03	15F	Woodland Way	Common Element
61	42.03	15F	10 Shadetree Ln	Disabled Veteran
61	42.03	15F	10 Shadetree Ln	Disabled Veteran
61.01	1	15F	22 Howard Blvd	Common Element
106	9	15F	677 Henmar Dr	Disabled Veteran
113[1]	28	15F	626 Bensel Dr	Disabled Veteran

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

[1] Only a portion of the parcel is in the study area

Figure 8: Sites with Green Infrastructure Opportunities in Mount Arlington Borough

LAKE ROGERENE FIRE DEPARTMENT

RAP ID: 1

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 11,949 sq. ft.

Address: 173 Orben Drive
Landing, NJ 07850

Block and Lot: Block 87, Lot 6

Cisterns can be installed to the northeast and southeast of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing vehicles.

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 50"
83	9,910	0.5	5.0	45.5	0.008	0.31

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
Rainwater harvesting	1,295	0.038	6	1,100	0.04	1,100 (gal)	$3,300

GREEN INFRASTRUCTURE RECOMMENDATIONS

Lake Rogerene Fire Department

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

0 15' 30'

EDITH M. DECKER ELEMENTARY SCHOOL

RAP ID: 2

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 691,993 sq. ft.

Address: 446 Howard Boulevard
Mount Arlington, NJ 07856

Block and Lot: Block 8, Lot 5.01

Rain gardens can be installed to the south and southwest of the building and to the west of the parking lot to capture, treat, and infiltrate stormwater runoff from the rooftop and asphalt. The rain garden to the southwest of the school will require downspout redirection and disconnection. The rain garden to the south of the school will require downspout redirection underneath the sidewalk. The existing parking spaces to the northwest of the lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. 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 50"
13	92,648	4.5	46.8	425.4	0.072	2.89

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	7,220	0.214	32	15,060	0.57	1,800	$18,000
Pervious pavement	7,800	0.231	34	16,270	0.61	2,175	$54,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

Edith M. Decker Elementary School

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

0 30' 60'

MOUNT ARLINGTON BOROUGH HALL

RAP ID: 3

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 37,733 sq. ft.

Address: 419 Howard Boulevard
Mount Arlington, NJ 07856

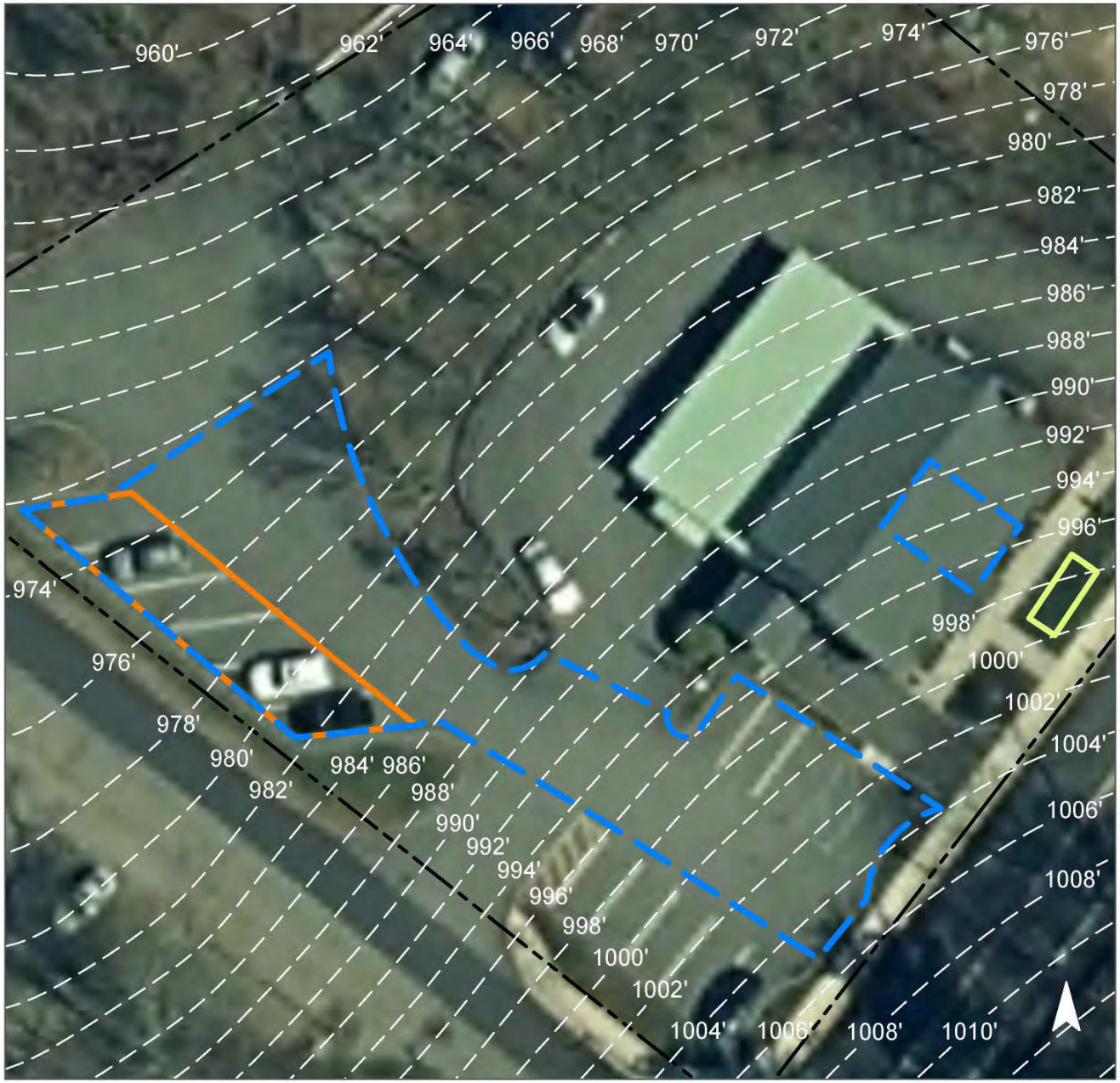
Block and Lot: Block 10, Lots 77 & 78

A rain garden can be installed to the east of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require a downspout redirection beneath the sidewalk. The existing parking spaces to the west of the building can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. A trench drain will be required. 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 50"
75	28,423	1.4	14.4	130.5	0.022	0.89

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	350	0.010	2	730	0.03	90	$900
Pervious pavement	5,880	0.174	25	12,270	0.46	1,180	$29,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Arlington Borough Hall

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

0 15' 30'

MOUNT ARLINGTON POLICE DEPARTMENT & CIVIC CENTER

RAP ID: 4

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 51,397 sq. ft.

Address: 520 Altenbrand Avenue &
18 North Glen Avenue
Mount Arlington, NJ 07856

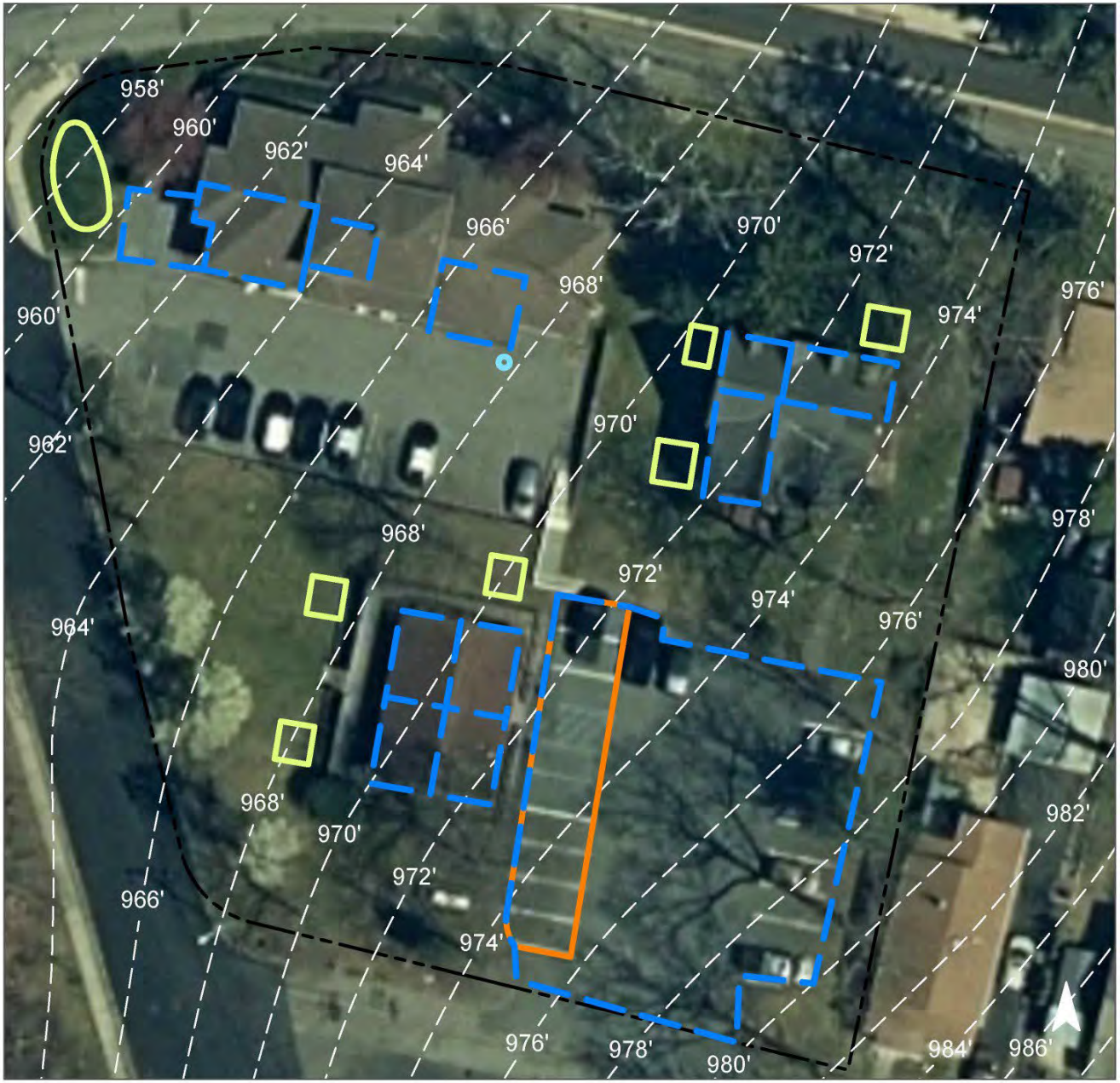
Block and Lot: Block 33, Lots 1, 2, 4

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the building rooftops. Many of these will require downspout redirections and disconnections . The rain garden to the west of the police department will also manage stormwater runoff from the parking lot. This rain garden will require a downspout disconnection, a trench drain, and a curb cut. The existing parking spaces to the east of the civic center can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt lot. The southeastern downspout can also be disconnected to the pervious pavement to manage rooftop runoff. A cistern can be installed to the south of the police department building to divert and detain stormwater runoff from the rooftop for later non -potable reuse such as watering the landscaping ve getation or washing vehicles. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suita bility 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 50"
63	32,471	1.6	16.4	149.1	0.025	1.01

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	3,470	0.103	15	7,240	0.27	860	$8,600
Pervious pavement	8,425	0.249	36	17,570	0.66	1,725	$43,125
Rainwater harvesting	420	0.012	2	400	0.01	400 (gal)	$1,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Arlington Police Department & Civic Center

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

0 20' 40'

MOUNT ARLINGTON PUBLIC LIBRARY

RAP ID: 5

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 110,097 sq. ft.

Address: 333 Howard Boulevard
Mount Arlington, NJ 07856

Block and Lot: Block 47, Lot 1

Rain gardens can be installed to the northeast and southeast corners of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require downspout disconnections. The northern rain garden will require downspout redirection beneath the sidewalk. The existing parking spaces to the east of the building can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. A cistern can be installed to the southwest of the building to divert and detain stormwater runoff from the rooftop for later non-potable reuse such as watering the nearby garden beds. 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 50"
31	33,904	1.6	17.1	155.7	0.026	1.06

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	1,130	0.033	6	2,360	0.09	285	$2,850
Pervious pavement	4,740	0.140	21	9,890	0.37	1,310	$32,750
Rainwater harvesting	530	0.016	2	500	0.02	500 (gal)	$1,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mount Arlington Public Library

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

0 15' 30'

MOUNT ARLINGTON PUBLIC SCHOOL

RAP ID: 6

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 478,428 sq. ft.

Address: 235 Howard Boulevard
Mount Arlington, NJ 07856

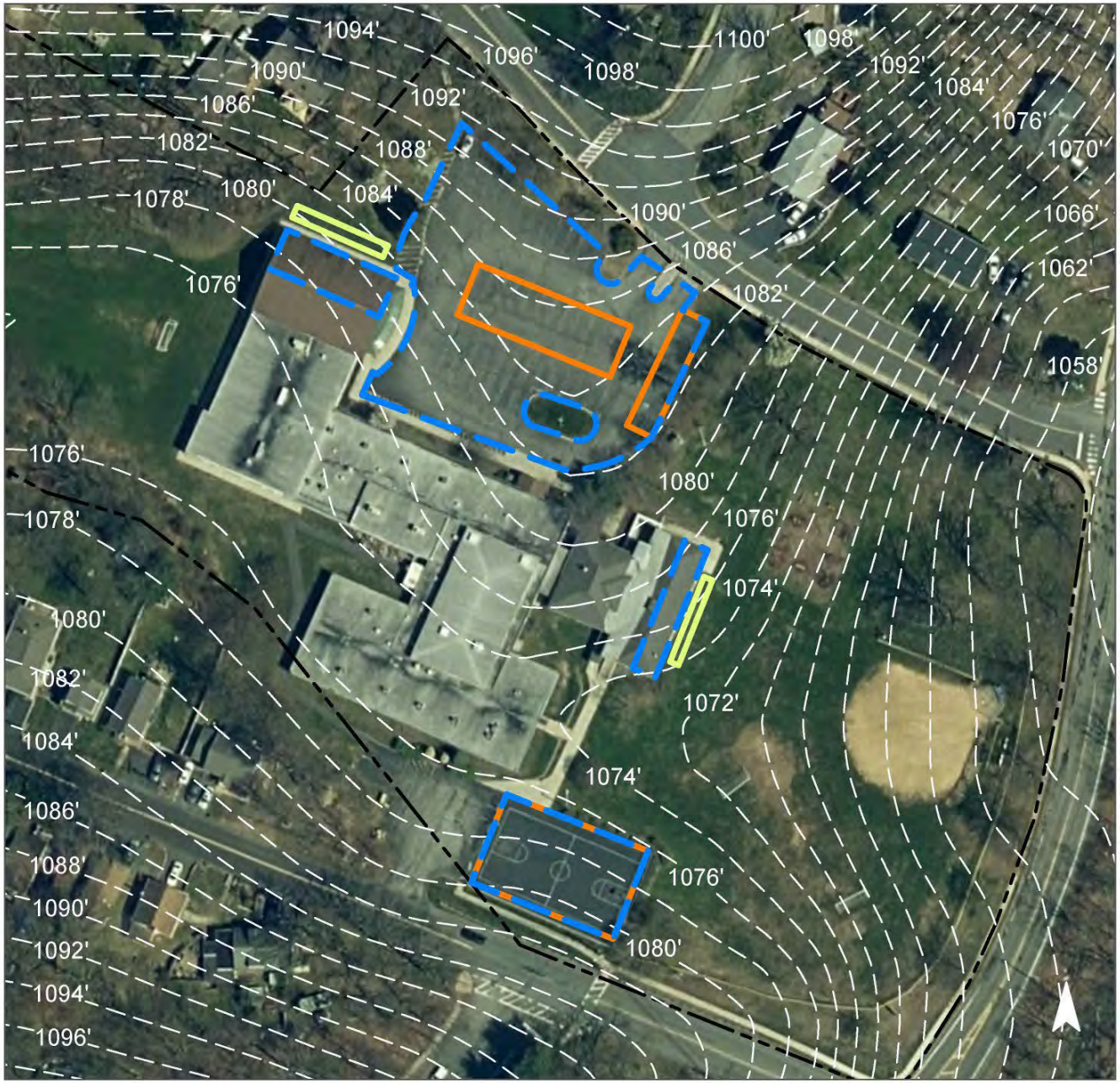
Block and Lot: Block 121, Lot 59

Rain gardens can be installed to the northwest and southeast corners of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. The southeastern rain garden will require downspout disconnections. The northwestern rain garden will require downspout redirection beneath the sidewalk. Existing parking spaces to the north and northeast of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The southern basketball court can be converted into pervious pavement to capture and infiltrate stormwater runoff from the court. 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 50"
22	105,118	5.1	53.1	482.6	0.082	3.28

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	3,625	0.107	15	7,560	0.28	905	$9,050
Pervious pavement	33,635	0.996	146	70,150	2.64	11,600	$290,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Arlington Public School

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

0 50' 100'

OUR LADY OF THE LAKE ROMAN CATHOLIC CHURCH

RAP ID: 7

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 111,695 sq. ft.

Address: 8 Windemere Avenue &
1 Park Avenue
Mount Arlington, NJ 07856

Block and Lot: Block 26, Lots 3, 4, 5, 16

Rain gardens can be installed in multiple grass areas around the church and rectory property to capture, treat, and infiltrate stormwater runoff from the rooftops and parking lot. Downspout redirections, disconnections, and redirection beneath a walkway will be required. The rain garden to the northwest of the rectory will require a trench drain and curb cuts. A cistern can be installed to the southeast of the northern church building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering the landscaping vegetation. The two nearest downspouts can be redirected to the cistern to increase the managed drainage area. 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 50"
45	49,876	2.4	25.2	229.0	0.039	1.55

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	4,140	0.123	19	8,630	0.32	1,040	$10,400
Rainwater harvesting	440	0.013	2	400	0.01	400 (gal)	$1,200

GREEN INFRASTRUCTURE RECOMMENDATIONS

Our Lady of the Lake Roman Catholic Church

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

0 30' 60'

TIMES SQUARE CHURCH

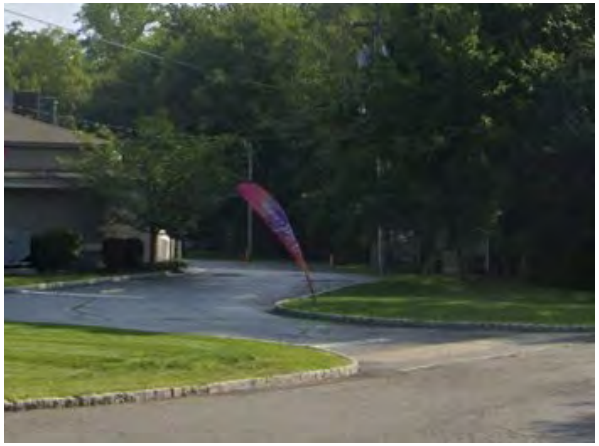
RAP ID: 8

Subwatershed: Lake Hopatcong

HUC14 ID: 02040105150020

Site Area: 223,704 sq. ft.

Address: 450 Howard Boulevard
Mount Arlington, NJ 07856



Block and Lot: Block 9, Lot 2.01

A rain garden can be installed to the east of the entry driveway to capture, treat, and infiltrate stormwater runoff from the asphalt. This will require a trench drain and a curb cut. Another rain garden can be installed to the south of the manger to capture, treat, and infiltrate stormwater runoff from the rooftop. The existing parking spaces to the northwest of the church building can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt and the rooftop. This will require downspout disconnections to the pervious pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
29	65,184	3.1	32.9	299.3	0.051	2.03

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	1,675	0.050	8	3,490	0.13	420	$4,200
Pervious pavement	4,375	0.130	19	9,130	0.34	1,360	$34,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Times Square Church

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

0 25' 50'

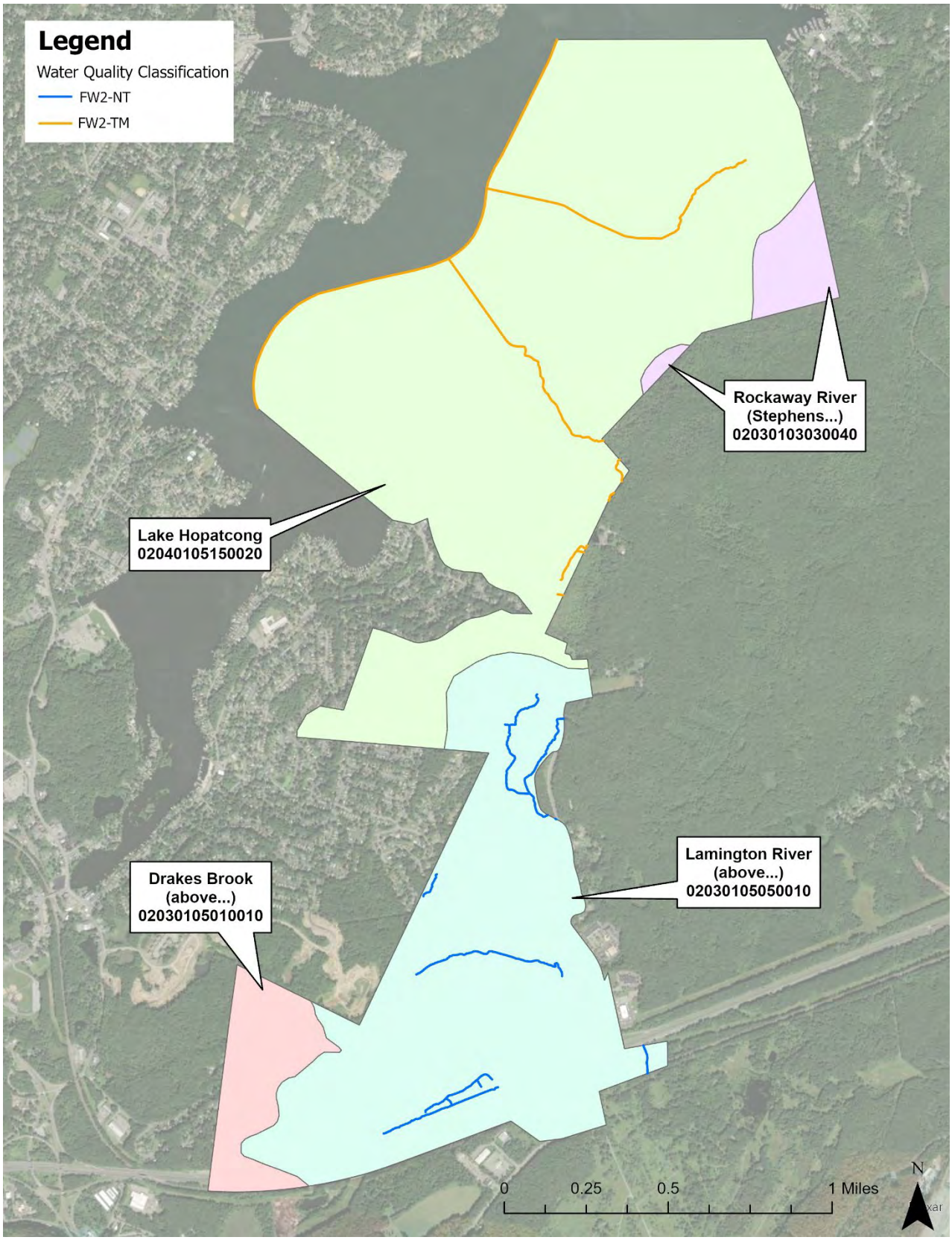


Figure 9. Water Quality Classification of Surface Waters in Mount Arlington Borough

Table 7. Water Quality Classification of Surface Waters in Mount Arlington Borough

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	2.3	38.2%
Freshwater 2, trout maintenance	FW2-TM	3.7	61.8%

Randolph Township

Introduction

Located in Morris County in New Jersey, Randolph Township covers about 21.2 square miles. With a population of 26,504 (2020 United States Census), Randolph Township consists of 52.1% of urban land uses by area. Of that urban land use, approximately 36.0% is comprised of low-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 46.3% of Randolph Township.

Randolph Township contains portions of eleven subwatersheds (Table 1). There are approximately 55.1 miles of rivers and streams within the municipality; these include Burnett Brook and its tributaries, Dawsons Brook and its tributaries, Den Brook and its tributaries, Harmony Brook and its tributaries, India Brook and its tributaries, Jackson Brook and its tributaries, Lamington River and its tributaries, Mill Brook and its tributaries, Rockaway River and its tributaries, tributaries to the Whippany River, and several uncoded tributaries. Randolph Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 6 (Upper Passaic, Whippany, and Rockaway) and 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Randolph Township

Subwatershed	HUC14
Whippany River (above road at 74d 33m)	02030103020010
Whippany River (Washington Valley Road to 74d 33m)	02030103020020
Whippany River (Lake Pocahontas to Washington Valley Road)	02030103020040
Rockaway River (74d 33m 30s to Stephens Brook)	02030103030070
Mill Brook (Morris County)	02030103030080
Rockaway River (Benchmark 534 bridge to 74d 33m 30s)	02030103030090
Den Brook	02030103030120
Lamington River (above Route 10)	02030105050010
Lamington River (Hillside Road to Route 10)	02030105050020

Raritan River North Branch (above/including India Brook)	02030105060010
Burnett Brook (above Old Mill Road)	02030105060020

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Randolph Township. 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 Randolph Township'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 Randolph Township in relation to the study area. Figure 2 shows the portions of the eleven HUC14s in Randolph Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Randolph Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Randolph Township and is presented in Table 2. Figure 4 shows the impervious cover in Randolph Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Randolph Township 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". Only detention basins and naturalized detention basins were identified Randolph Township within the study area.

The Q-Farms in Randolph Township 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 Randolph Township 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 171.0 acres of agricultural land use in Randolph Township, of which, 138.9 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 20 Q-Farms and a portion of one Q-Farm in the study area portion of Randolph Township, totaling 262.5 acres. Within the 20 Q-Farms and portion of one Q-Farm, there are approximately 78.6 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Randolph Township are presented in Table 8.

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 (02030105050010, 02030105050020, 02030105060010, 02030105060020). Within these four HUC14s, there are 178.6 acres of buildings and 227.4 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 Randolph Township, approximately 11.2 acres of rooftop runoff would be managed with 2.23 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Randolph Township, approximately 22.7 acres of roadway would be managed, or 6.3 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 Randolph Township are shown in Figure 10 and presented in Table 9. 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 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. Eight of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 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 five classifications that apply to the streams in Randolph Township. Figure 13 depicts the water quality classification of surface waters throughout Randolph Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

Administrators from Randolph Township have identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. The intersection of Route 10 and Sussex Turnpike has often been observed to experience flooding. In preparation for severe weather events, the municipality requests that the Department of Transportation (DOT) clears stormwater basins to minimize the risk of roadway inundation because the location falls under DOT and county jurisdiction. Rockaway Road adjacent to the railroad tracks experiences similar flooding issues and the municipality must contact the DOT prior to heavy rainfall events to request debris be cleared from the area because it falls under their jurisdiction. Debris that is not cleared can obstruct stormwater infrastructure and contribute to flooding that can pose a risk to infrastructure and public safety. The intersection of Jennifern Avenue and Route 10 is also identified as a location prone to flooding within Randolph Township. Figure 14 shows the locations of the aforementioned areas of concern.

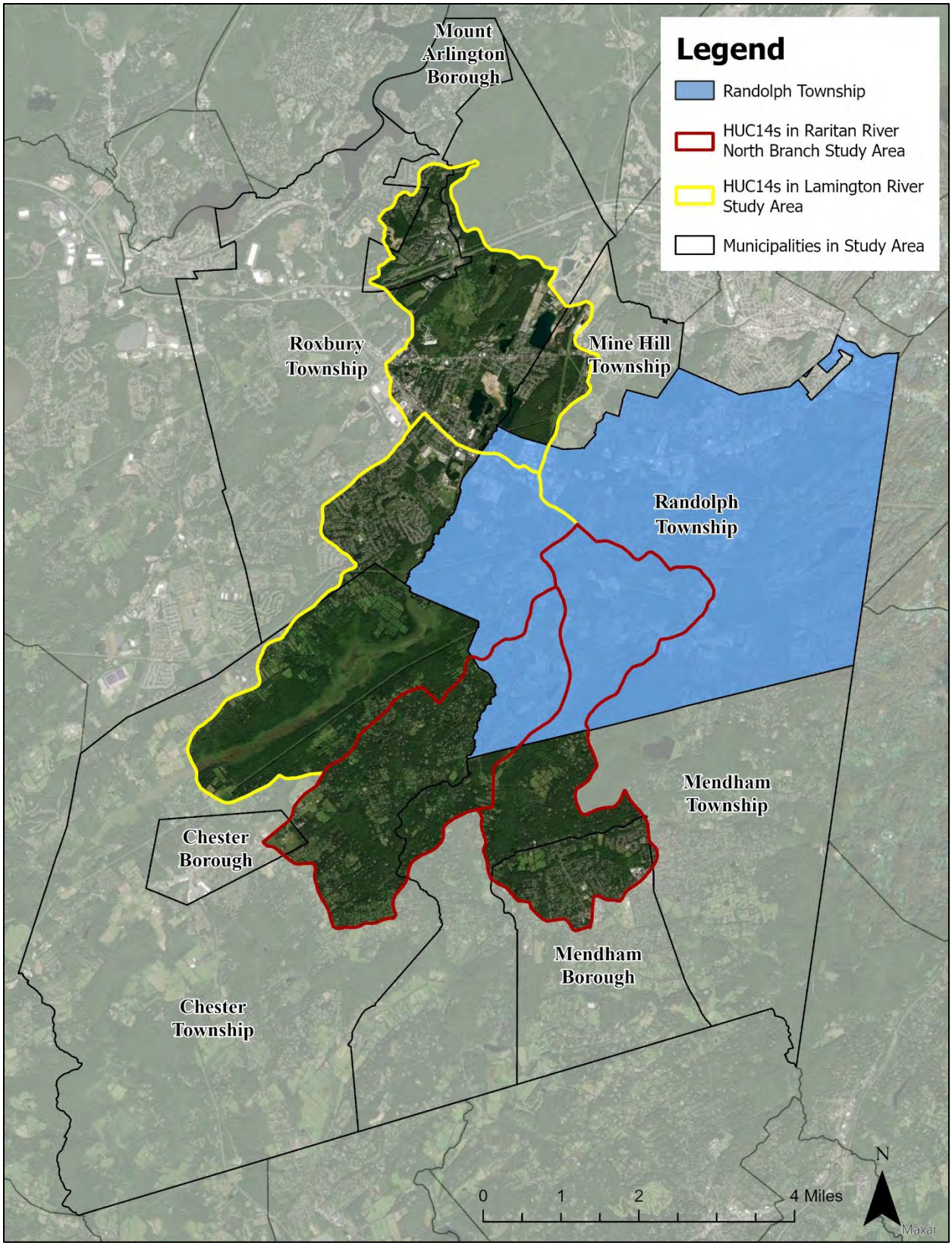


Figure 1: Municipalities in the Study Area

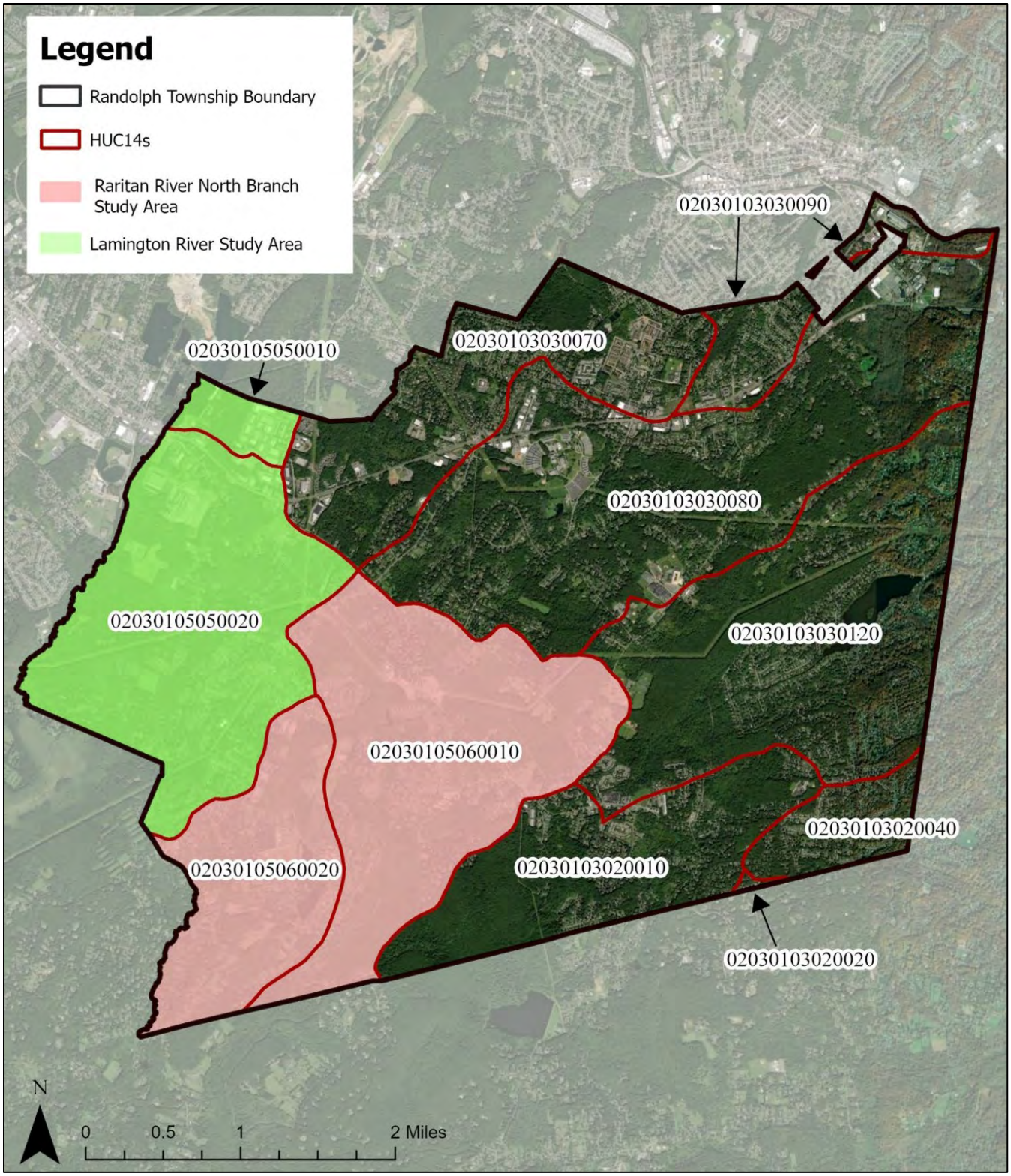


Figure 2: Portions of eleven HUC14s are in Randolph Township

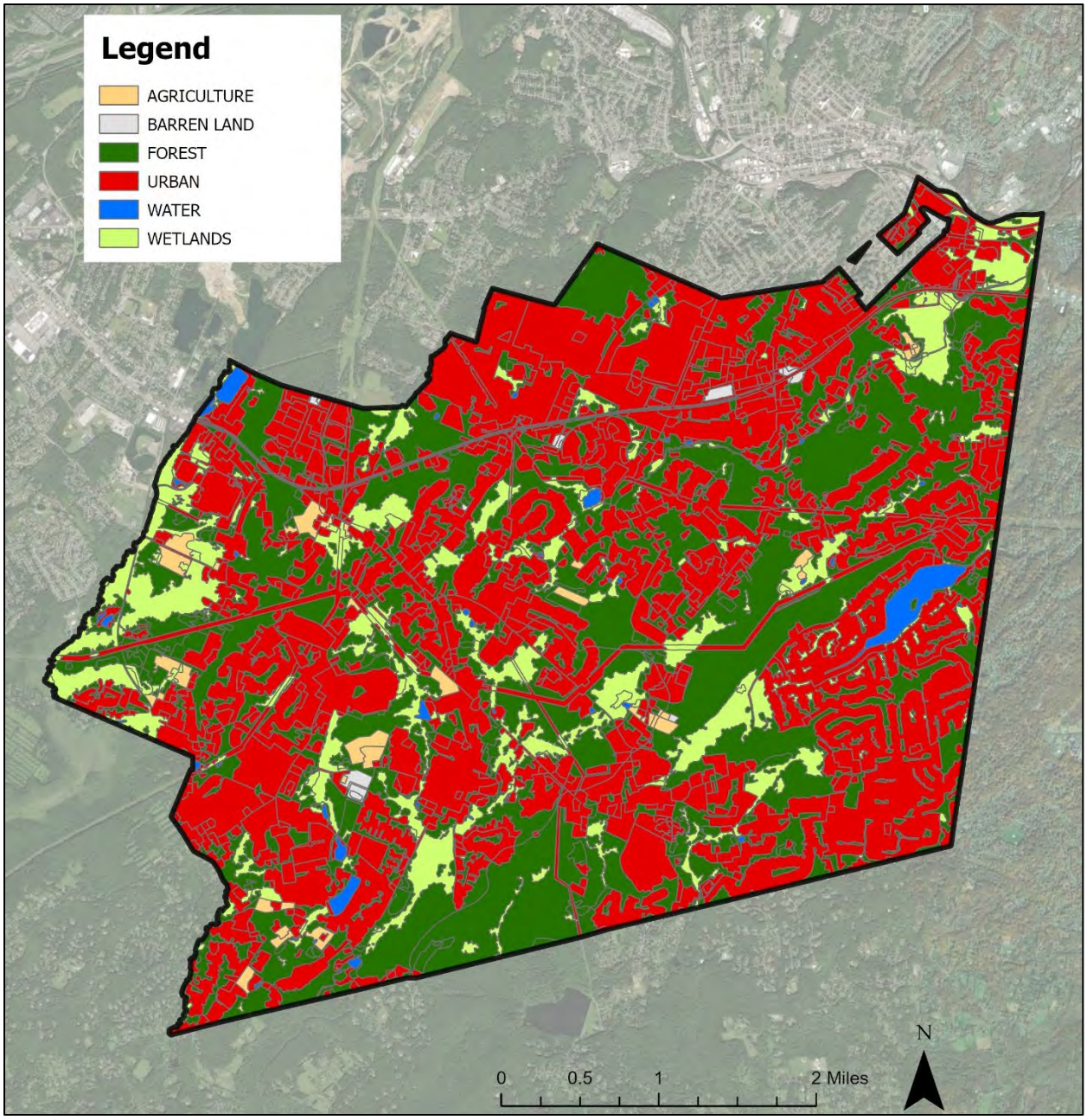


Figure 3: Land Use in Randolph Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Randolph Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103020010				
Agriculture	0.04	0.1	0.4	13.4
Barren Land	0.0	0.0	0.0	0.0
Forest	640.2	64.0	1,920.7	25,610.0
Urban	480.2	672.3	7,203.1	67,229.0
Water	1.0	0.1	2.9	39.0
Wetlands	80.1	8.0	240.2	3,203.0
TOTAL =	**1,201.6**	**744.5**	**9,367.4**	**96,094.3**
02030103020020				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	4.4	0.4	13.1	175.2
Urban	8.0	11.2	119.9	1,119.4
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**12.4**	**11.6**	**133.1**	**1,294.7**
02030103020040				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	67.0	6.7	201.1	2,680.7
Urban	258.3	361.6	3,874.7	36,163.5
Water	0.0	0.0	0.0	0.0
Wetlands	1.8	0.2	5.3	70.1
TOTAL =	**327.1**	**368.5**	**4,081.0**	**38,914.3**
02030103030070				
Agriculture	0.8	1.0	8.1	242.1
Barren Land	3.6	1.8	18.0	216.4
Forest	377.3	37.7	1,131.9	15,092.2
Urban	888.7	1,244.1	13,329.9	124,412.1
Water	3.2	0.3	9.7	129.9
Wetlands	84.0	8.4	252.0	3,359.6
TOTAL =	**1,357.6**	**1,293.4**	**14,749.6**	**143,452.4**
02030103030080				
Agriculture	16.0	20.7	159.6	4,787.8
Barren Land	4.5	2.2	22.5	269.4
Forest	1,071.7	107.2	3,215.1	42,868.2
Urban	1,518.9	2,126.5	22,783.9	212,649.3
Water	23.4	2.3	70.2	936.4
Wetlands	269.8	27.0	809.5	10,792.9

TOTAL =	**2,904.3**	**2,286.0**	**27,060.7**	**272,304.1**
02030103030090				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	10.7	5.3	53.4	640.7
Forest	60.3	6.0	180.9	2,412.5
Urban	274.7	384.5	4,119.9	38,452.0
Water	3.2	0.3	9.6	127.9
Wetlands	30.3	3.0	90.8	1,211.1
TOTAL =	**379.1**	**399.2**	**4,454.6**	**42,844.3**
02030103030120				
Agriculture	15.3	19.9	153.2	4,595.1
Barren Land	1.4	0.7	6.9	82.5
Forest	806.2	80.6	2,418.6	32,248.0
Urban	1,146.8	1,605.5	17,201.8	160,550.4
Water	77.6	7.8	232.7	3,102.4
Wetlands	214.5	21.4	643.4	8,578.3
TOTAL =	**2,261.7**	**1,735.9**	**20,656.5**	**209,156.7**
02030105050010				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	2.3	1.2	11.6	138.7
Forest	41.4	4.1	124.1	1,655.3
Urban	98.4	137.8	1,476.2	13,777.8
Water	20.0	2.0	60.1	801.9
Wetlands	5.9	0.6	17.6	234.4
TOTAL =	**168.0**	**145.7**	**1,689.6**	**16,608.1**
02030105050020				
Agriculture	62.3	81.0	622.7	18,682.0
Barren Land	0.0	0.0	0.0	0.0
Forest	582.6	58.3	1,747.9	23,305.9
Urban	950.1	1,330.1	14,250.8	133,007.7
Water	12.0	1.2	36.1	481.0
Wetlands	345.1	34.5	1,035.4	13,805.7
TOTAL =	**1,952.1**	**1,505.0**	**17,693.0**	**189,282.3**
02030105060010				
Agriculture	35.3	45.9	353.1	10,591.8
Barren Land	6.8	3.4	34.0	408.5
Forest	703.1	70.3	2,109.4	28,125.8
Urban	894.7	1,252.6	13,421.2	125,264.8
Water	13.4	1.3	40.2	535.8
Wetlands	319.1	31.9	957.3	12,763.8
TOTAL =	**1,972.5**	**1,405.5**	**16,915.2**	**177,690.6**
02030105060020				
Agriculture	41.3	53.6	412.6	12,377.1

Barren Land	9.3	4.6	46.4	556.3
Forest	308.4	30.8	925.1	12,334.8
Urban	542.5	759.5	8,137.4	75,948.8
Water	21.1	2.1	63.4	844.7
Wetlands	82.8	8.3	248.3	3,310.9
TOTAL =	**1,005.3**	**859.0**	**9,833.1**	**105,372.6**
All HUCs				
Agriculture	171.0	222.3	1,709.6	51,289.3
Barren Land	38.5	19.3	192.7	2,312.6
Forest	4,662.7	466.3	13,988.2	186,508.7
Urban	7,061.3	9,885.8	105,918.8	988,575.0
Water	175.0	17.5	524.9	6,998.9
Wetlands	1,433.2	143.3	4,299.7	57,329.8
TOTAL =	**13,541.7**	**10,754.4**	**126,633.9**	**1,293,014.3**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Randolph Township 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 Randolph Township. Based upon the NJDEP impervious surface data, Randolph Township has impervious cover totaling 18.7%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Randolph Township 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, Randolph Township's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to degradation of the state's surface water quality standards.

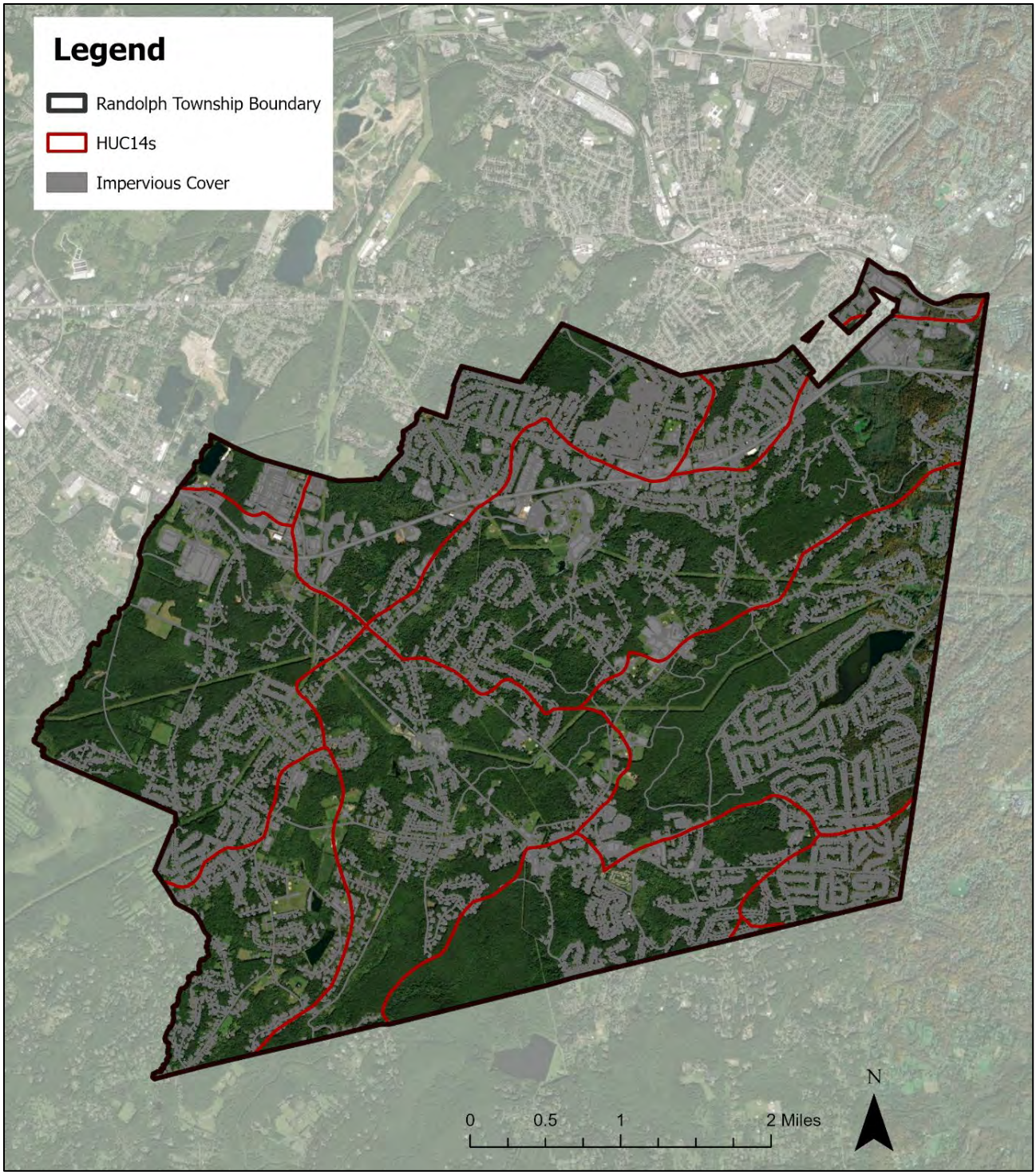


Figure 4: Impervious Cover in Randolph Township

Table 3: Impervious Cover Analysis by HUC14 for Randolph Township

Class	Area (acres)	HUC Impervious Cover (%)
02030103020010		
Building	42.72	
Other	77.16	
Road	53.50	
TOTAL =	**173.4**	**14.4%**
02030103020020		
Building	0.75	
Other	1.09	
Road	0.47	
TOTAL =	**2.3**	**18.7%**
02030103020040		
Building	27.15	
Other	36.69	
Road	32.61	
TOTAL =	**96.4**	**29.5%**
02030103030070		
Building	91.77	
Other	173.15	
Road	128.28	
TOTAL =	**393.2**	**29.0%**
02030103030080		
Building	121.58	
Other	279.52	
Road	167.12	
TOTAL =	**568.2**	**19.6%**
02030103030090		
Building	28.26	
Other	73.40	
Road	35.83	
TOTAL =	**137.5**	**36.3%**
02030103030120		
Building	97.46	
Other	155.78	
Road	122.42	
TOTAL =	**375.7**	**16.6%**
02030105050010		
Building	17.14	
Other	30.18	
Road	6.97	
TOTAL =	**54.3**	**32.3%**
02030105050020		
Building	78.01	
Other	155.67	
Road	92.95	
TOTAL =	**326.6**	**16.7%**

02030105060010		
Building	51.58	
Other	127.13	
Road	81.24	
TOTAL =	**260.0**	**13.2%**
02030105060020		
Building	31.85	
Other	70.59	
Road	46.20	
TOTAL =	**148.6**	**14.8%**
All HUCs		
Building	588.27	
Other	1,180.37	
Road	767.58	
TOTAL =	**2,536.2**	**18.7%**

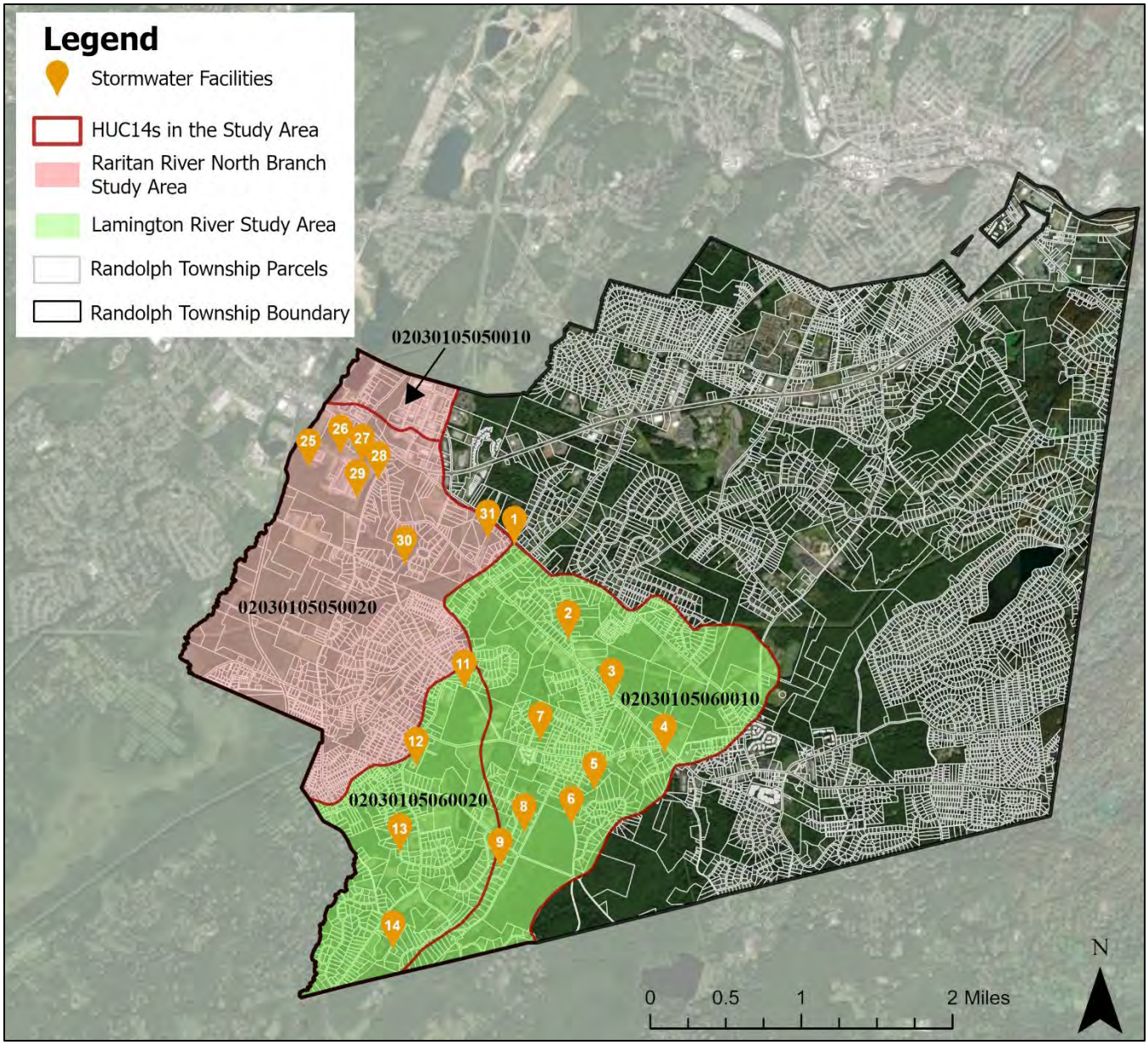


Figure 5: Stormwater Facilities in the Study Area of Randolph Township

Table 4: Location of Stormwater Facilities in the Study Area of Randolph Township

Lamington River Study Area		
ID	**Address**	**Type**
25	1578 Sussex Tpke	N
26	1578 Sussex Tpke	N
27	1578 Sussex Tpke	N
28	1578 Sussex Tpke	D
29	1578 Sussex Tpke	N
30	Sherwood Ct	N
31	1447 Sussex Tpke	D
Raritan River North Branch Study Area		
ID	**Address**	**Type**
1	2 Tamari Ct	N
2	122 Morris Tpke	D
3	1318 Sussex Tpke	N
4	1264 Sussex Tpke	N
5	83 Heritage Ct	N
6	5 Dolly Bridge Rd	D
7	3 Edgewood Ter	N
8	57 Combs Hollow Rd	N
9	92 Doby Rd	N
11	99 Fairway	D
12	335 Dover Chester Rd	D
13	82 Patriots Way	N
14	Shadowbrook Way	N

"D" = Detention, "N" = Naturalized

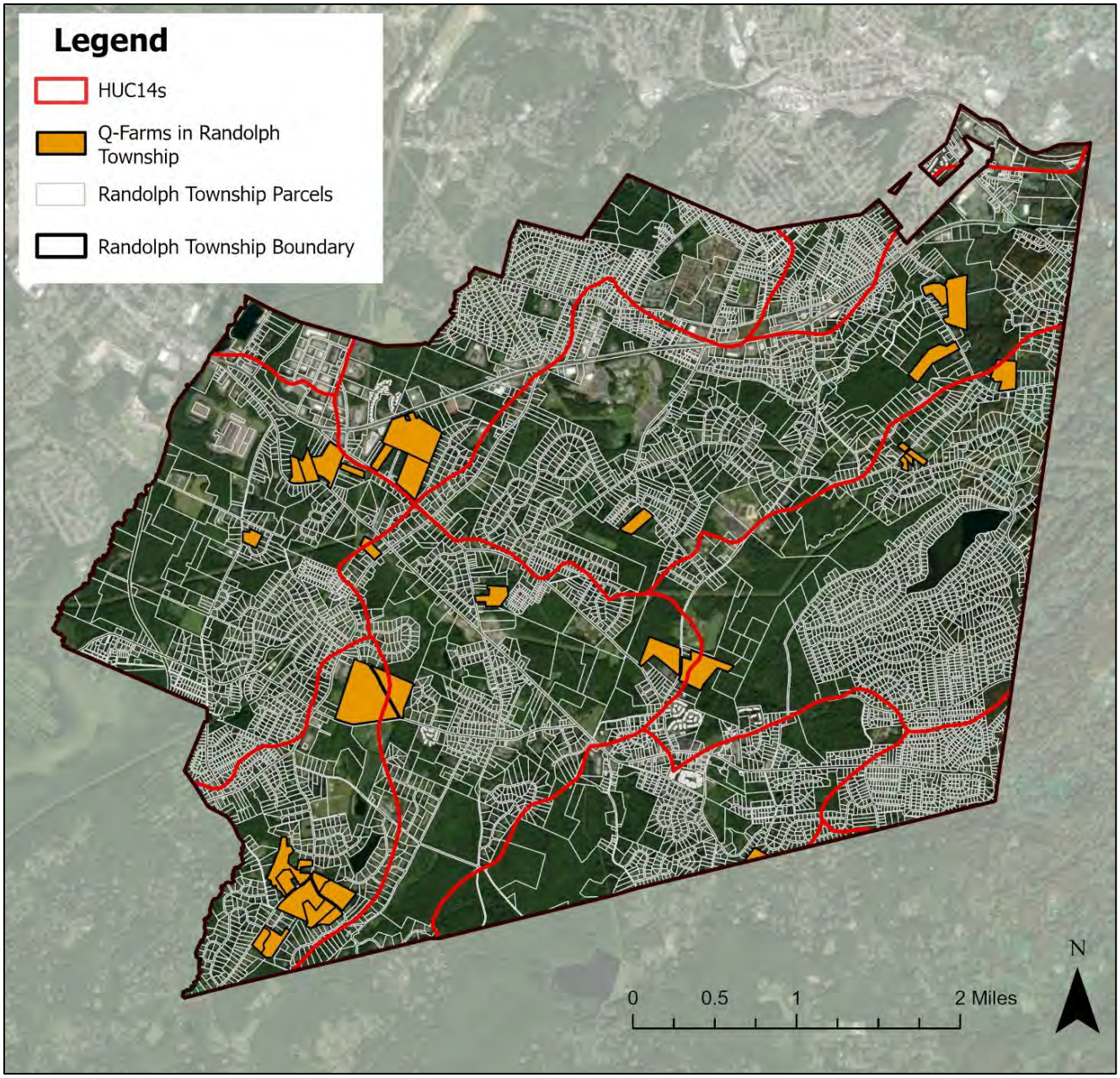


Figure 6: Q-Farm Parcels in Randolph Township

Table 5: Q-Farm Parcels in Randolph Township

Block	Lot	Q-Code	Prop Class	Location
20	9	QFARM	3B	19 Canfield Ave
20	11	QFARM	3B	1491 Sussex Tpke
20	12	QFARM	3B	1501 Sussex Tpke
21	28	QFARM	3B	230 Dover-Chester Rd
21.07	12	QFARM	3B	54 Park Ave
35	50	QFARM	3B	8 Patriots Way
35	50.16	QFARM	3B	85 South Rd
35	52	QFARM	3B	65 South Rd
40	1	QFARM	3B	10 Combs Ave
40	2	QFARM	3B	22 Combs Ave
40	3	QFARM	3B	30 Combs Ave
40	20.01	QFARM	3B	50 South Rd
40	20.02	QFARM	3B	50 South Rd
44	4	QFARM	3B	931 Route 10
44	41	QFARM	3B	65 Morris Tpke
44	48	QFARM	3B	39 Morris Tpke
45	1.01	QFARM	3B	40 Canfield Ave
47	34	QFARM	3B	95A Calais Rd
48	2	QFARM	3B	141 Calais Rd
51	18	QFARM	3B	21 Combs Ave
51	19	QFARM	3B	5 Combs Ave
82	26	QFARM	3B	52 School House Rd
82	39	QFARM	3B	645 Millbrook Ave
86	79	QFARM	3B	137 Morris Tpke
119	114	QFARM	3B	654 Millbrook Ave
146	42.01	QFARM	3B	73 Mountainside Dr
146	61	QFARM	3B	55 Everdale Rd
199	45	QFARM	3B	124 Mountainside Dr
199	48	QFARM	3B	58 Mountainside Dr
199	56	QFARM	3B	36 Mountainside Dr
201	1.01	QFARM	3B	55 Everdale Rd
201	2	QFARM	3B	55 Everdale Rd
201	3	QFARM	3B	60 Everdale Rd
227	72	QFARM	3B	Off Knights Bridge Dr

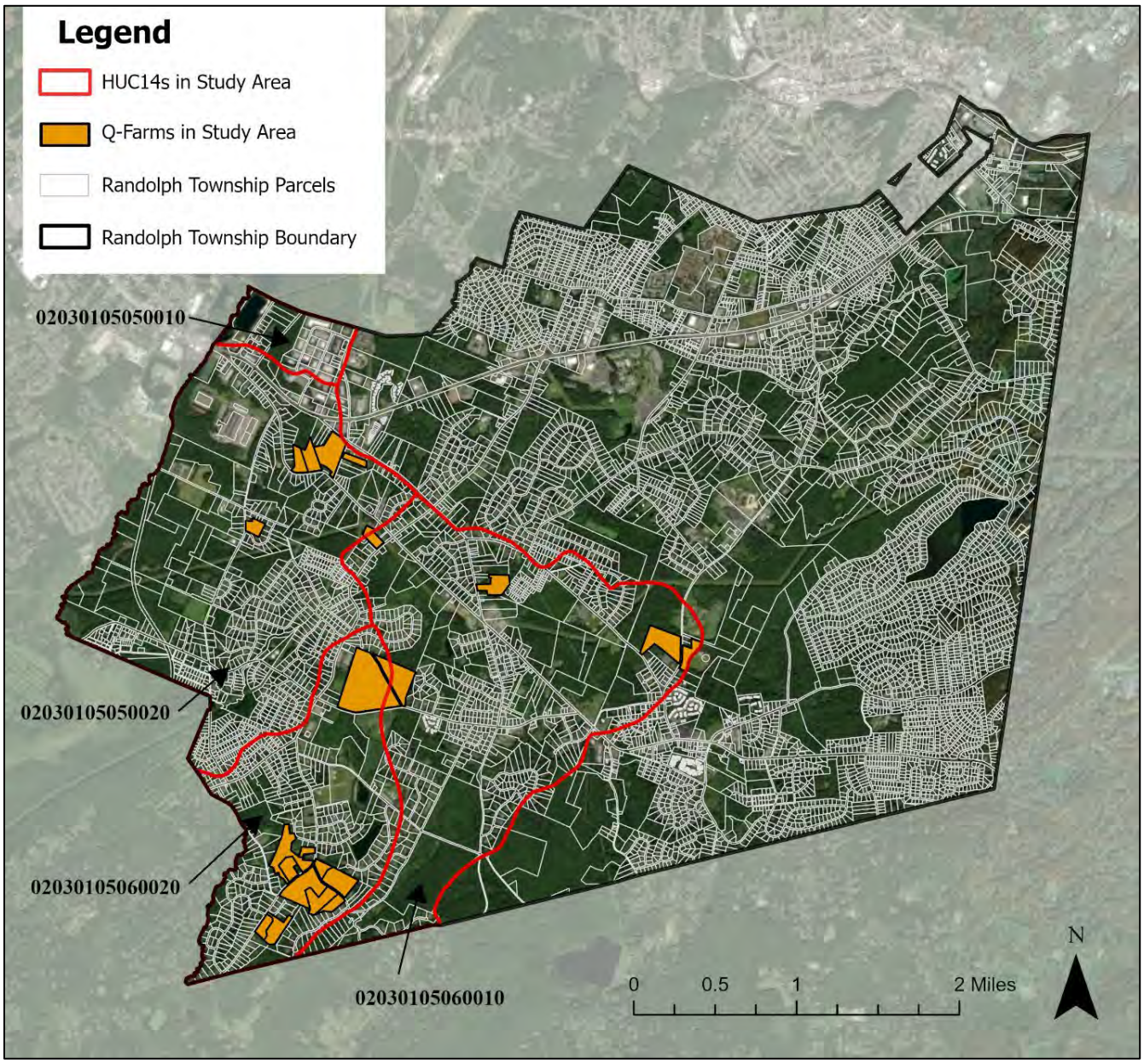


Figure 7: Q-Farm Parcels in the Study Area of Randolph Township

Table 6: Q-Farm Parcels in the Study Area of Randolph Township

Block	Lot	Q-Code	Prop Class	Location
20	9	QFARM	3B	19 Canfield Ave
20	11	QFARM	3B	1491 Sussex Tpke
20	12	QFARM	3B	1501 Sussex Tpke
21	28	QFARM	3B	230 Dover-Chester Rd
21.07	12	QFARM	3B	54 Park Ave
35	50	QFARM	3B	8 Patriots Way
35	50.16	QFARM	3B	85 South Rd
35	52	QFARM	3B	65 South Rd
40	1	QFARM	3B	10 Combs Ave
40	2	QFARM	3B	22 Combs Ave
40	3	QFARM	3B	30 Combs Ave
40	20.02	QFARM	3B	50 South Rd
45	1.01	QFARM	3B	40 Canfield Ave
47	34	QFARM	3B	95A Calais Rd
48	2	QFARM	3B	141 Calais Rd
51	18	QFARM	3B	21 Combs Ave
51	19	QFARM	3B	5 Combs Ave
82	39	QFARM	3B	645 Millbrook Ave
86	79	QFARM	3B	137 Morris Tpke
*119	114	QFARM	3B	654 Millbrook Ave

*Only a portion of the Q-Farm is within the study area

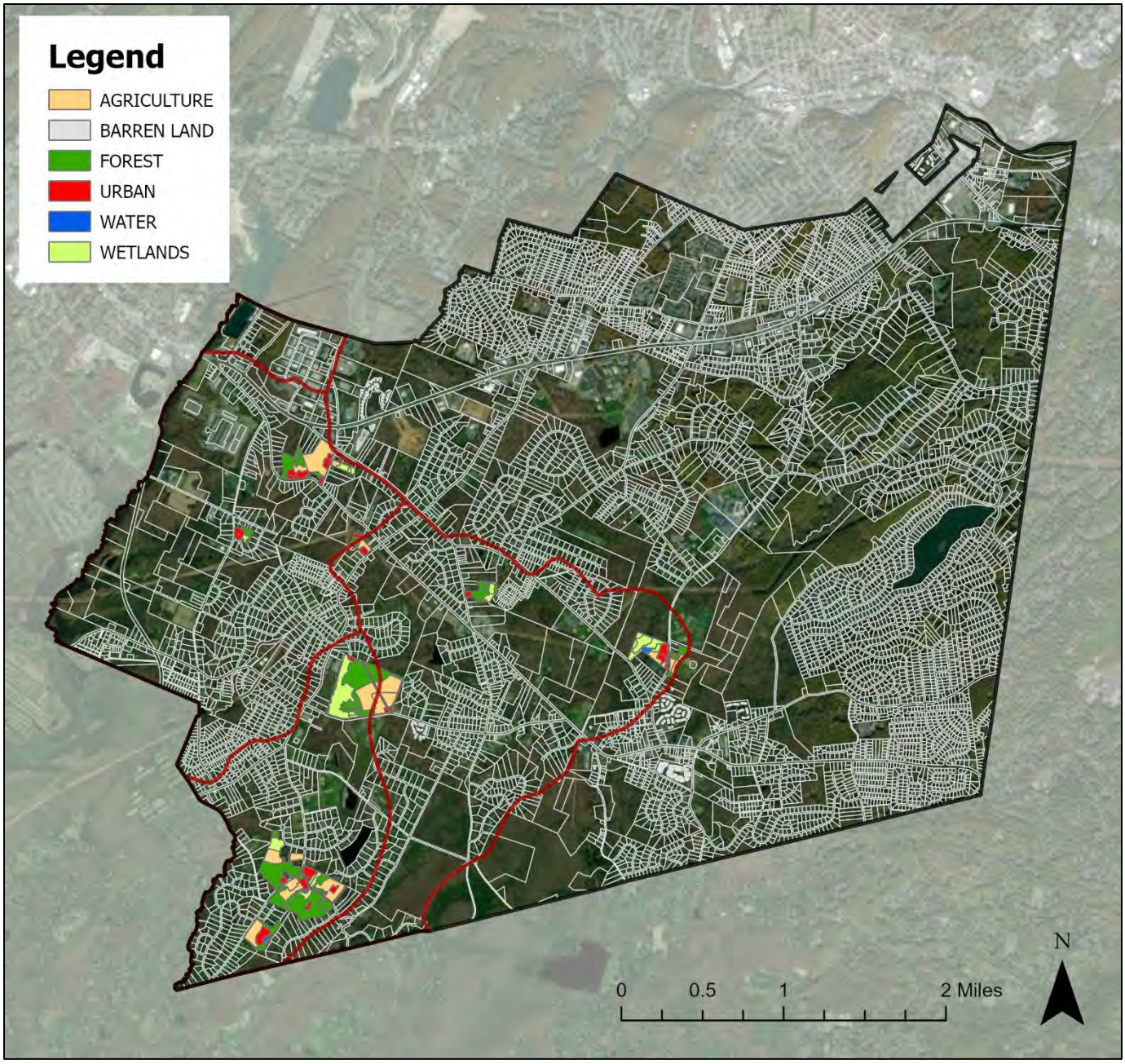


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Randolph Township

Table 7: Land Use on Q-Farms in the Study Area of Randolph Township

Land Use	Area (acres)
Agriculture	78.6
Barren Land	0.0
Forest	105.3
Urban	31.3
Water	2.0
Wetlands	45.2
Total:	**262.4**

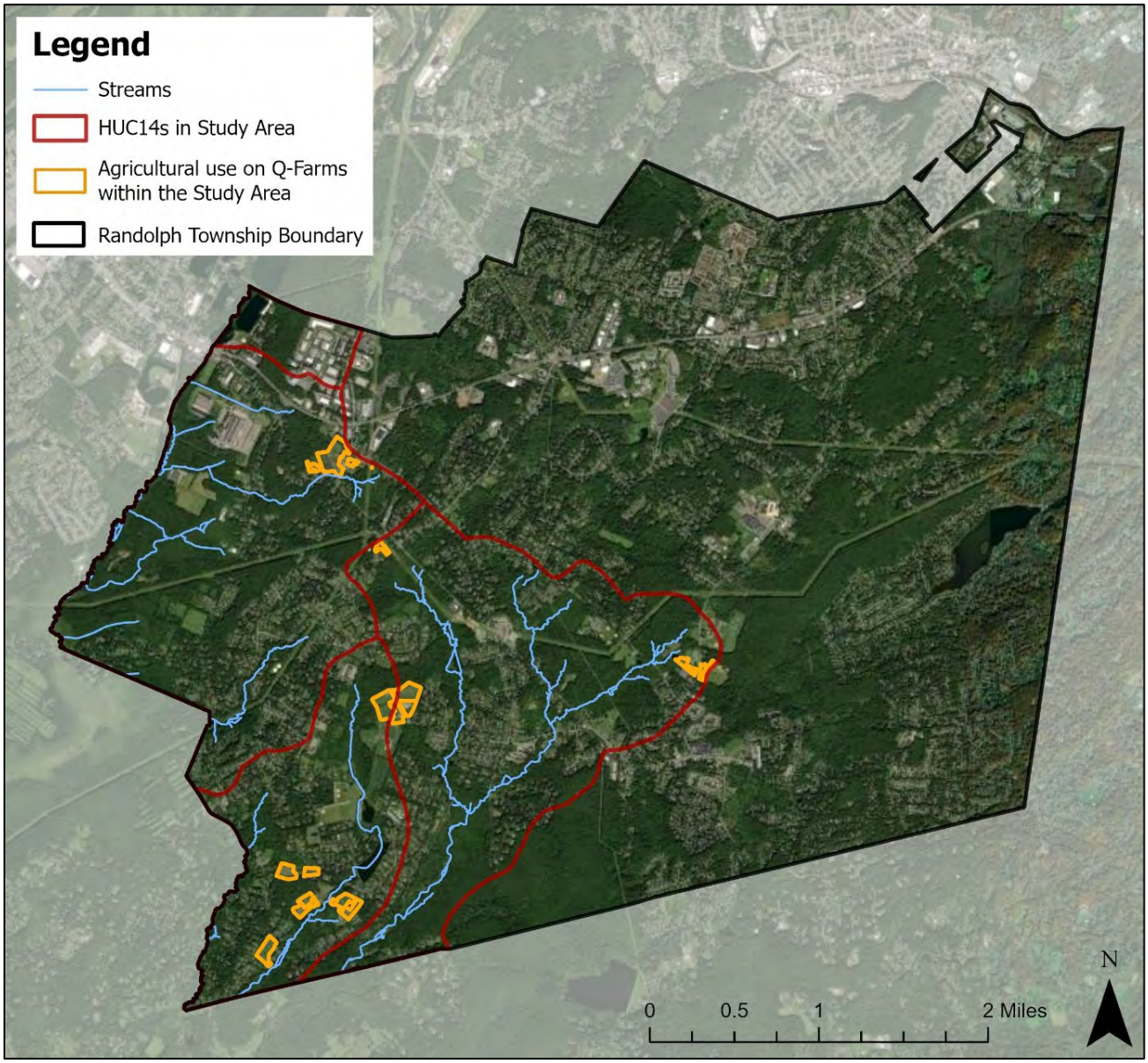


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Randolph Township

Table 8: Recommendations for Specific Farms in the Study Area of Randolph Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
20	9	QFARM	X		X	X		
20	11	QFARM						

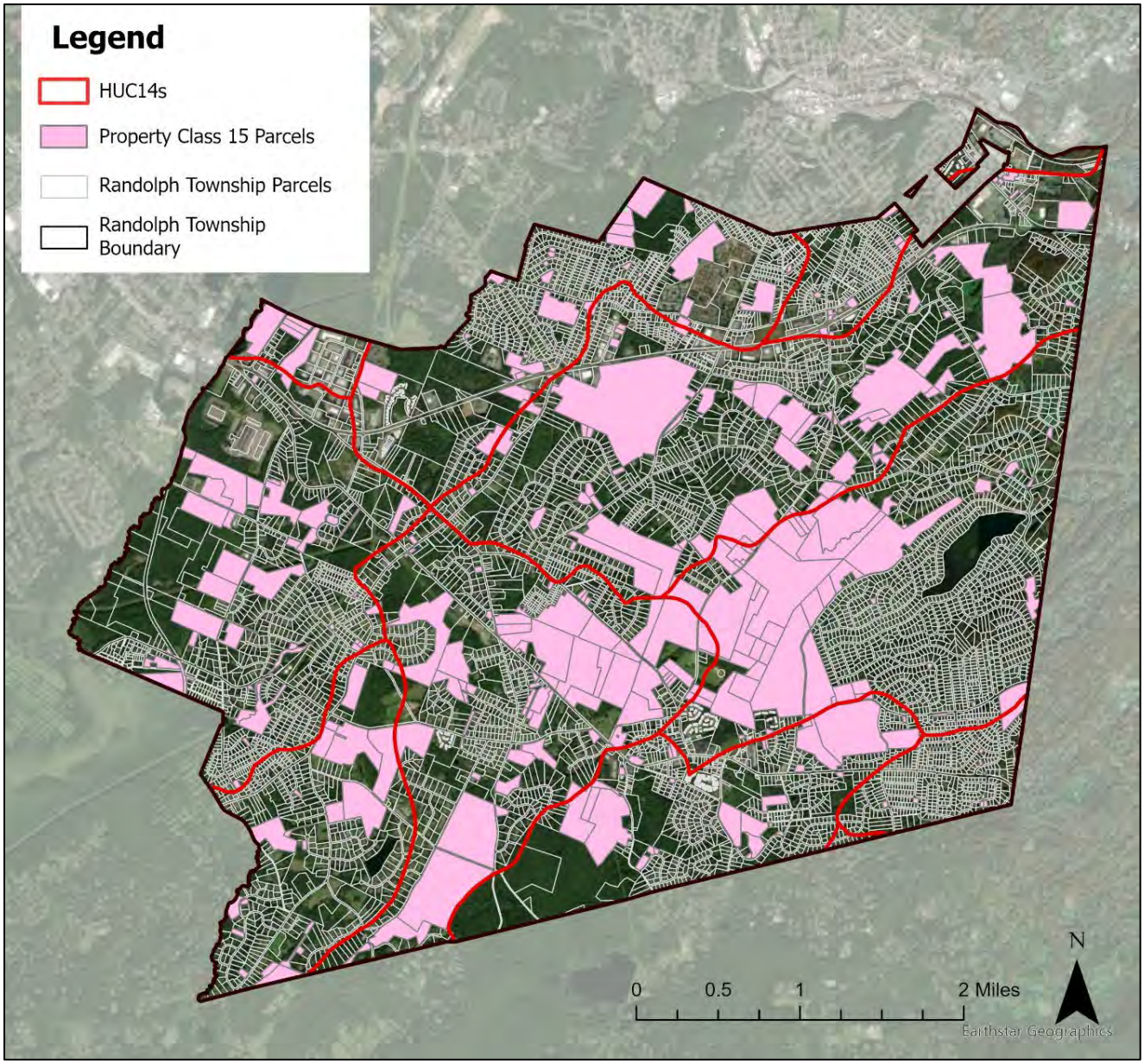


Figure 10: Property Class 15 Parcels in Randolph Township

Table 9: Property Class 15 Parcels in Randolph Township

Block	Lot	Prop Class	Location	Facility Type
47	7.32	15A	Off Quail Run	Sanitary Disposal
48	5	15A	303 Dover-Chester Rd	Ironia School
81	1	15A	214 Center Grove Rd	County College
110	11	15A	206 Quaker Church Rd	Fernbrook School
116	28	15A	507 Millbrook Ave	High & Intermediate
116	30	15A	522 Millbrook Ave	Schools
116	31	15A	559 Millbrook Ave	Vacant Land
116	33	15A	575 Millbrook Ave	Farm
116	34	15A	25 School House Rd	Intermediate School
168	58	15A	9 Arrow Pl	Shongum School
1	2	15C	43 Green Ln	Randolph Park
2	1	15C	76 Green Ln	Randolph Park
2	2	15C	68 Green Ln	Vacant Land
2	3	15C	64 Green Ln	Vacant Land
5	19	15C	41 Park Ave	Day Camp
5	22	15C	15 Righter Rd	Open Space
5	23	15C	45 Righter Rd	Vacant Land
5	26	15C	55A Righter Rd	Open Space
6	16	15C	49 Pleasant Hill Rd	Vacant Land
6	26	15C	111 Park Ave	Open Space
6	27.01	15C	57 Pleasant Hill Rd	Mua Easement
6	42	15C	83 Park Ave	Vacant Land
6	43	15C	75 Park Ave	Vacant Land
6	52	15C	18 Righter Rd	Vacant Land
6	53	15C	34 Righter Rd	Open Space
14	2.01	15C	147 Selma Blvd	Vacant Land
14	9	15C	Pleasant Hill Rd	Vacant Land
14	11	15C	9 Chester Ave	Well
14	27	15C	Off Selma Blvd	Vacant Land
18.01	1	15C	80 Irish Spring Rd	Vacant Land
21	19.15	15C	11 Nottingham Way	Dedicated Open Space
21	20	15C	1466 Sussex Tpke	Open Space
21	32.08	15C	Sherwood Ct	Open Space
21	39	15C	5 Stonehill Rd	Well
21	127.01	15C	110 Park Ave	Open Space
21	129	15C	Park Ave	Vacant Land
21	130.02	15C	72 Park Ave	Open Space
21	142	15C	18 James Rd	Open Space
21	149	15C	34 Park Ave	Camp
21	150.02	15C	32 Park Ave	Vacant Land
21.05	152	15C	Pleasant Hill Rd	Vacant Land
21.10	1	15C	Nottingham Way	Dedicated Open Space
23	18	15C	18 Aldebaran Dr	Vacant Land
27	5.08	15C	Off Spring Brook Dr	Vacant Land
27	6	15C	88A Pleasant Hill Rd	Vacant Land
27	8	15C	Dover-Chester Rd	Vacant Land

27	86.02	15C	152.5 Park Ave	Vacant Land
30	1	15C	159 Park Ave	Foreclosure
32	7	15C	4 Sunset Dr	Well
47	7.32	15A	Off Quail Run	Sanitary Disposal
48	5	15A	303 Dover-Chester Rd	Ironia School
35	5	15C	385 Dover-Chester Rd	County Garage
35	50.05	15C	10 Patriots Way	Detention Basin
35	50.14	15C	Patriots Path	Patriots Path
35	65	15C	37 Ironia Mendham Rd	Vacant Land
38	54	15C	4 Burnett Brook Dr	Vacant Land
38.02	6	15C	9 Burnett Brook Dr	Vacant Land
40	4.34	15C	Shadowbrook Way	Vacant Land
40	4.36	15C	Shadowbrook Way	Vacant Land
40	4.37	15C	Shadowbrook Way	Vacant Land
40	4.38	15C	Shadowbrook Way	Vacant Land
40	7	15C	Off South Rd	Open Space
40	15	15C	Off South Rd	Open Space
42	3.01	15C	40 Bedminster Rd	Vacant Land
42	26	15C	97 Randolph Ave	Detention Basin
42	123	15C	164 Canfield Ave	Inspection Station
44	15	15C	723 Route 10	Vacant Land
44	57	15C	2 Sweetwood Dr	Detention Basin
46	1	15C	1425 Sussex Tpke	Park Land
46	13.02	15C	122 Morris Tpke	Detention Basin
46	28	15C	1411 Sussex Tpke	Retention Basin
47	1	15C	1428 Sussex Tpke	Vacant Land
47	7.30	15C	1392 Sussex Tpke	Dedicated Open Space
47	12.17	15C	Lake Cherokee	Vacant Land
47	27.13	15C	Nina Place	Stream Management
47	27.27	15C	24 Nina Pl	Detention Basin
47	27.28	15C	Nina Place	Stream Management
47	27.29	15C	Nina Place	Vacant Land
47	28.33	15C	India Brook & Calais Rd	Detention Basin
49	2	15C	112 Calais Rd	Vacant Land
49	3	15C	100 Calais Rd	Pavillion
49	8	15C	9 Farmstead Ct W	Vacant Land
50	3	15C	63 Dolly Bridge Rd	Open Space
51	7	15C	40 Doby Rd	Park
51	30	15C	126 South Rd	Park
52	1.01	15C	Doby Rd	Open Space
52	2.08	15C	Combs Hollow Rd	Vacant Land
53	1	15C	Wallace Brook	Morris County Park
*53	3	15C	Linwood Ave	Morris County Park
53	76.01	15C	Valley Rd	Draninage Easement
53	98	15C	Off Valley Dr	Morris County Park
53	99	15C	Off Dogwood Trl	Morris County Park
53	100	15C	Off Valley Dr	Morris County Park
54	5	15C	38 Center Rd	Well House
65	2	15C	24 Calumet Rd	Well House

73	14	15C	9 Guy St	Vacant Land
77	1	15C	124 Reservoir Ave	Vacant
80	10	15C	Birch St	Foreclosure
81	29.32	15C	30 Wilkeshire Blvd	Vacant Land
81	29.42	15C	10 Wilkeshire Blvd	Vacant Land
81	68	15C	103 Dover-Chester Rd	Vacant Land
81.03	14	15C	288 Center Grove Rd	Open Space
81.03	24	15C	Off Castle Ct	Detention Basin
81.03	37	15C	8 Tudor Pl	Vacant Land
82	27.02	15C	Off School House Rd	Vacant Land
82	38	15C	631 Millbrook Ave	Residence
82	50	15C	103 Carrell Rd	Club House
82	51	15C	99 Carrell Rd	Vacant Land
82	52	15C	75 Carrell Rd	Vacant Land
82	86	15C	287 Center Grove Rd	Vacant Land
82	89.02	15C	Center Grove Rd	Open Space
82	105	15C	7 Leigh Ct	Detention Basin
84	7	15C	55 Carrell Rd	Vacant Land
84	8	15C	57 Carrell Rd	Vacant Land
84	9	15C	57A Carrell Rd	Vacant Land
86	32	15C	Off Cypress Pl	Vacant Land
86	55	15C	60 Carrell Rd	Brundage Park
86	56	15C	60 Carrell Rd	Brundage Park
86	57	15C	74 Carrell Rd	Brundage Park
86	58	15C	84 Carrell Rd	Vacant Land
86	61	15C	25 Church Rd	Vacant Land
86	62	15C	Off Church Rd	Brundage Park
86	63.02	15C	1275 Sussex Tpke	Vacant Land
86	64	15C	Off Church Rd	Brundage Park
86	65	15C	Sussex Turnpike	Brundage Park
86	66	15C	1313 Sussex Tpke	Vacant Land
86	72.02	15C	1339 Sussex Tpke	Vacant Land
86	72.03	15C	1341 Sussex Tpke	Vacant Land
86	73	15C	1345 Sussex Tpke	Township Garage
86	74	15C	151 Morris Tpke	Maintenance Bldg.
86	75	15C	147 Morris Tpke	Vacant Land
88	7.10	15C	1318 Sussex Tpke	Vacant Land
88	12	15C	Off Sussex Tpke	Vacant Land
91	2	15C	14 Tucker Ave	Vacant Land
91	3	15C	8 Tucker Ave	Vacant Land
92	4	15C	1304 Sussex Tpke	Vacant Land
92	24	15C	9 Tucker Ave	Vacant Land
92	25	15C	13 Tucker Ave	Public Housing
93	3	15C	30 Calais Rd	Library
93	20	15C	32A Old Brookside Rd	Water Storage Tank
93	21.01	15C	32B Old Brookside Rd	Vacant Land
93	38.27	15C	Heritage Ct - Off In Back	Vacant Land
93	39	15C	Off Old Brookside Rd	Vacant Land
93	40	15C	Off Old Brookside Rd	Vacant Land

93	52	15C	Morris Tpke	Stream Management
93	56.01	15C	213 Morris Tpke	Public Housing
93.02	1	15C	3 Dolly Bridge Rd	Vacant Land
93.03	8	15C	Calais Rd / Sussex Tpke	Detention Basin
97	30.29	15C	Valley Rd	Vacant Land
103	72	15C	17 Wick Ln	Vacant Land
103	103	15C	19 Wick Ln	Vacant Land
103	105	15C	25 Wick Ln	Vacant Land
112	16	15C	389 Route 10	Gas Station
112.01	52	15C	Robin Dr	Water Plant
113	1	15C	Center Grove Rd	Vacant Land
115	3	15C	343 Millbrook Ave	Public Housing
115	7	15C	Off Millbrook Ave	Vacant Land
115	25.02	15C	421 Millbrook Ave	Open Space
115	68.01	15C	Center Grove Rd	Vacant Land
115	76.01	15C	15 Fords Rd	Vacant Land
115	76.04	15C	17 Fords Rd	Vacant Land
115	80.02	15C	Off Fords Rd	Vacant Land
115	83	15C	Off Cambridge Ct	Vacant Land
115	84	15C	43 Fords Rd	Open Space
116	31.01	15C	555 Millbrook Ave	Vacant Land
116	32	15C	565 Millbrook Ave	Residence
119	2	15C	112 Everdale Rd	Park Land
119	3	15C	110 Everdale Rd	Park Land
119	5	15C	108 Everdale Rd	Utility Bldg.
119	14.13	15C	8 Rebecca Ct	Detention Basin
119	14.30	15C	Rebecca Ct	Open Space
119	76	15C	73 Radtke Rd	Park Land
119	79	15C	111 Radtke Rd	Park Land
119	83	15C	123 Radtke Rd	Park Land
119	84	15C	135 Radtke Rd	Park Land
119	85	15C	167 Radtke Rd	Park Land
119	91.50	15C	31 W Hanover Ave	Open Space
119	95	15C	Off W Hanover Ave	Park Land
119	96	15C	Off W Hanover Ave	Park Land
119	97	15C	Off W Hanover Ave	County Park
119	98	15C	Off W Hanover Ave	County Park
119	99	15C	Radtke Rd	Park Land
119	100	15C	Off W Hanover Ave	Park Land
119	101.01	15C	Off Millbrook Ave	Open Space
119	115.01	15C	630 Millbrook Ave	Residence
119	115.02	15C	Millbrook Ave	Open Space
119	116.01	15C	620 Millbrook Ave	Open Space
119	118	15C	554 Millbrook Ave	Park Land
119	119	15C	502 Millbrook Ave	Town Hall
119	121	15C	496 Millbrook Ave	Public Housing
119	122	15C	488 Millbrook Ave	Public Housing
119	124	15C	Off Everdale Rd	Park Land
119	129	15C	Off Everdale Rd	Park Land

119	145	15C	22 Bragman Rd	Detention Basin
121	68.01	15C	2 Laurel Hill Dr	Vacant Land
131	51.16	15C	4 Dyer Ln	Detention Basin
131.01	7	15C	Fairfield Ave	Detention Basin
135	5	15C	10 Fairlawn Ave	Foreclosure
137	1	15C	216 Millbrook Ave	Residence
137	3	15C	222 Millbrook Ave	For Millbrook Circle
142	5	15C	High St	Water Line
142	19.01	15C	19 Grist Mill Rd	Vacant Land
142	28	15C	Hill St	Vacant Land
145	51	15C	87 Grist Mill Rd	Vacant Land
146	42.02	15C	71 Mountainside Dr	Open Space
146	45.02	15C	Off Mountainside Dr	Vacant Land
146	72.03	15C	Skyline Dr	Vacant Land
146	72.11	15C	40 Piersons Hill Rd	Vacant Land
146	72.16	15C	Skyline Dr	Vacant Land
146	72.31	15C	Skyline Dr	Vacant Land
146	79.02	15C	Piersons Hill Rd	Vacant Land
147	1	15C	1 Piersons Hill Rd	Vacant Land
147	14	15C	107 Everdale Rd	Vacant Land
155	18	15C	79 W Hanover Ave	County Park
155	59	15C	89 W Hanover Ave	County Park
155	60	15C	89A W Hanover Ave	County Park
155	61	15C	71 W Hanover Ave	County Park
155	62	15C	180 Radtke Rd	County Park
155	63	15C	51 W Hanover Ave	County Park
166	1	15C	50 W Hanover Ave	Forest
166	3	15C	119 W Hanover Ave	Park Land
166	4.14	15C	Off Block Ct	Vacant Land
166	15.08	15C	1127 Sussex Tpke	Detention Facility
168	87	15C	140 W Hanover Ave	Open Space
168	106	15C	Forrest Hill Rd	Vacant Land
176	40	15C	Off Shady Ln	Vacant Land
191	7	15C	11-19 Bennett Ave	Housing
195	1	15C	202 S Salem St	Vacant Land
195	3	15C	8 Bennett Ave	Public Housing
195	18	15C	80 Route 10	Vacant Land
195	25	15C	232 S Salem St	Park
198	1	15C	87 Route 10	Vacant Land
199	1	15C	217 Route 10	Vacant Land
199	46.17	15C	100 Mountainside Dr	Open Space
199.02	34.04	15C	Off Roc Etam Rd	Drainage
201	37.11	15C	22 Heather Ln	Drainage
201	43	15C	1 Openaki Rd	Vacant Land
201	48	15C	4 Farm Rd	Vacant Land
208.02	119.37	15C	16 Timber Ln	Park
212	1	15C	167 W Hanover Ave	Well
215	29	15C	190 W Hanover Ave	Park & County Radio
215	73	15C	1015 Sussex Tpke	Pumping Station

217	8.01	15C	Chestnut Hill Rd	Vacant Land
217	17.01	15C	Cottonwood Dr	Vacant Land
221	49	15C	16 Drake Ct	Detention Basin
222	7	15C	25 Drake Ct	Vacant Land
222	8	15C	23 Drake Ct	Detention Basin
222	11.01	15C	7A Mount Pleasant Rd	Vacant Land
224	16	15C	15 Musiker Ave	Well
224	23	15C	5 Leonard Ln	Vacant Land
224	24	15C	2 Sylvia Pl	Vacant Land
224	32	15C	17 Knights Bridge Dr	Recreation Area
224	34	15C	9 Knights Bridge Dr	Detention Basin
224	35	15C	7 Knights Bridge Dr	Pump. Station
224	78	15C	47 Brookside Rd	Retention Basin
1706	24	15C	W Munson Ave	Shed
*10102	7	15C	13 Black Birch Dr	Pond
23	8	15D	4 East Logan Rd	Vacant Land
23	9	15D	2 East Logan Rd	Parsonage
23	10	15D	298 Dover-Chester Rd	Church
33	51	15D	186 Park Ave	Church
35	28	15D	17 Pamela Dr	Group Residence
42	95	15D	23 Gilmar Rd	Parsonage
42	97	15D	764 Route 10/44 Fernia Dr	Church
42	109	15D	790 Route 10	Church
44	13.01	15D	791 Route 10	2.89 Ac Is Taxable
44	19	15D	120 Dover-Chester Rd	Church
44	31.01	15D	146 Dover-Chester Rd	Schools
45	21	15D	220 Dover-Chester Rd	Church
45	25	15D	1447 Sussex Tpke	Church
47	40	15D	267 Dover-Chester Rd	Parsonage
49	2.01	15D	335 Dover-Chester Rd	Church
50	6	15D	140 Combs Hollow Rd	Autism House
53	44	15D	45 High Ave	Group Home
55	1	15D	443 Quaker Church Rd	Church
73	56	15D	6 Emery Ave	Church
73	58	15D	10 Emery Ave	Parking Area
73	59	15D	12 Emery Ave	Church
77	35	15D	318 Quaker Church Rd	Church
78	3	15D	319 Quaker Church Rd	Church
82	30	15D	40 School House Rd	Health & Welfare
82	40	15D	651 Millbrook Ave	Catholic Church
82	48	15D	107 Carrell Rd	Parsonage
93	14	15D	12 Old Brookside Rd	Church
97	1	15D	1253 Sussex Tpke	Church
97	1	15D	16 Church Rd	Church
97	23	15D	1207 Sussex Tpke	Synagogue
97	24	15D	1209 Sussex Tpke	Vacant Land
103	17	15D	1 Nuko Ter	Rabbi Residence
111	22.06	15D	390 Route 10	Church Offices
115	74	15D	185 Center Grove Rd	Church

119	114.03	15D	658 Millbrook Ave	Church
131	55	15D	2 Quaker Ave	Church
141	11	15D	343 S Morris St	Parsonage
141	12	15D	367 S Morris St	Church
145	58	15D	246 Millbrook Ave	Church
166	1.01	15D	48 W Hanover Ave	Rabbi Residence
176	82	15D	18 Cedar Ter	NJ Dept. Group Home
180	1	15D	322 S Morris St	Christadel Ecclesia
3	3	15F	1579 Sussex Tpke	Office
21.05	129	15F	13 Orchard Dr	Disabled Veteran
27	5	15F	86 Pleasant Hill Rd	Disabled Veteran
27	66	15F	14 Seneca Trl	Disabled Veteran
38	60	15F	20 Cromwell Dr	Disabled Veteran
38.01	21	15F	11 South Rd	Disabled Veteran
42	107	15F	780 Route 10	Rescue Squad
42	110	15F	800 Route 10	Disabled Veteran
42	122.02	15F	100 Canfield Ave	Girls Scouts Of Amer
42.06	66	15F	26 Dover-Chester Rd	Morris County Ymca
46.01	38	15F	106 Morris Tpke	Disabled Veteran
49	2.02	15F	331 Dover-Chester Rd	Chemical Co. # 4
59	6	15F	28 Treaty Rd	Disabled Veteran
60	6	15F	34 Ridge Rd	Disabled Veteran
60	11	15F	37 Treaty Rd	Disabled Veteran
81	29.31	15F	32 Wilkeshire Blvd	Vacant Land
81.03	10	15F	15 Rippling Brook Way	Disabled Veteran
82	49	15F	105 Carrell Rd	Disabled Veteran
86	10	15F	40 Carrell Rd	Disabled Veteran
101	22.01	15F	108 Albert Ct	Disabled Veteran
119	102.02	15F	9&10 Westminster Dr	Disabled Veteran
119	110.68	15F	5 Mahogany Way	Disabled Veteran
119	114.01	15F	670 Millbrook Ave	Volunteer Fire Co
120	5	15F	24 W Hanover Ave	Vacant Land
120	5.01	15F	26 W Hanover Ave	Synagogue
121	52	15F	1100 Sussex Tpke	Disabled Veteran
137	6	15F	99 Quaker Church Rd	Fire House
137	8	15F	340 Route 10	Fire House #2
145	12	15F	119 High St	Disabled Veteran
146	38	15F	51 Mountainside Dr	Disabled Veteran
148	17	15F	17 Winding Way	Disabled Veteran
161	8	15F	19 Forrest Rd	Disabled Veteran
167	1	15F	118 W Hanover Ave	Fire House #5
184	6.01	15F	601 Wendover Ct	Disabled Veteran
220	16	15F	57 Misty Mountain Rd	Disabled Veteran
220	27	15F	31 Ash Ln	Disabled Veteran

*Only a portion of the parcel is within the Randolph Township boundary

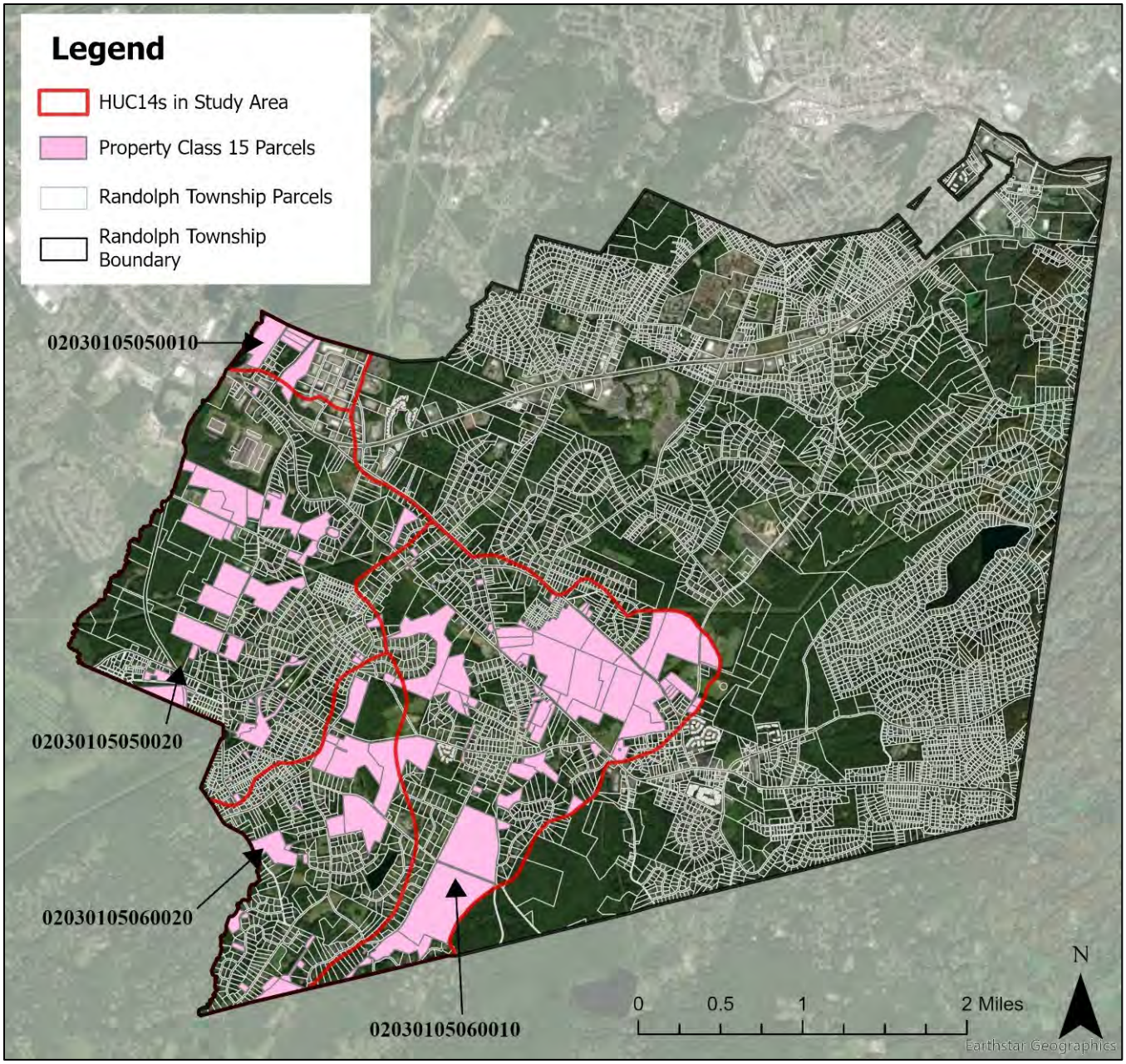


Figure 11: Property Class 15 parcels in the Study Area of Randolph Township

Table 10: Property Class 15 Parcels in the Study Area of Randolph Township

Block	Lot	Prop Class	Location	Facility Type
47	7.32	15A	Off Quail Run	Sanitary Disposal
***48**	**5**	**15A**	**303 Dover-Chester Rd**	**Ironia School**
1	2	15C	43 Green Ln	Randolph Park
2	1	15C	76 Green Ln	Randolph Park
2	2	15C	68 Green Ln	Vacant Land
2	3	15C	64 Green Ln	Vacant Land
5	19	15C	41 Park Ave	Day Camp
5	22	15C	15 Righter Rd	Open Space
5	23	15C	45 Righter Rd	Vacant Land
5	26	15C	55A Righter Rd	Open Space
6	16	15C	49 Pleasant Hill Rd	Vacant Land
6	26	15C	111 Park Ave	Open Space
6	27.01	15C	57 Pleasant Hill Rd	Mua Easement
6	42	15C	83 Park Ave	Vacant Land
6	43	15C	75 Park Ave	Vacant Land
6	52	15C	18 Righter Rd	Vacant Land
6	53	15C	34 Righter Rd	Open Space
14	2.01	15C	147 Selma Blvd	Vacant Land
14	9	15C	Pleasant Hill Rd	Vacant Land
14	11	15C	9 Chester Ave	Well
14	27	15C	Off Selma Blvd	Vacant Land
18.01	1	15C	80 Irish Spring Rd	Vacant Land
21	19.15	15C	11 Nottingham Way	Dedicated Open Space
21	20	15C	1466 Sussex Tpke	Open Space
21	32.08	15C	Sherwood Ct	Open Space
21	39	15C	5 Stonehill Rd	Well
21	127.01	15C	110 Park Ave	Open Space
21	129	15C	Park Ave	Vacant Land
21	130.02	15C	72 Park Ave	Open Space
21	142	15C	18 James Rd	Open Space
21	149	15C	34 Park Ave	Camp
21	150.02	15C	32 Park Ave	Vacant Land
21.05	152	15C	Pleasant Hill Rd	Vacant Land
21.10	1	15C	Nottingham Way	Dedicated Open Space
23	18	15C	18 Aldebaran Dr	Vacant Land
27	5.08	15C	Off Spring Brook Dr	Vacant Land
27	6	15C	88A Pleasant Hill Rd	Vacant Land
27	8	15C	Dover-Chester Rd	Vacant Land
27	86.02	15C	152.5 Park Ave	Vacant Land
30	1	15C	159 Park Ave	Foreclosure
32	7	15C	4 Sunset Dr	Well
35	5	15C	385 Dover-Chester Rd	County Garage
35	50.05	15C	10 Patriots Way	Detention Basin
35	50.14	15C	Patriots Path	Patriots Path
35	65	15C	37 Ironia Mendham Rd	Vacant Land
38	54	15C	4 Burnett Brook Dr	Vacant Land

38.02	6	15C	9 Burnett Brook Dr	Vacant Land
40	4.34	15C	Shadowbrook Way	Vacant Land
40	4.36	15C	Shadowbrook Way	Vacant Land
40	4.37	15C	Shadowbrook Way	Vacant Land
40	4.38	15C	Shadowbrook Way	Vacant Land
40	7	15C	Off South Rd	Open Space
40	15	15C	Off South Rd	Open Space
42[2]	123	15C	164 Canfield Ave	Inspection Station
46	1	15C	1425 Sussex Tpke	Park Land
46	13.02	15C	122 Morris Tpke	Detention Basin
46	28	15C	1411 Sussex Tpke	Retention Basin
47	1	15C	1428 Sussex Tpke	Vacant Land
47	7.30	15C	1392 Sussex Tpke	Dedicated Open Space
47	12.17	15C	Lake Cherokee	Vacant Land
47	27.13	15C	Nina Place	Stream Management
47	27.27	15C	24 Nina Pl	Detention Basin
47	27.28	15C	Nina Place	Stream Management
47	27.29	15C	Nina Place	Vacant Land
47	28.33	15C	India Brook & Calais Rd	Detention Basin
49	2	15C	112 Calais Rd	Vacant Land
49	3	15C	100 Calais Rd	Pavillion
49	8	15C	9 Farmstead Ct W	Vacant Land
50	3	15C	63 Dolly Bridge Rd	Open Space
***51[1]**	**7**	**15C**	**40 Doby Rd**	**Park**
***51[1]**	**30**	**15C**	**126 South Rd**	**Park**
52	1.01	15C	Doby Rd	Open Space
52	2.08	15C	Combs Hollow Rd	Vacant Land
82[2]	38	15C	631 Millbrook Ave	Residence
82	50	15C	103 Carrell Rd	Club House
82	51	15C	99 Carrell Rd	Vacant Land
82[2]	52	15C	75 Carrell Rd	Vacant Land
82	89.02	15C	Center Grove Rd	Open Space
84	7	15C	55 Carrell Rd	Vacant Land
84	8	15C	57 Carrell Rd	Vacant Land
84	9	15C	57A Carrell Rd	Vacant Land
86	32	15C	Off Cypress Pl	Vacant Land
86	55	15C	60 Carrell Rd	Brundage Park
86	**56**	**15C**	**60 Carrell Rd**	**Brundage Park**
86	57	15C	74 Carrell Rd	Brundage Park
86	58	15C	84 Carrell Rd	Vacant Land
86	61	15C	25 Church Rd	Vacant Land
86	62	15C	Off Church Rd	Brundage Park
86	63.02	15C	1275 Sussex Tpke	Vacant Land
86	64	15C	Off Church Rd	Brundage Park
86	65	15C	Sussex Turnpike	Brundage Park
86	66	15C	1313 Sussex Tpke	Vacant Land
86	72.02	15C	1339 Sussex Tpke	Vacant Land
86	72.03	15C	1341 Sussex Tpke	Vacant Land
86	73	15C	1345 Sussex Tpke	Township Garage

86	74	15C	151 Morris Tpke	Maintenance Bldg.
86	75	15C	147 Morris Tpke	Vacant Land
88	7.10	15C	1318 Sussex Tpke	Vacant Land
88	12	15C	Off Sussex Tpke	Vacant Land
91	2	15C	14 Tucker Ave	Vacant Land
91	3	15C	8 Tucker Ave	Vacant Land
92	4	15C	1304 Sussex Tpke	Vacant Land
92	24	15C	9 Tucker Ave	Vacant Land
92	25	15C	13 Tucker Ave	Public Housing
***93**	**3**	**15C**	**30 Calais Rd**	**Library**
93[2]	20	15C	32A Old Brookside Rd	Water Storage Tank
93	38.27	15C	Heritage Ct - Off In Back	Vacant Land
93[2]	39	15C	Off Old Brookside Rd	Vacant Land
93	52	15C	Morris Tpke	Stream Management
93	56.01	15C	213 Morris Tpke	Public Housing
93.02	1	15C	3 Dolly Bridge Rd	Vacant Land
93.03	8	15C	Calais Rd / Sussex Tpke	Detention Basin
***119[2]**	**115.01**	**15C**	**630 Millbrook Ave**	**Residence**
119[2]	115.02	15C	Millbrook Ave	Open Space
23	8	15D	4 East Logan Rd	Vacant Land
23	9	15D	2 East Logan Rd	Parsonage
23	10	15D	298 Dover-Chester Rd	Church
33	51	15D	186 Park Ave	Church
35	28	15D	17 Pamela Dr	Group Residence
45	21	15D	220 Dover-Chester Rd	Church
45	25	15D	1447 Sussex Tpke	Church
47	40	15D	267 Dover-Chester Rd	Parsonage
49	2.01	15D	335 Dover-Chester Rd	Church
50	6	15D	140 Combs Hollow Rd	Autism House
***82**	**40**	**15D**	**651 Millbrook Ave**	**Catholic Church**
82	48	15D	107 Carrell Rd	Parsonage
97	1	15D	1253 Sussex Tpke	Church
97[2]	1	15D	16 Church Rd	Church
119[2]	114.03	15D	658 Millbrook Ave	Church
3	3	15F	1579 Sussex Tpke	Office
21.05	129	15F	13 Orchard Dr	Disabled Veteran
27	5	15F	86 Pleasant Hill Rd	Disabled Veteran
27	66	15F	14 Seneca Trl	Disabled Veteran
38	60	15F	20 Cromwell Dr	Disabled Veteran
38.01	21	15F	11 South Rd	Disabled Veteran
42	122.02	15F	100 Canfield Ave	Girls Scouts Of Amer
46.01	38	15F	106 Morris Tpke	Disabled Veteran
***49**	**2.02**	**15F**	**331 Dover-Chester Rd**	**Chemical Co. # 4**
82	49	15F	105 Carrell Rd	Disabled Veteran
86[1,2]	10	15F	40 Carrell Rd	Disabled Veteran
***119[2]**	**114.01**	**15F**	**670 Millbrook Ave**	**Volunteer Fire Co**

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

[1]Site includes two tax-exempt parcels

[2]Only a portion of the parcel is within the study area

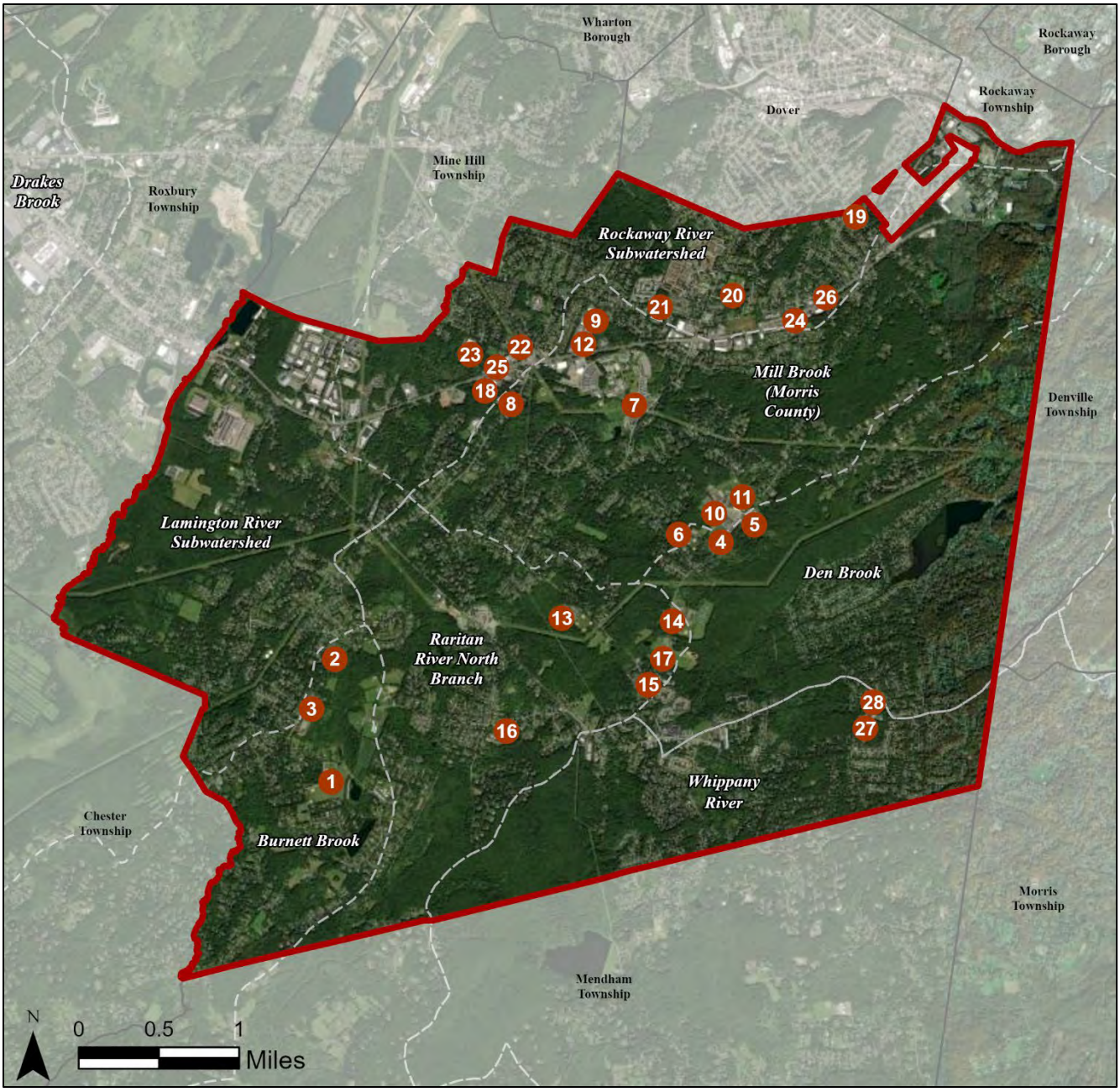


Figure 12: Sites with Green Infrastructure Opportunities in Randolph Township

HEISTEIN PARK

RAP ID: 1

Subwatershed: Burnett Brook

Site Area: 1,849,597 sq. ft.

Address: Heistein Park Road
Randolph, NJ 07869

Block and Lot: Block 51 | Lot 7,30

A bioretention system can be installed in the parking lot bump out to treat the parking lot drainage area. Pervious pavement can be installed in the east and west strips of the parking lot to manage additional 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"
9	174,724	8.4	88.2	802.2	0.136	4.79

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	0.078	13	6,110	0.23	750	$3,750
Pervious pavement	1.091	183	85,230	3.20	7,520	$188,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Heistein Park

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

0 75' 150'

IRONIA ELEMENTARY SCHOOL

RAP ID: 2

Subwatershed: Burnett Brook

Site Area: 653,414 sq. ft.

Address: 303 Dover Chester Road
Randolph, NJ 07869

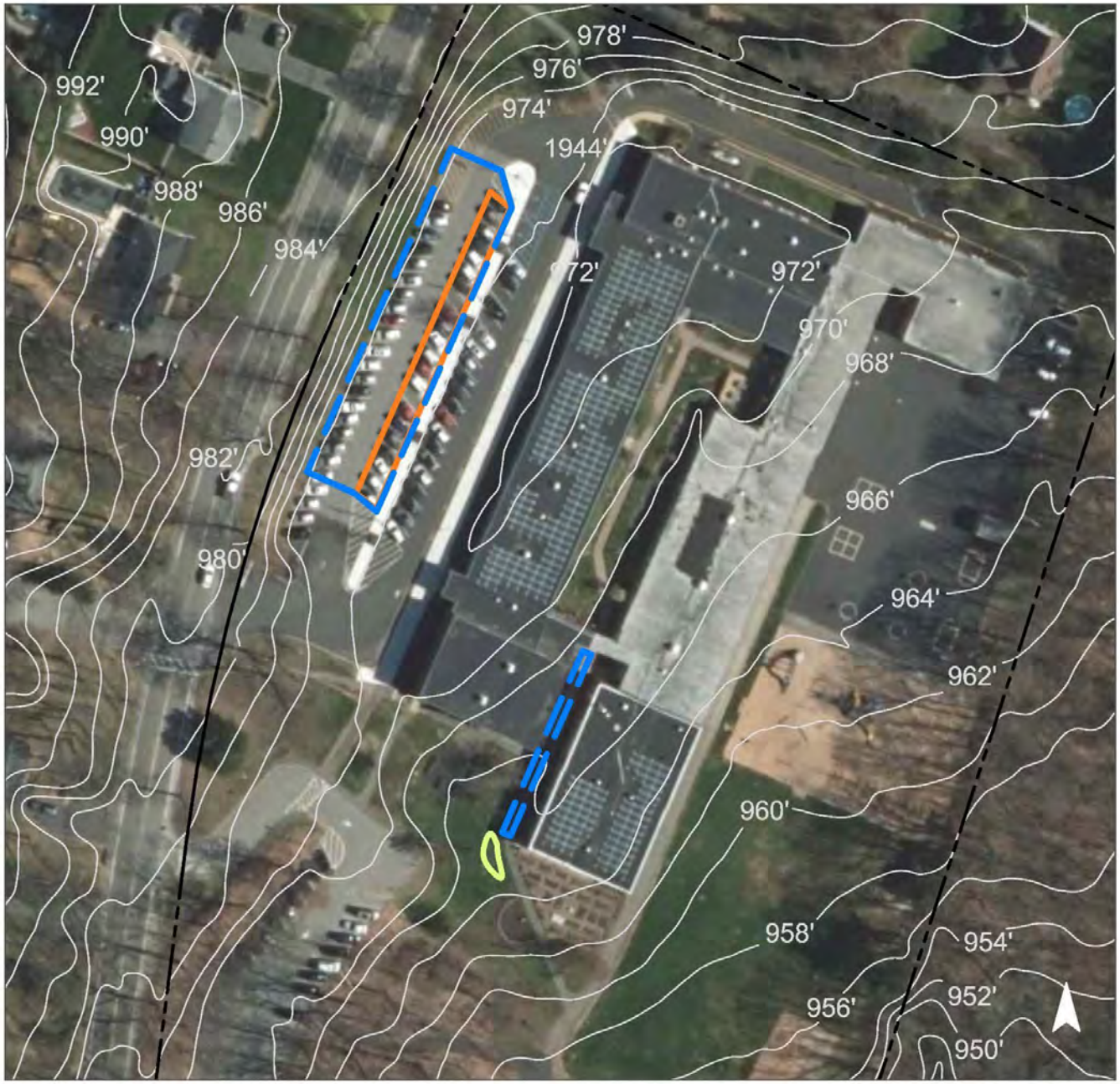
Block and Lot: Block 48 | Lot 5

A bioretention system can be created at the south end the building to capture, treat, and infiltrate the building's stormwater runoff. Pervious pavement can be installed in a strip of parking spaces to treat 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"
38	247,317	11.9	124.9	1,135.5	0.193	6.78

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.020	3	1,590	0.06	200	$1,000
Pervious pavement	0.312	52	24,350	0.92	3,925	$98,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Ironia Elementary School

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

0 50' 100'

RANDOLPH TOWNSHIP FIRE DEPARTMENT COMPANY #4

RAP ID: 3

Subwatershed: Burnett Brook

Site Area: 100,313 sq. ft.

Address: 331 Dover Chester Road
Randolph, NJ 07869

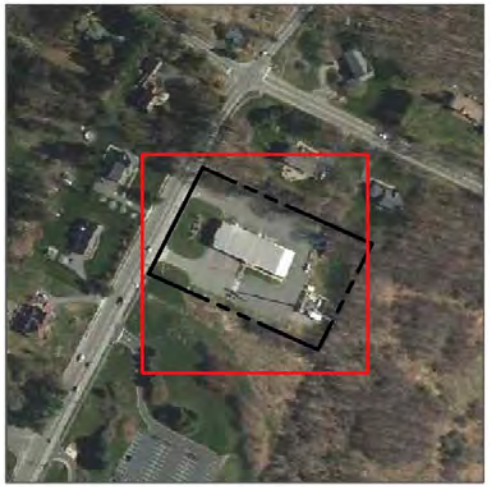
Block and Lot: Block 49 | Lot 2.02

A bioretention system can be installed in the east and south turfgrass areas to capture, treat, and infiltrate the runoff from the parking area. Additionally, a cistern can be installed on the northeast corner of the building to capture the rooftop drainage area that can be reused to wash the fire trucks and water the existing landscaping. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
67	67,102	3.2	33.9	308.1	0.052	1.84

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	0.231	39	18,060	0.68	2,220	$55,500
Rainwater harvesting	0.066	11	2,000	0.07	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph Township Fire Department Company #4

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

0 30' 60'

JOHN DASILVA MEMORIAL FIELD

RAP ID: 4

Subwatershed: Den Brook

HUC14 ID: 02030103020010

Site Area: 453,633 sq. ft.

Address: 555 Millbrook Avenue
Randolph, NJ 07869

Block and Lot: Block 116, Lots 31 & 31.01

A rain garden can be installed to the northeast of the garage to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require disconnecting downspouts. The existing parking spaces to the west of the entry driveway and in the western lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the 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 50"
40	181,313	8.7	91.6	832.5	0.141	5.65

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	2,295	0.068	10	4,790	0.18	575	$5,750
Pervious pavement	25,940	0.768	114	54,100	2.03	7,595	$189,875

GREEN INFRASTRUCTURE RECOMMENDATIONS

John DaSilva Memorial Field

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

0 50' 100'

RANDOLPH TOWNSHIP RECREATION

RAP ID: 5

Subwatershed: Den Brook

HUC14 ID: 02030103030120

Site Area: 847,700 sq. ft.

Address: 502 Millbrook Avenue
Randolph, NJ 07869

Block and Lot: Block 119, Lot 119

A rain garden can be installed to the northeast corner of the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require downspout disconnection and redirection. The concrete entry walkway to the southwest of the building can be replaced with permeable pavers. Existing parking spaces in the southeastern and southwestern lots can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. The pervious pavement to the southeast will require a trench drain to intercept and redirect runoff. The downspouts on the southwest of the adjacent shed can be disconnected to the porous pavement to manage runoff from the rooftop. A cistern can be installed to the north of the shed to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing township vehicles. 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 50"
21	181,641	8.8	91.7	834.0	0.142	5.66

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	430	0.013	2	900	0.03	110	$1,100
Pervious pavement	20,035	0.593	87	41,790	1.57	6,390	$159,750
Rainwater harvesting	575	0.017	2	500	0.02	500 (gal)	$1,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Randolph Township Recreation

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

0 30' 60'

CENTER GROVE ELEMENTARY SCHOOL

RAP ID: 6

Subwatershed: Den Brook

Site Area: 886,920 sq. ft.

Address: 25 Schoolhouse Road
Randolph, NJ 07869

Block and Lot: Block 116 | Lot 34

Pervious pavement can be installed in parking spaces throughout the site to capture and infiltrate stormwater runoff from the parking lot and adjacent rooftops. A rain garden can be installed in the area to the south of the building to capture additional stormwater from the rooftop 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"
34	302,005	14.6	152.5	1,386.6	0.235	8.28

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	0.092	15	7,210	0.27	885	$22,125
Pervious pavement	0.996	167	77,850	2.93	1,980	$49,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Center Grove Elementary School

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

0 50' 100'

COUNTY COLLEGE OF MORRIS

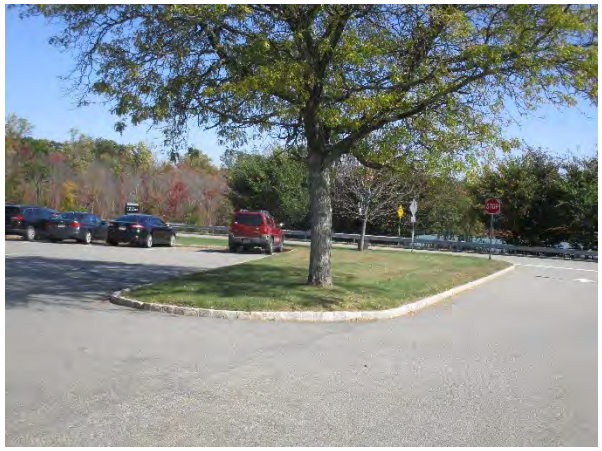
RAP ID: 7

Subwatershed: Mill Brook

Site Area: 9,259,582 sq. ft.

Address: 214 Center Grove Road
Randolph, NJ 07869

Block and Lot: Block 81 | Lot 1



A bioretention system can be installed at the east end of the parking lot adjacent to Henderson Hall to treat the parking lot's drainage area. Pervious pavement can be installed in parking spaces throughout the campus to manage the large amount of stormwater runoff generated by the parking lot areas. 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"
27	2,484,265	119.8	1254.7	11,406.2	1.936	68.14

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	0.417	70	32,580	1.22	4,000	$20,000
Pervious pavement	8.189	1,371	639,940	24.05	60,800	$1,520,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

County College of Morris

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

0 150' 300'

HOLY TRINITY ORTHODOX CHURCH

RAP ID: 8

Subwatershed: Mill Brook

HUC14 ID: 02030103030080

Site Area: 199,885 sq. ft.

Address: 120 Dover Chester Road
Randolph, NJ 07869

Block and Lot: Block 44, Lot 19

Existing parking spaces to the north and southwest of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The pervious pavement to the north of the building will also manage rooftop runoff. A trench drain will be needed to intercept and redirect the water to the southwestern pervious pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
21	41,923	2.0	21.2	192.5	0.033	1.31

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
Pervious pavement	22,615	0.670	99	47,170	1.77	4,870	$121,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Holy Trinity Orthodox Church

- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 25' 50'

IGLESIA ALIANZA

RAP ID: 9

Subwatershed: Mill Brook

Site Area: 93,605 sq. ft.

Address: 12 Emery Avenue
Randolph, NJ 07869

Block and Lot: Block 73, Lot 58, 59

Parking spaces at the southeast end of the parking lot can be converted to pervious pavement to capture and infiltrate stormwater 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"
53	49,950	2.4	25.2	229.3	0.039	1.37

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.263	44	20,530	0.77	1,800	$45,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Iglesia Alianza

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

0 25' 50'

RANDOLPH HIGH SCHOOL

RAP ID: **10**

Subwatershed: **Mill Brook**

Site Area: **1,241,714 sq. ft.**

Address: **511 Millbrook Avenue**
Randolph, NJ 07869

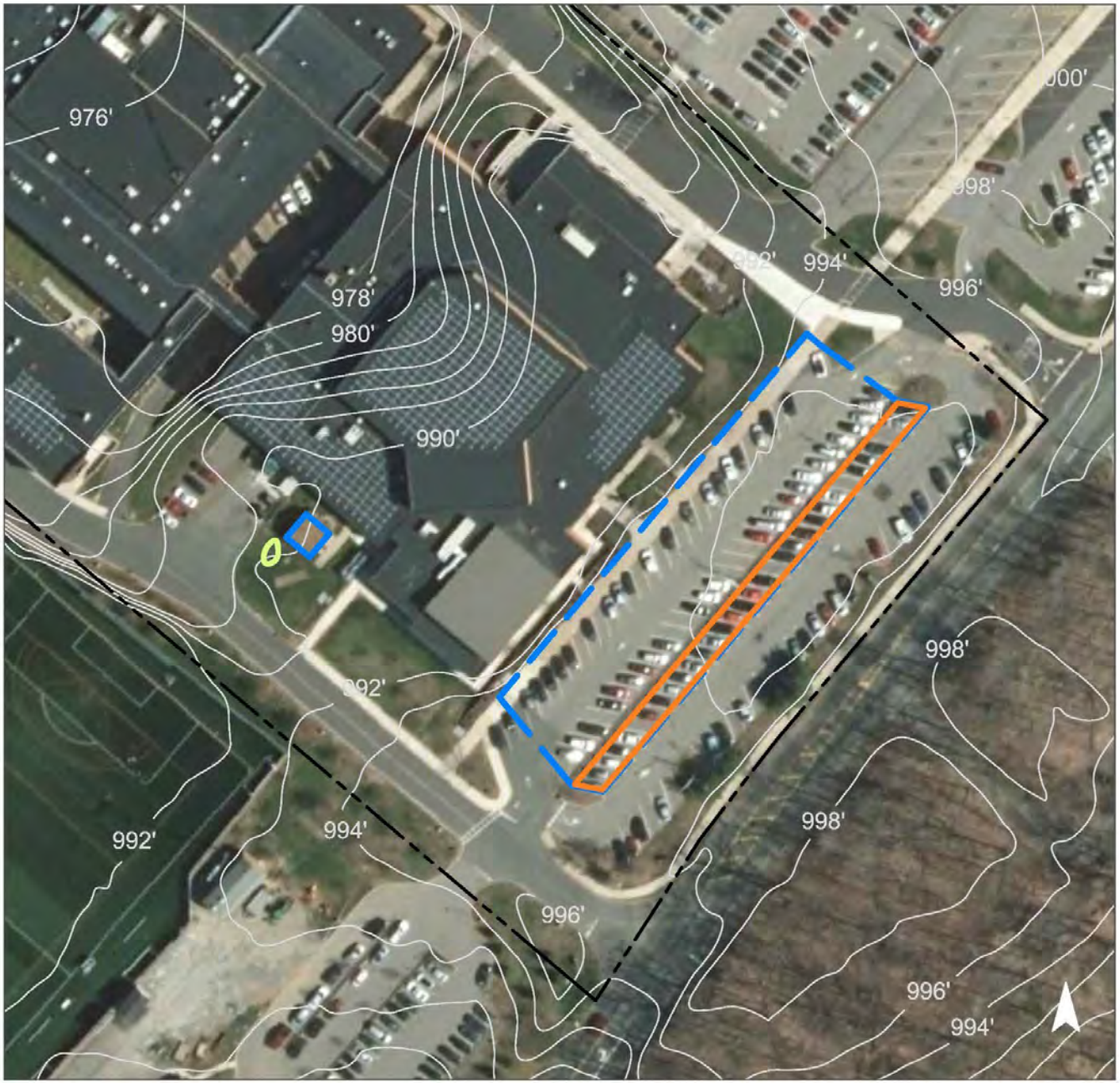
Block and Lot: **Block 116 | Lot 30**

Parking spaces in the parking lot to the southeast of the building can be converted to pervious pavement to capture and infiltrate stormwater runoff from the parking lot. Additional parking spaces throughout the site could be retrofitted as well. A small bioretention system can be installed adjacent to the shed to manage the 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"
47	584,321	28.2	295.1	2,682.8	0.455	16.03

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.010	2	820	0.03	100	$500
Pervious pavement	0.771	129	60,270	2.26	5,940	$148,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph High School

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

0 50' 100'

RANDOLPH MIDDLE SCHOOL

RAP ID: 11

Subwatershed: Mill Brook

HUC14 ID: 02030103030080

Site Area: 1,301,901 sq. ft.

Address: 507 Millbrook Avenue
Randolph, NJ 07869

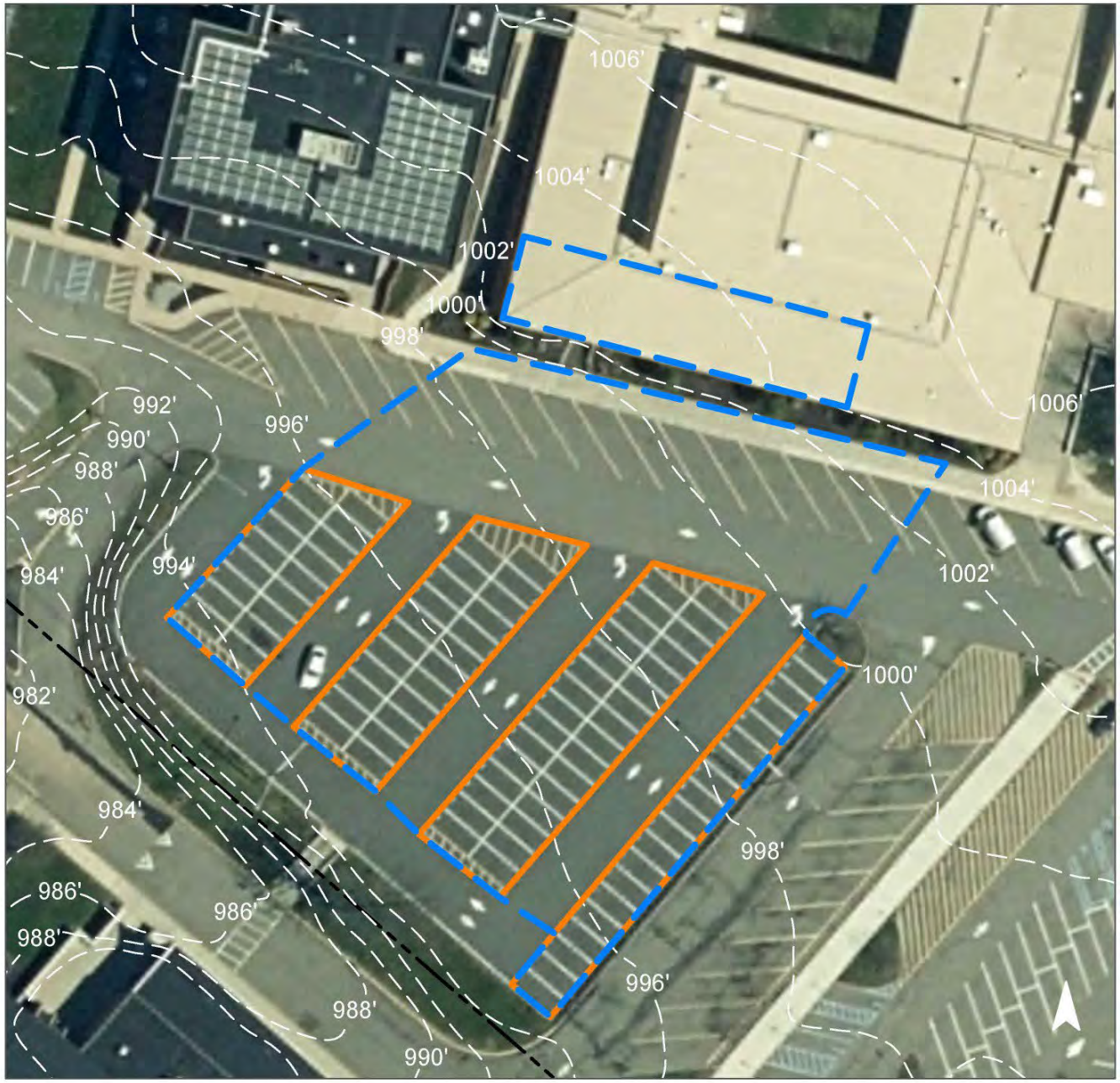
Block and Lot: Block 116, Lot 28

The existing parking spaces to the south of the school can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. Trench drains will be required. The downspouts on the southern side of the building can also be disconnected to the pervious pavement to manage rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
50	657,085	31.7	331.9	3,016.9	0.512	20.48

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
Pervious pavement	45,790	1.356	200	95,510	3.59	18,005	$450,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph Middle School

- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 30' 60'

THE CONNECT CHURCH: RANDOLPH

RAP ID: 12

Subwatershed: Mill Brook

Site Area: 75,871 sq. ft.

Address: 6 Emery Avenue
Randolph, NJ 07869

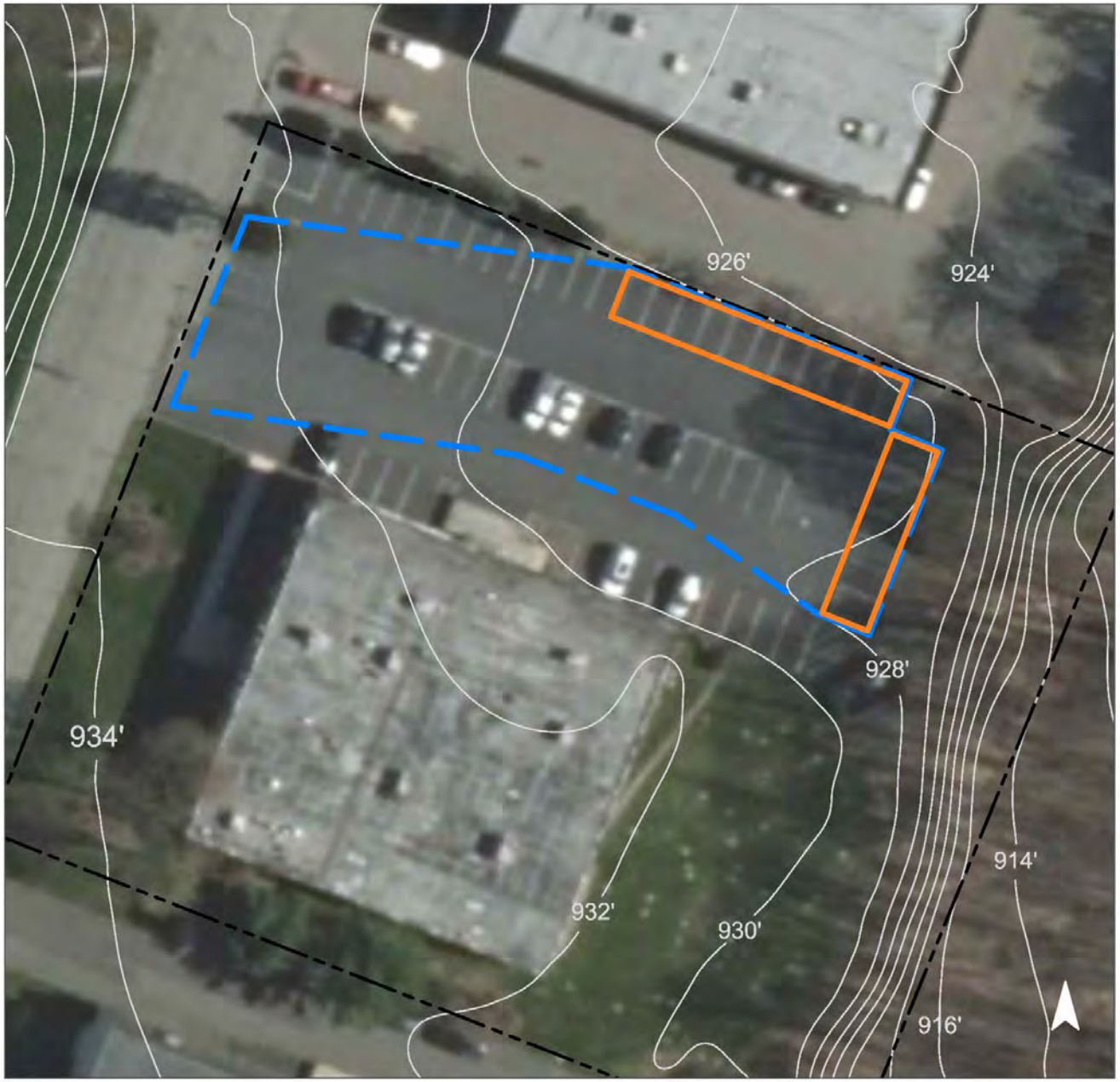
Block and Lot: Block 73 | Lot 56

Pervious pavement can be installed in the northeast portion of the parking lot to capture and infiltrate stormwater runoff from the parking area. 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"
62	47,152	2.3	23.8	216.5	0.037	1.29

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	0.550	92	42,970	1.61	2,970	$74,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Connect Church: Randolph

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

0 25' 50'

BRUNDAGE PARK

RAP ID: 13

Subwatershed: Raritan River North Branch

HUC14 ID: 02030105060010

Site Area: 818,135 sq. ft.

Address: 43 North Bungalow Lane
Randolph, NJ 07869

Block and Lot: Block 86, Lot 56

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the rooftops of the park buildings. This may require downspout redirections and disconnections. A gutter system will need to be installed on the pavilion for the northern rain garden. Existing parking spaces in the northern lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The tennis and basketball courts can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the courts. A cistern can be installed to the northeast of the southern park building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing vehicles. 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 50"
27	217,150	10.5	109.7	997.0	0.169	6.77

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	3,235	0.096	13	6,750	0.25	810	$8,100
Pervious pavement	87,850	2.601	384	183,240	6.89	61,430	$1,535,750
Rainwater harvesting	285	0.008	2	300	0.01	300 (gal)	$900

GREEN INFRASTRUCTURE RECOMMENDATIONS

Brundage Park

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

0 50' 100'

FREEDOM PARK

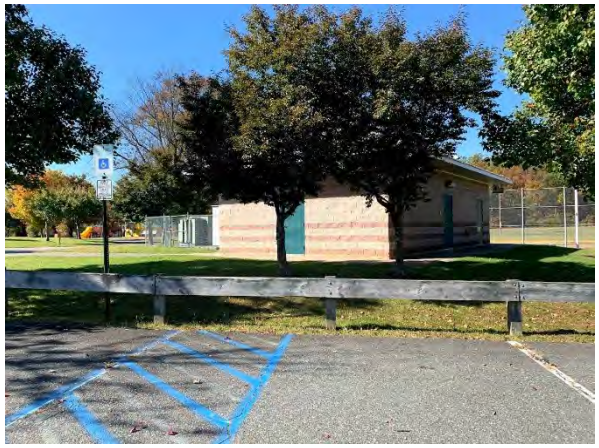
RAP ID: 14

Subwatershed: Den Brook

Site Area: 4,398,539 sq. ft.

Address: 630 Millbrook Avenue
Randolph, NJ 07869

Block and Lot: Block 119 | Lot 15. 01, 115.02, 101.01, 116.01

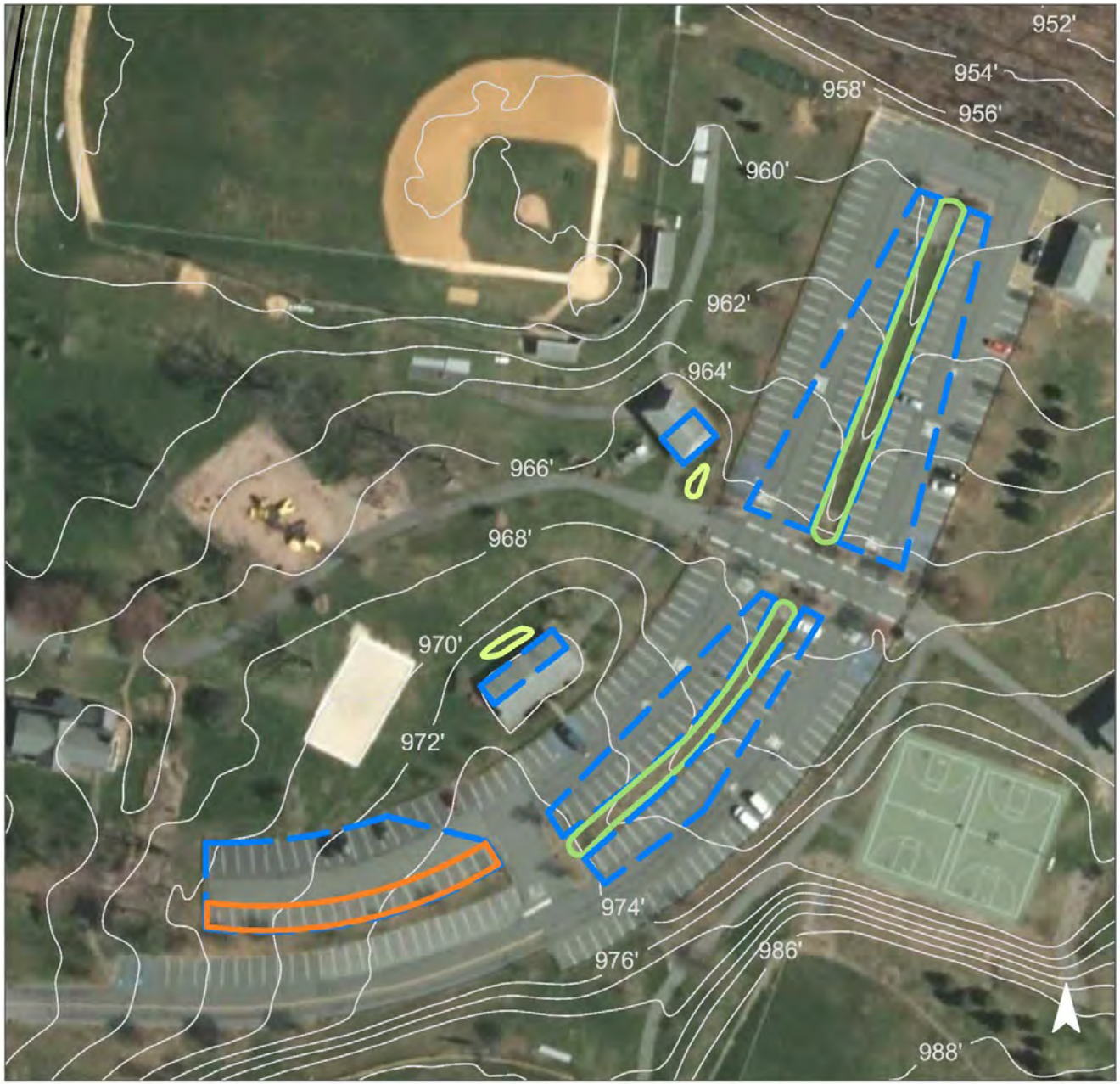


Bioretention systems can be installed near the park buildings to manage their rooftop areas. The existing swales in the center of the parking lot can be retrofitted with bioswales to enhance infiltration and slow down the stormwater runoff from the parking lot area. Pervious pavement can be installed in the northwest corner of the parking lot to capture additional stormwater 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"
8	348,578	16.8	176.0	1,600.4	0.272	9.56

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.039	7	3,080	0.12	380	$1,900
Bioswales	0.305	73	21,880	0.35	5,850	$146,250
Pervious pavement	0.266	44	20,770	0.78	3,530	$88,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Freedom Park

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

0 50' 100'

RANDOLPH TOWNSHIP FIRE DEPARTMENT COMPANY #3

RAP ID: 15

Subwatershed: Raritan River

Site Area: 199,614 sq. ft.

Address: 670 Millbrook Avenue
Randolph, NJ 07869

Block and Lot: Block 119 | Lot 114.01

Parking spaces along the south end of the building near multiple disconnected downspouts can be converted to pervious pavement to capture and infiltrate stormwater runoff from the parking lot and rooftop areas. A cistern can be installed on the north side of the building near a disconnected downspout to capture rainwater that can be used for watering gardens, washing vehicles, or for other non-potable uses. 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"
35	70,861	3.4	35.8	325.3	0.055	1.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.438	73	34,210	1.29	4,680	$117,000
Rainwater harvesting	0.039	7	1,200	0.05	1,200 (gal)	$2,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

Randolph Township Fire Department Company #3

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

0 25' 50'

RANDOLPH TOWNSHIP LIBRARY & COMMUNITY CENTER

RAP ID: 16

Subwatershed: Raritan River

Site Area: 431,087 sq. ft.

Address: 30 Calais Road
Randolph, NJ 07869

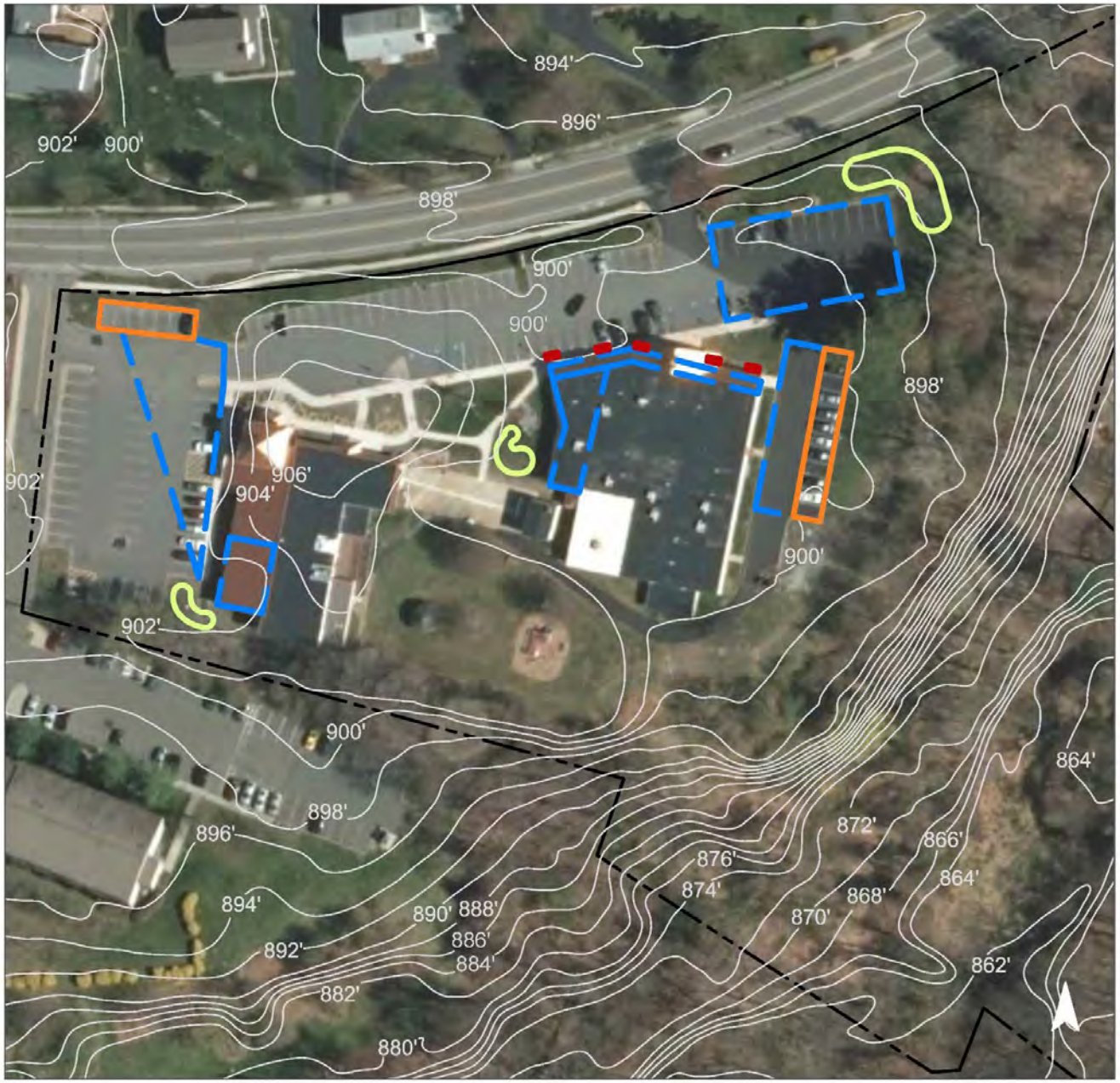
Block and Lot: Block 93 | Lot 3

Five downspout planter boxes can be installed on the north end of the library to filter the rooftop drainage area and beautify the area. Pervious pavement can be installed in the parking areas to capture and infiltrate stormwater runoff from the parking lot. Bioretention systems can be installed to manage areas from the rooftop by redirecting downspouts and from the parking lot by creating curb cuts. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
28	121,846	5.9	61.5	559.4	0.095	3.34

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.269	45	21,030	0.79	2,590	$12,950
Planter boxes	0.028	5	n/a	n/a	5 (boxes)	$5,000
Pervious pavement	0.327	55	25,580	0.96	2,450	$61,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph Township Library & Community Center

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

0 50' 100'

RESURRECTION PARISH

RAP ID: 17

Subwatershed: Raritan River

Site Area: 347,087 sq. ft.

Address: 651 Millbrook Avenue
Randolph, NJ 07869

Block and Lot: Block 82 | Lot 40

A rain garden can be installed on the north side of the building near the connected downspouts. The connected downspouts can be disconnected and led into the rain garden to capture, treat, and infiltrate stormwater runoff from the roof. The parking spaces in the parking lot can be retrofitted into pervious pavement to capture a large volume of stormwater running off from the parking lot during storm events. 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"
35	120,730	5.8	61.0	554.3	0.094	3.31

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	0.033	6	2,590	0.10	320	$1,600
Pervious pavement	2.210	370	172,740	6.49	16,430	$410,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Resurrection Parish

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

0 50' 100'

BIBLE CHURCH INTERNATIONAL

RAP ID: 18

Subwatershed: Rockaway River

Site Area: 336,955 sq. ft.

Address: 791 NJ Route 10
Randolph, NJ 07869

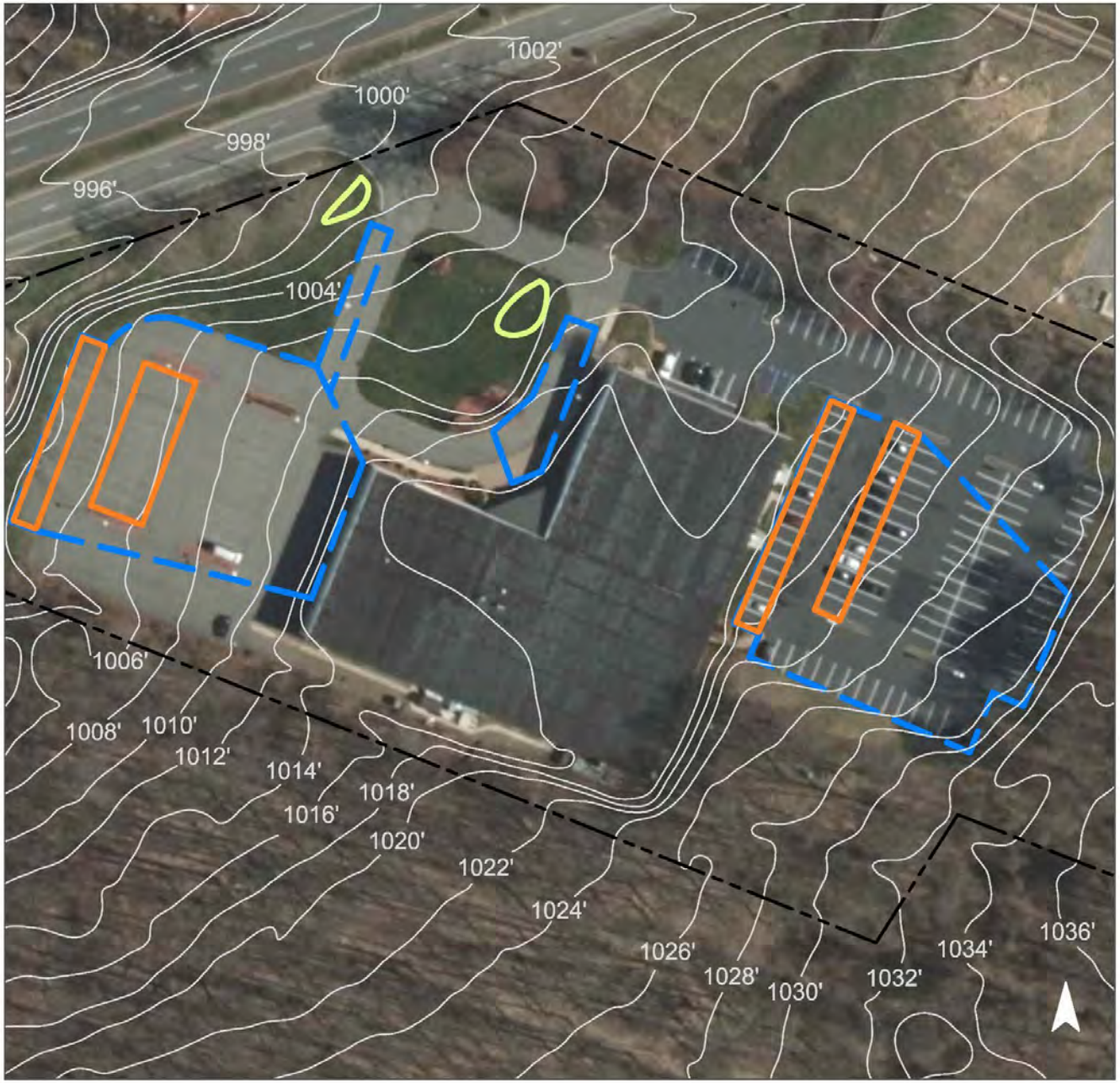
Block and Lot: Block 44 | Lot 13.01

Pervious pavement can be installed in both parking lots to capture and infiltrate stormwater runoff from the parking lot. Bioretention systems can be installed in the turfgrass areas by using curb cuts to direct water from the pavement into them. 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"
50	167,782	8.1	84.7	770.3	0.131	4.60

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.112	19	8,750	0.33	1,075	$5,375
Pervious pavement	0.327	55	25,580	0.96	2,500	$62,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bible Church International

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

0 50' 100'

CHRISTADELPHIAN CHAPEL

RAP ID: 19

Subwatershed: Rockaway River

Site Area: 130,981 sq. ft.

Address: 322 South Morris Street
Randolph, NJ 07869

Block and Lot: Block 180 | Lot 1

Parking spaces in the parking lot to the northeast of the building can be converted to pervious pavement to capture and infiltrate 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"
19	24,620	1.2	12.4	113.0	0.019	0.68

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
Pervious pavement	0.210	35	16,420	0.62	1,440	$36,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Christadelphian Chapel

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

0 25' 50'

FERNBROOK ELEMENTARY SCHOOL

RAP ID: 20

Subwatershed: Rockaway River

HUC14 ID: 02030103030070

Site Area: 741,674 sq. ft.

Address: 206 Quaker Church Road
Randolph, NJ 07869

Block and Lot: Block 110, Lot 11

Multiple rain gardens can be installed to the west of the school to capture, treat, and infiltrate stormwater runoff from the rooftop. Some downspouts will need to be redirected beneath the asphalt pathway. Rain gardens can also be installed to the north of the northern parking lot and the western play area. Trench drains will need to be installed on the western side of the asphalt to intercept and redirect the runoff to the rain gardens. Existing parking spaces to the east of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. Adjacent downspouts can be disconnected to the pervious pavement to manage stormwater runoff from the rooftop. The concrete entryway to the south of the building can be replaced with permeable pavers. 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 50"
31	229,220	11.1	115.8	1,052.4	0.179	7.14

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	26,235	0.777	114	54,720	2.06	6,565	$65,650
Pervious pavement	29,455	0.872	129	61,440	2.31	7,615	$190,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

Fernbrook Elementary School

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

0 50' 100'

GOOD SHEPHERD LUTHERAN CHURCH

RAP ID: **21**

Subwatershed: **Rockaway River**

HUC14 ID: **02030103030070**

Site Area: **229,094 sq. ft.**

Address: **319 Quaker Church Road**
Randolph, NJ 07869

Block and Lot: **Block 78, Lot 3**

Rain gardens can be installed to the north and west of the church buildings to capture, treat, and infiltrate the stormwater runoff from the rooftop. Some downspouts will need to be disconnected. 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 50"
29	66,518	3.2	33.6	305.4	0.052	2.07

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	3,930	0.116	17	8,200	0.31	985	$9,850

GREEN INFRASTRUCTURE RECOMMENDATIONS

Good Shepherd Lutheran Church

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

0 20' 40'

GRACE CHURCH BETHLEHEM CAMPUS

RAP ID: 22

Subwatershed: Rockaway River

Site Area: 442,120 sq. ft.

Address: 758 Route 10 West
Randolph, NJ 07869

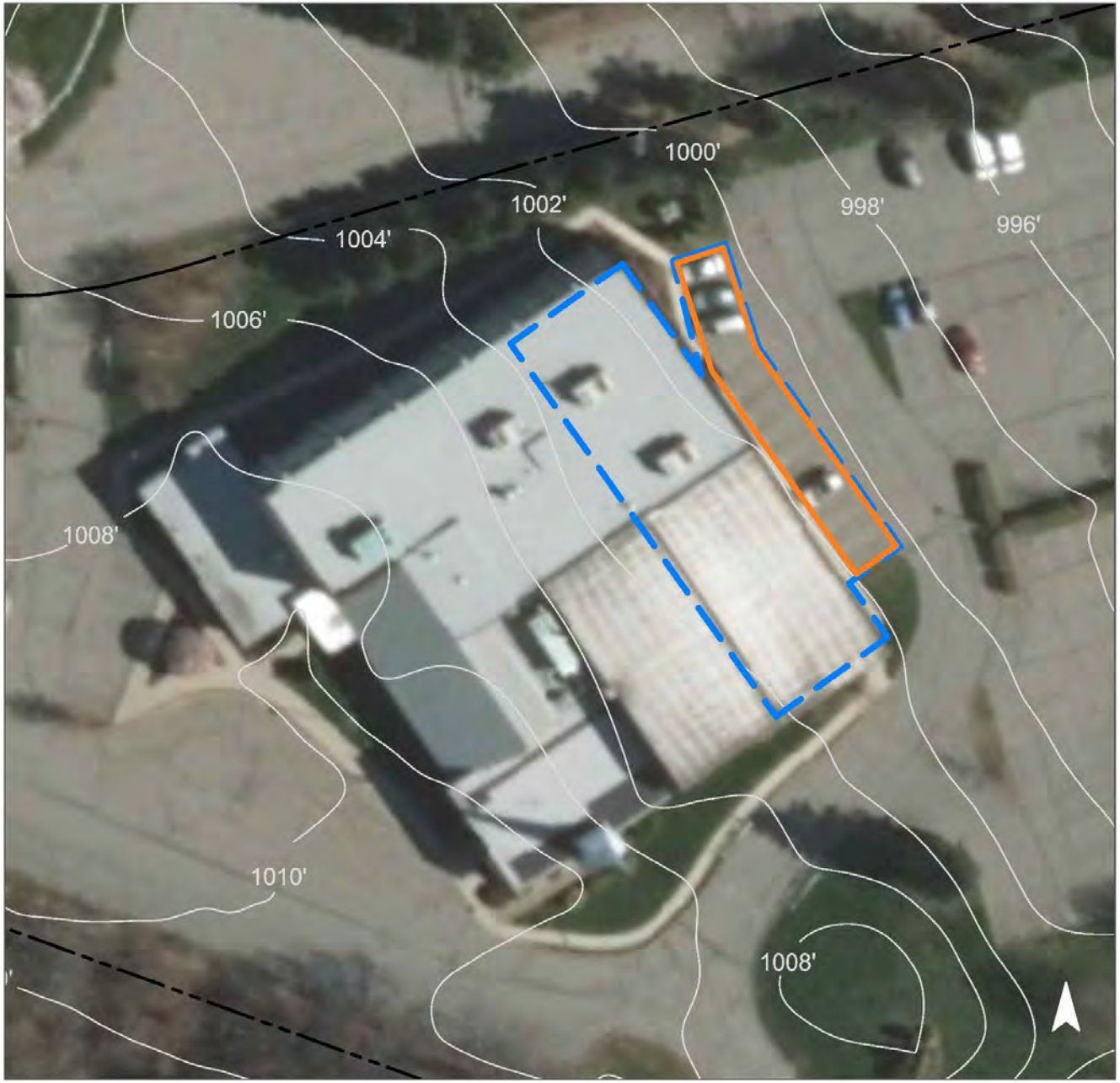
Block and Lot: Block 42 | Lot 97,98,99

Pervious pavement can be installed on a strip of parking spaces north of the building near connected downspouts. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. The downspouts can be disconnected and redirected into the 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"
32	139,728	6.7	70.6	641.5	0.109	3.83

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	0.238	40	18,630	0.70	2,130	$53,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Grace Church
Bethlehem Campus

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

0 25' 50'

MAR THOMA CHURCH OF NEW JERSEY

RAP ID: **23**

Subwatershed: **Rockaway River**

Site Area: **70,616 sq. ft.**

Address: **790 NJ Route 10**
Randolph, NJ 07869

Block and Lot: **Block 42 | Lot 109**

Parking spaces in the parking lot to the southwest of the building can be converted to pervious pavement to capture and infiltrate stormwater runoff from the parking lot. A rain garden can be installed in the turfgrass area west of the building to capture, treat, and infiltrate stormwater runoff from the roof. 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"
67	47,055	2.3	23.8	216.0	0.037	1.29

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	0.033	6	2,620	0.10	300	$1,500
Pervious pavement	0.078	13	6,110	0.23	810	$20,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mar Thoma Church of New Jersey

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

0 25' 50'

MILLBROOK UNITED METHODIST CHURCH

RAP ID: **24**

Subwatershed: **Rockaway River**

Site Area: **269,443 sq. ft.**

Address: **246 Millbrook Avenue**
Randolph, NJ 07869

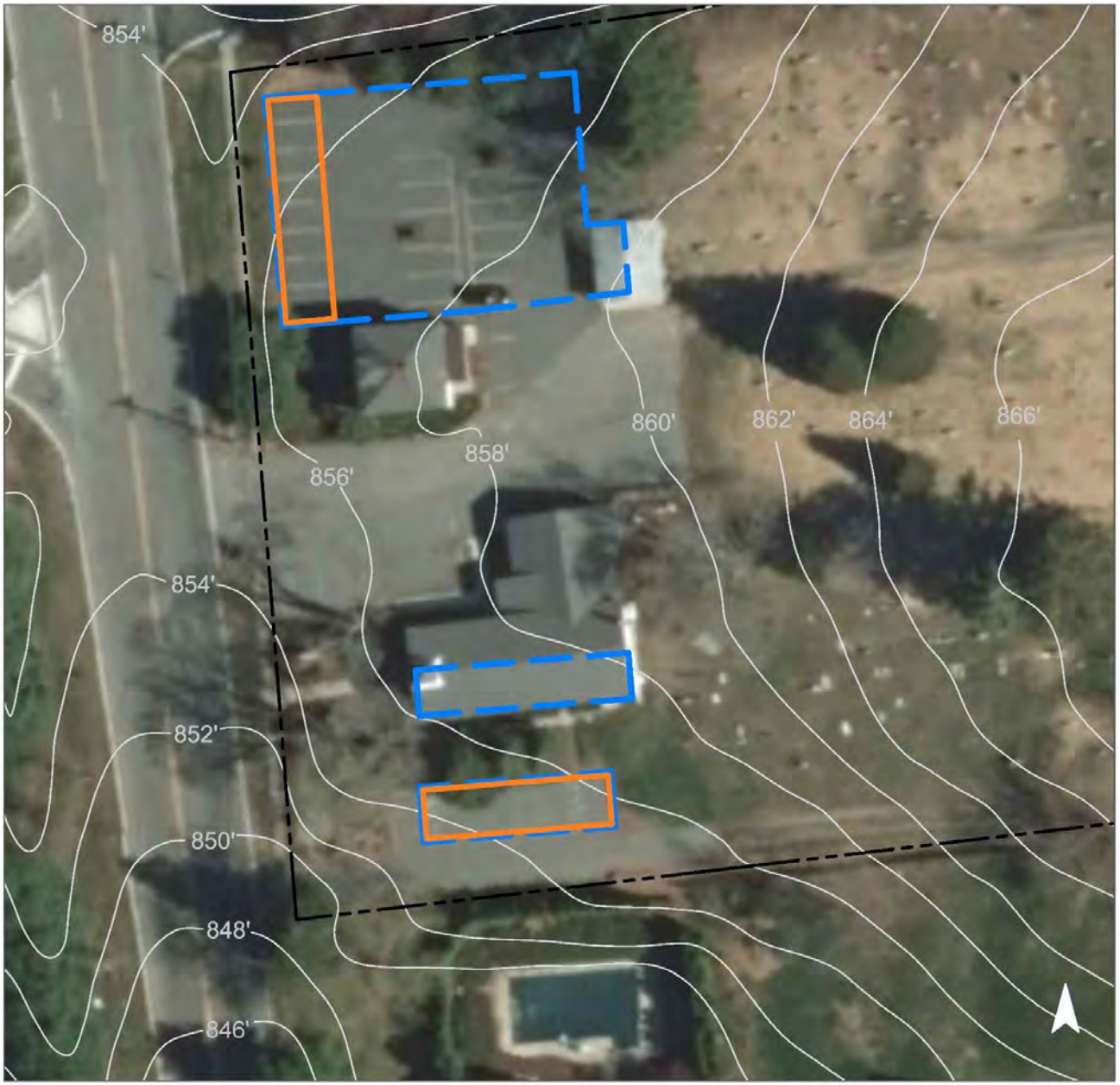
Block and Lot: **Block 145 | Lot 3, 58**

Pervious pavement can be installed south of the building near two disconnected downspouts to capture and infiltrate stormwater runoff from the parking lot and building. Parking spaces in the north parking lot can also be retrofitted with pervious pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
12	32,099	1.5	16.2	147.4	0.025	0.88

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	0.254	43	19,840	0.75	2,485	$62,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Millbrook United Methodist Church

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

0 25' 50'

RANDOLPH RESCUE SQUAD

RAP ID: 25

Subwatershed: Rockaway River

HUC14 ID: 02030103030070

Site Area: 59,005 sq. ft.

Address: 780 NJ-10
Randolph, NJ 07869

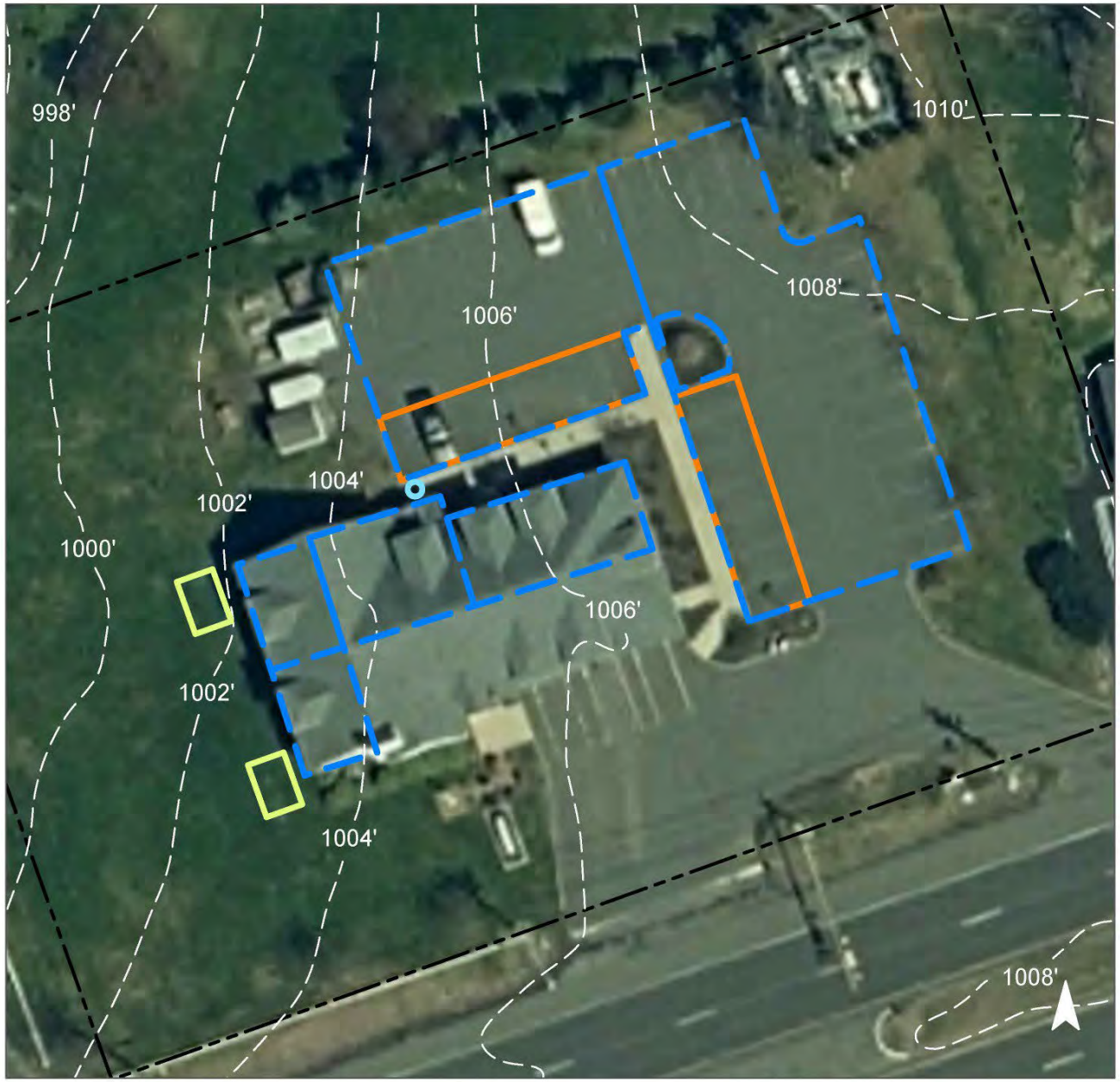
Block and Lot: Block 42, Lot 107

Rain gardens can be installed to the northwest and southwest of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require downspout disconnections. Existing parking spaces to the north and east of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. Downspouts on the north of the building can be disconnected to the pervious pavement to manage stormwater runoff from the rooftop. A cistern can be installed to the north of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing vehicles. 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 50"
56	33,088	1.6	16.7	151.9	0.026	1.03

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	1,160	0.034	6	2,420	0.09	290	$2,900
Pervious pavement	11,500	0.340	49	23,990	0.90	2,210	$55,250
Rainwater harvesting	1,080	0.032	4	900	0.03	900 (gal)	$2,700

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph Rescue Squad

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

0 20' 40'

RANDOLPH TOWNSHIP FIRE DEPARTMENT COMPANY #2

RAP ID: 26

Subwatershed: Rockaway River

Site Area: 94,287 sq. ft.

Address: 340 NJ Route 10
Randolph, NJ 07869

Block and Lot: Block 137, Lot 6, 7, 8

Pervious pavement can be installed in the parking spaces north of the building to capture and infiltrate stormwater runoff from the parking lot. A cistern can be installed north of the building near a downspout. The water from the cistern can then be used for watering gardens, washing vehicles, or for other non-potable uses. 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	57,966	2.8	29.3	266.1	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
Pervious pavement	0.384	64	30,000	1.13	2,710	$67,750
Rainwater harvesting	0.061	10	2,300	0.09	2,300 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Randolph Township Fire Department Company #2

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

0 25' 50'

SHONGUM ELEMENTARY SCHOOL

RAP ID: 27

Subwatershed: Whippany River

Site Area: 675,450 sq. ft.

Address: 9 Arrow Place
Randolph, NJ 07869

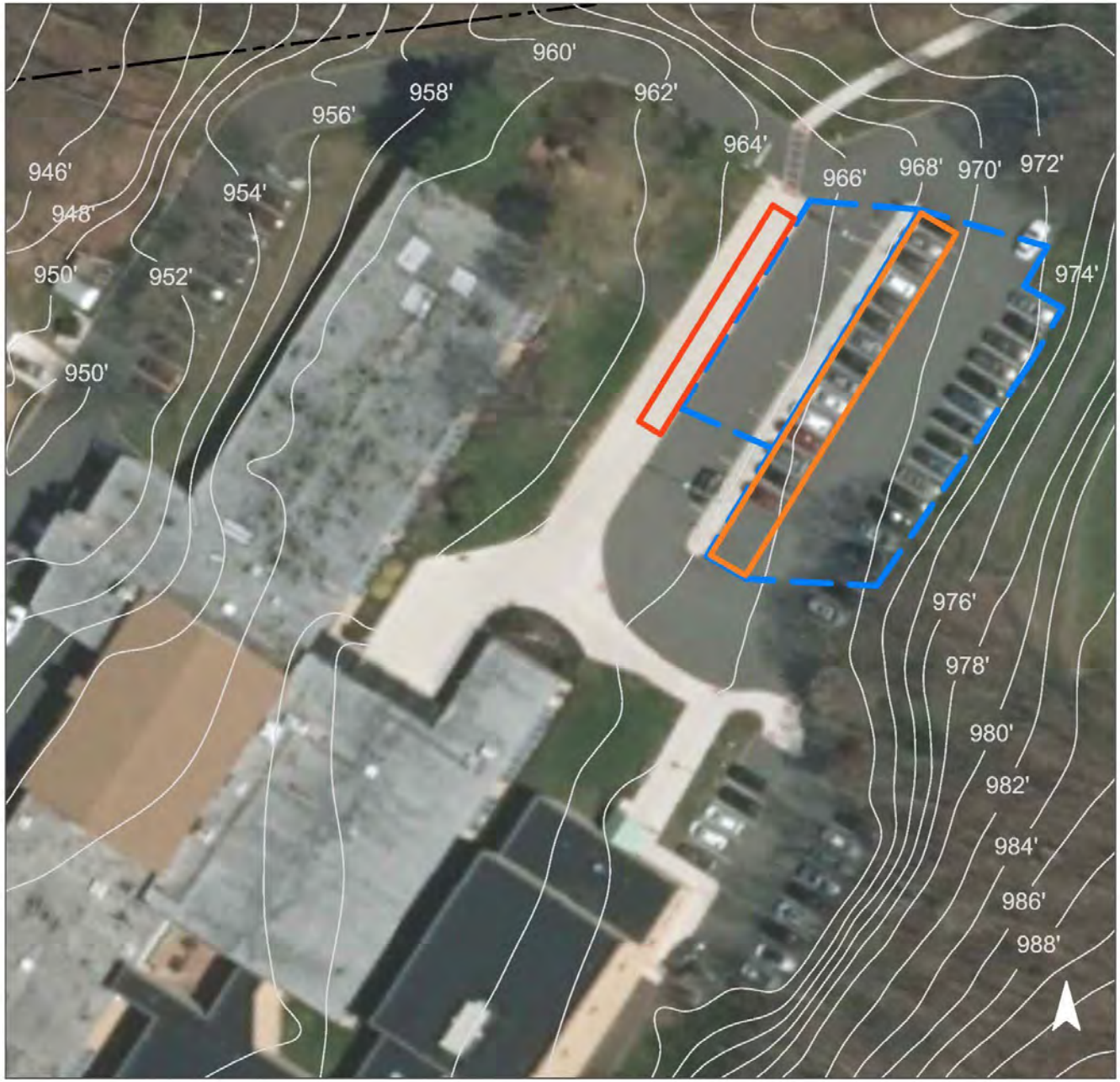
Block and Lot: Block 168 | Lot 58

Pervious pavement can be installed in the center parking spaces to capture and infiltrate stormwater runoff from the parking lot. A stormwater planter can be installed by depaving a portion of the wide sidewalk. A curb cut can be used to intercept 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"
26	173,966	8.4	87.9	798.7	0.136	4.77

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	0.267	45	20,830	0.78	2,890	$5,780
Stormwater planter	0.104	17	8,150	0.31	1,000	$5,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Shongum Elementary School

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

0 30' 60'

RANDOLPH TOWNSHIP FIRE DEPARTMENT COMPANY #5

RAP ID: 28

Subwatershed: Whippany River

Site Area: 20,984 sq. ft.

Address: 118 West Hanover Avenue
Randolph, NJ 07869

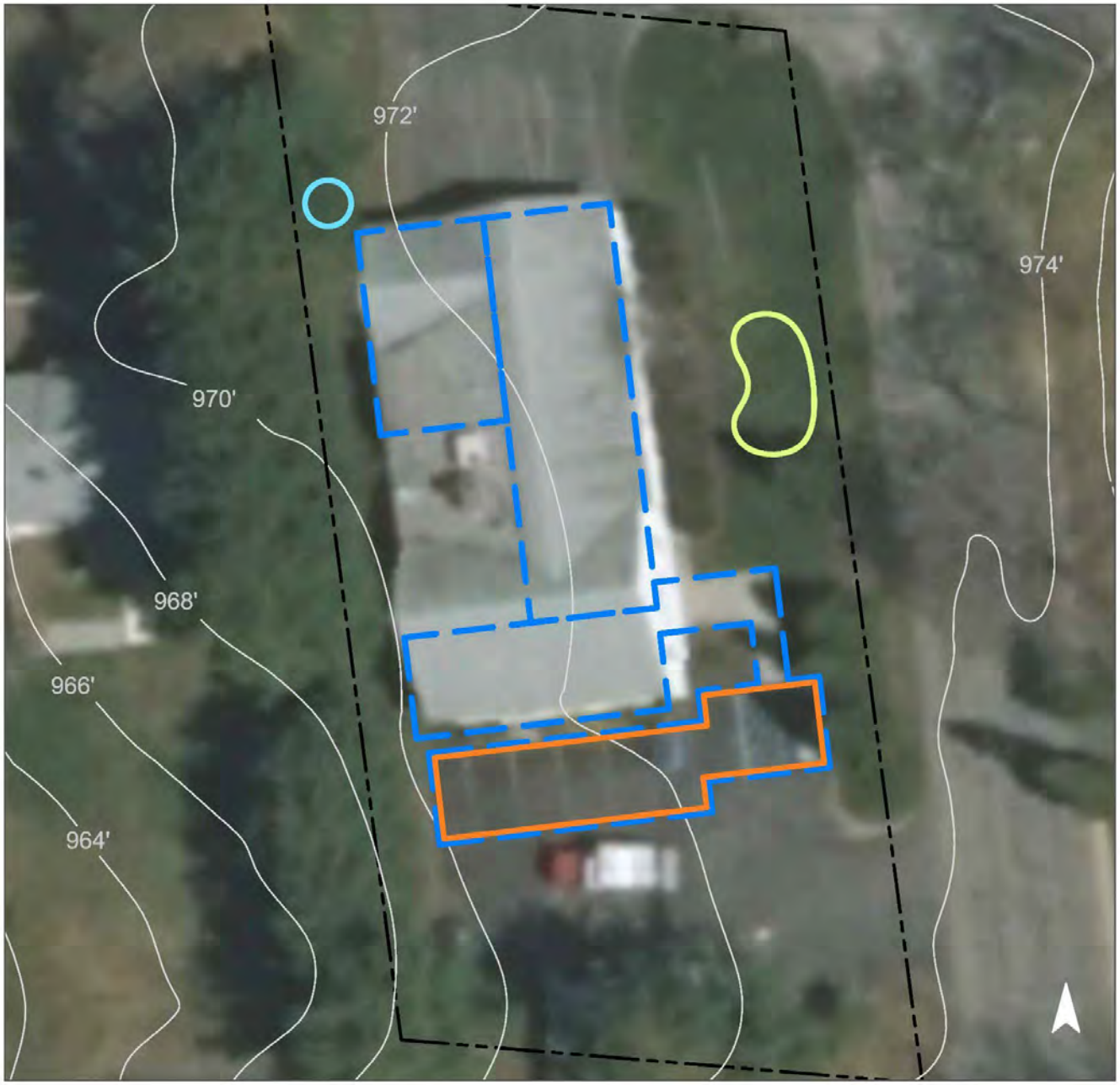
Block and Lot: Block 167 | Lot 1

Pervious pavement can be installed in parking spaces along the south side of the building to capture and infiltrate stormwater from the adjacent paved areas and rooftop. A rain garden can be installed to the east of the building near a disconnected downspout to capture, treat, and infiltrate stormwater runoff. A cistern can be installed on the north side of the building to capture stormwater and reuse it for watering gardens, washing vehicles, or for other non-potable uses. 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"
33	6,928	0.3	3.5	31.8	0.005	0.19

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.052	9	4,070	0.15	500	$2,500
Pervious pavement	0.071	12	5,540	0.21	1,400	$35,000
Rainwater harvesting	0.026	4	800	0.03	800 (gal)	$1,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Randolph Township Fire Department Company #5

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

0 15' 30'

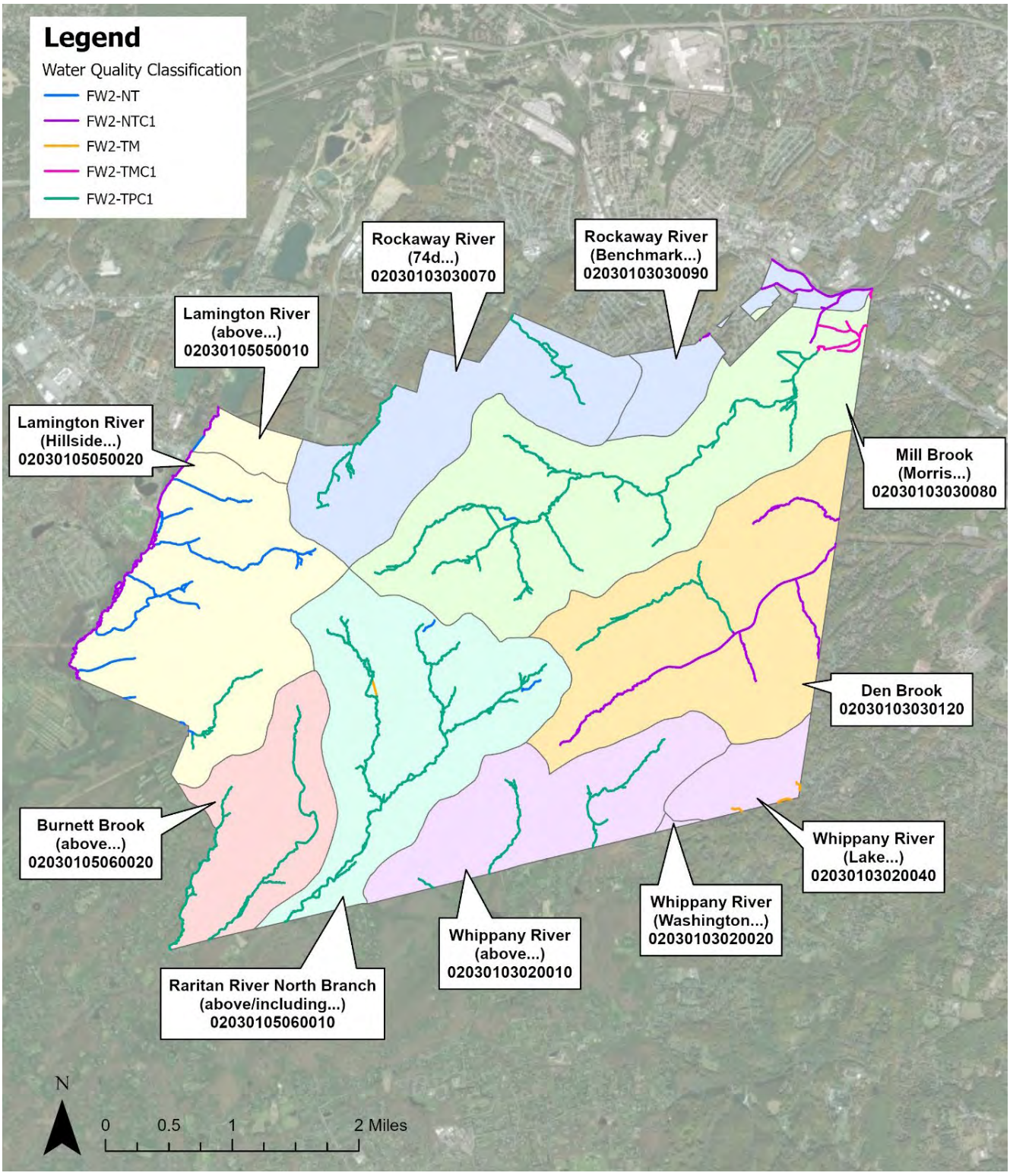


Figure 13. Water Quality Classification of Surface Waters in Randolph Township

Table 11. Water Quality Classification of Surface Waters in Randolph Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	6.1	11.1%
Freshwater 2, non-trout, Category One	FW2-NTC1	11.0	20.0%
Freshwater 2, trout production, Category One	FW2-TPC1	36.2	65.7%
Freshwater 2, trout maintenance	FW2-TM	0.4	0.8%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	1.3	2.4%

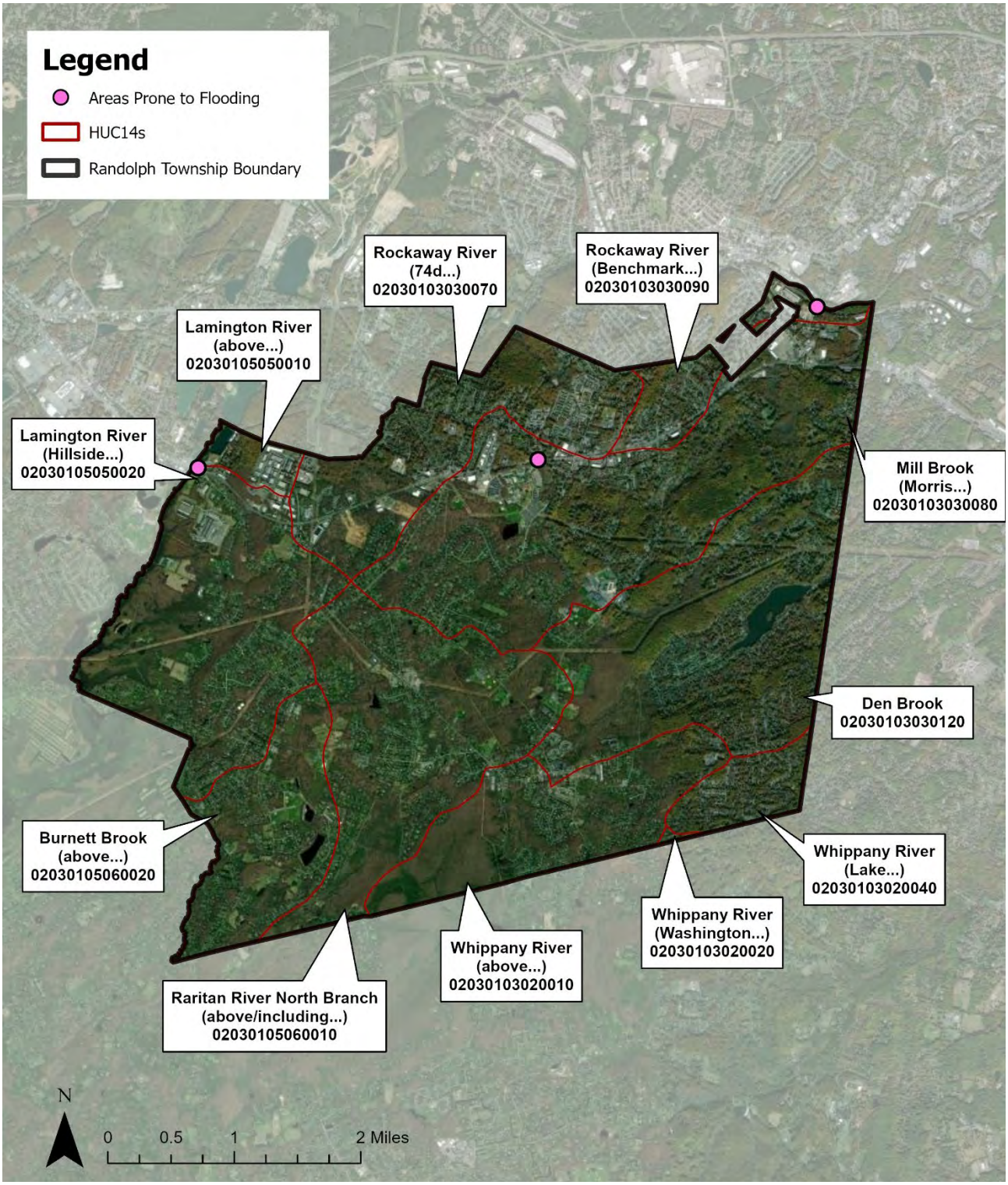


Figure 14. Areas Prone to Flooding in Randolph Township

Roxbury Township

Introduction

Located in Morris County in New Jersey, Roxbury Township covers about 21.9 square miles. With a population of 22,950 (2020 United States Census), Roxbury Township consists of 41.2% of urban land uses by area. Of that urban land use, approximately 31.5% 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 55.0% of Roxbury Township.

Roxbury Township contains portions of nine subwatersheds (Table 1). There are approximately 56.3 miles of rivers and streams within the municipality; these include Drakes Brook and its tributaries, tributaries to Flanders Brook, Lamington River and its tributaries, Ledgewood Brook and its tributaries, tributaries to Ledgewood Pond, Musconetcong River and its tributaries, Rockaway River and its tributaries, Stephens Brook and its tributaries, Succasunna Brook and its tributaries, Wills Brook and its tributaries, and several uncoded tributaries. Roxbury Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 1 (Upper Delaware), 6 (Upper Passaic, Whippany, and Rockaway), and 8 (North and South Branch Raritan)

Table 1: Subwatersheds of Roxbury Township

Subwatershed	HUC14
Rockaway River (Stephens Brook to Longwood Lake)	02030103030040
Rockaway River (74d 33m 30s to Stephens Brook)	02030103030070
Drakes Brook (above Eyland Avenue)	02030105010010
Drakes Brook (below Eyland Avenue)	02030105010020
Lamington River (above Route 10)	02030105050010
Lamington River (Hillside Road to Route 10)	02030105050020
Lake Hopatcong	02040105150020
Musconetcong River (Wills Brook to Lake Hopatcong)	02040105150030
Musconetcong River (above Waterloo)	02040105150070

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Roxbury Township. 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 Roxbury Township'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 Roxbury Township in relation to the study area. Figure 2 shows the portions of the nine HUC14s in Roxbury Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Roxbury Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Roxbury Township and is presented in Table 2. Figure 4 shows the impervious cover in Roxbury Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Roxbury Township 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). Detention basins that are already naturalized are identified as type "N". The retention basins in Table 3 (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".

The Q-Farms in Roxbury Township 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 Roxbury Township 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 129.5 acres of agricultural land use in Roxbury Township, of which, 122.3 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 21 Q-Farms and portions of three Q-Farms in the study area portion of Roxbury Township, totaling 1,282.8 acres. Within the 21 Q-Farms and portions of three Q-Farms, there are approximately 63.0 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Roxbury Township are presented in Table 8.

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 (02030105010010, 02030105010020, 02030105050010, 02030105050020). Within these four HUC14s, there are 410.4 acres of buildings and 606.2 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 Roxbury Township, approximately 51.3 acres of rooftop runoff would be managed with 10.26 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Roxbury Township, approximately 60.6 acres of roadway would be managed, or 16.7 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 Roxbury Township are shown in Figure 10 and presented in Table 9. 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 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. Seventeen of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 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 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 seven classifications that apply to the streams in Roxbury Township.
Figure 13 depicts the water quality classification of surface waters throughout Roxbury Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

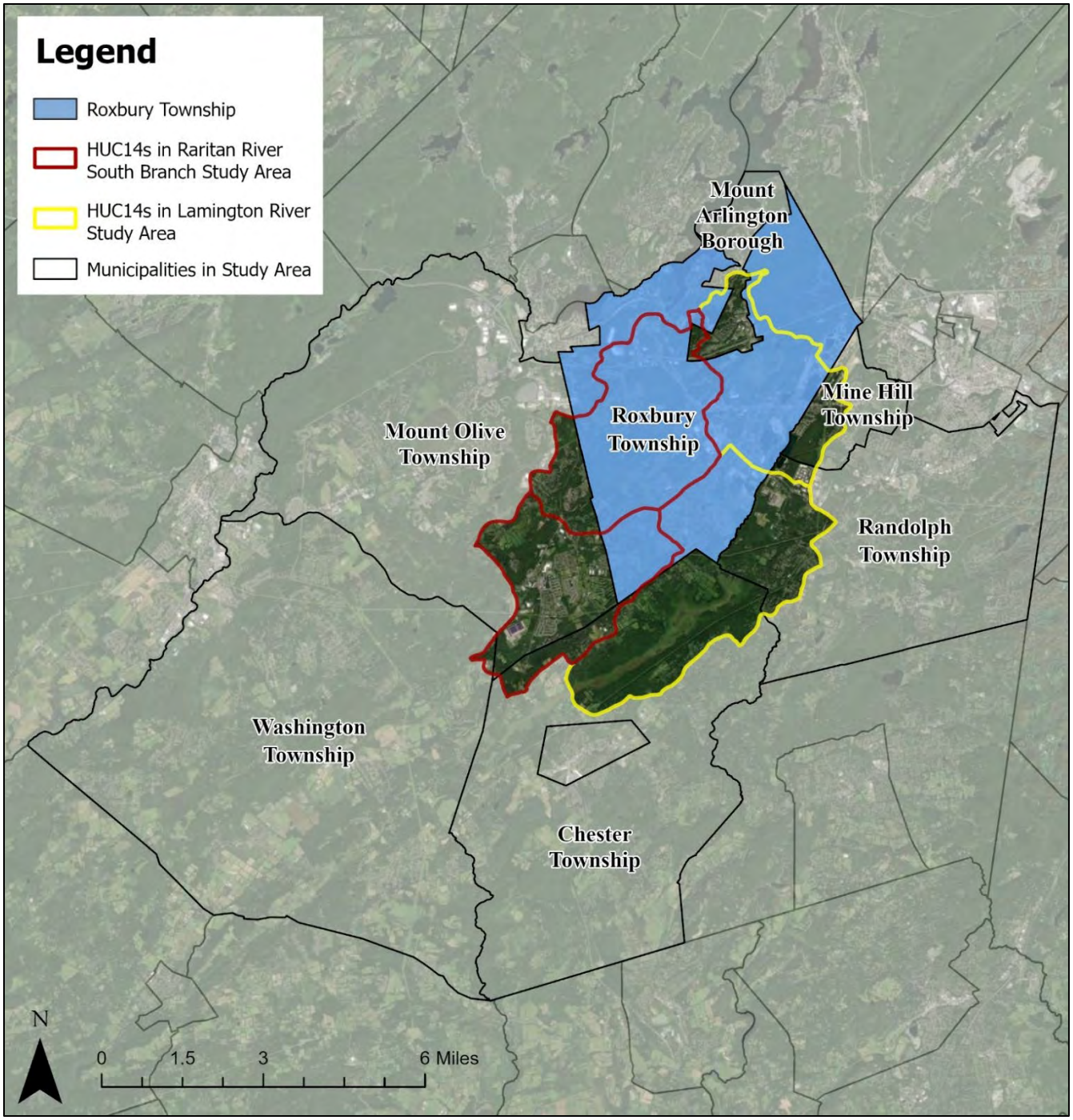


Figure 1: Municipalities in the Study Area

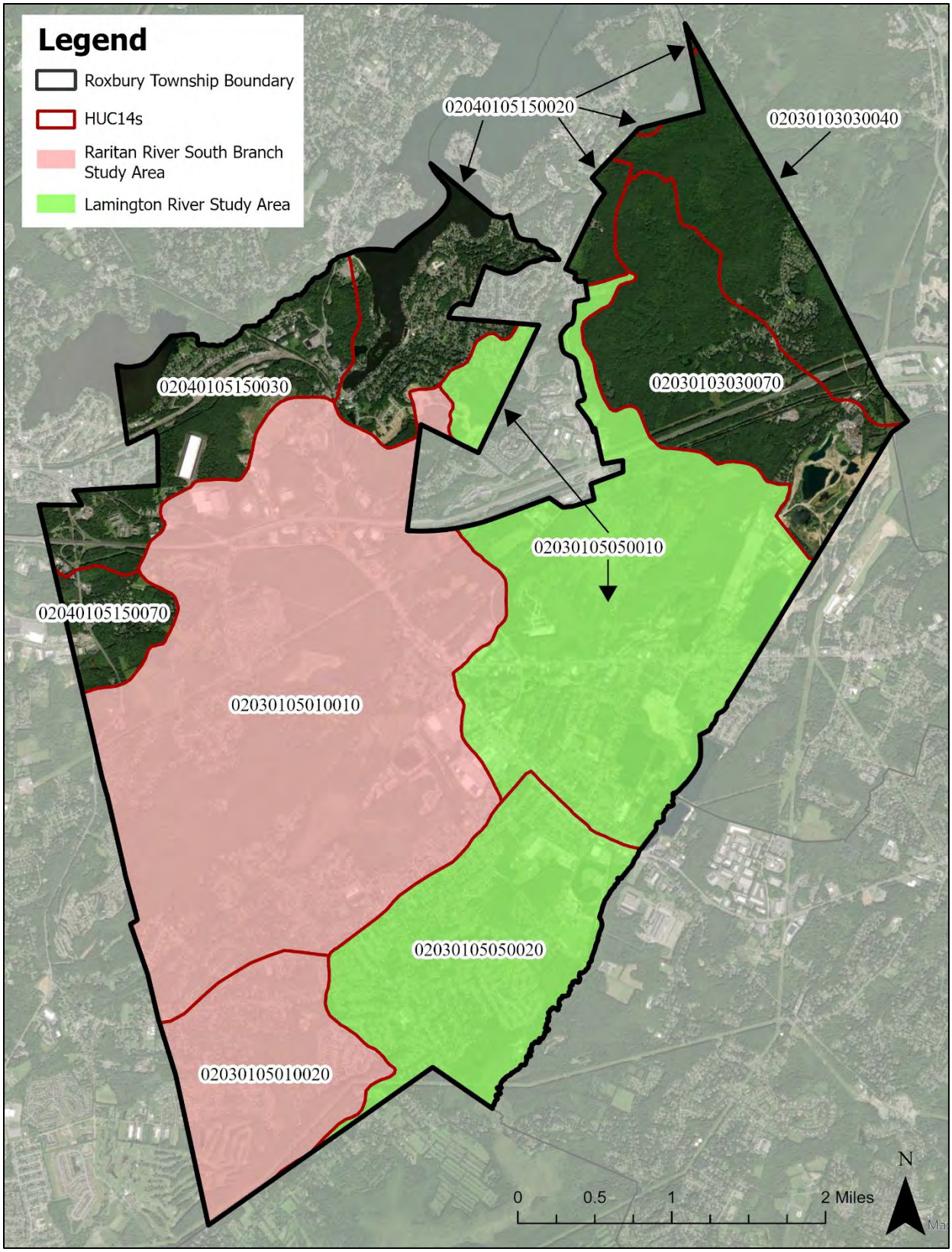


Figure 2: Portions of nine HUC14s are in Roxbury Township

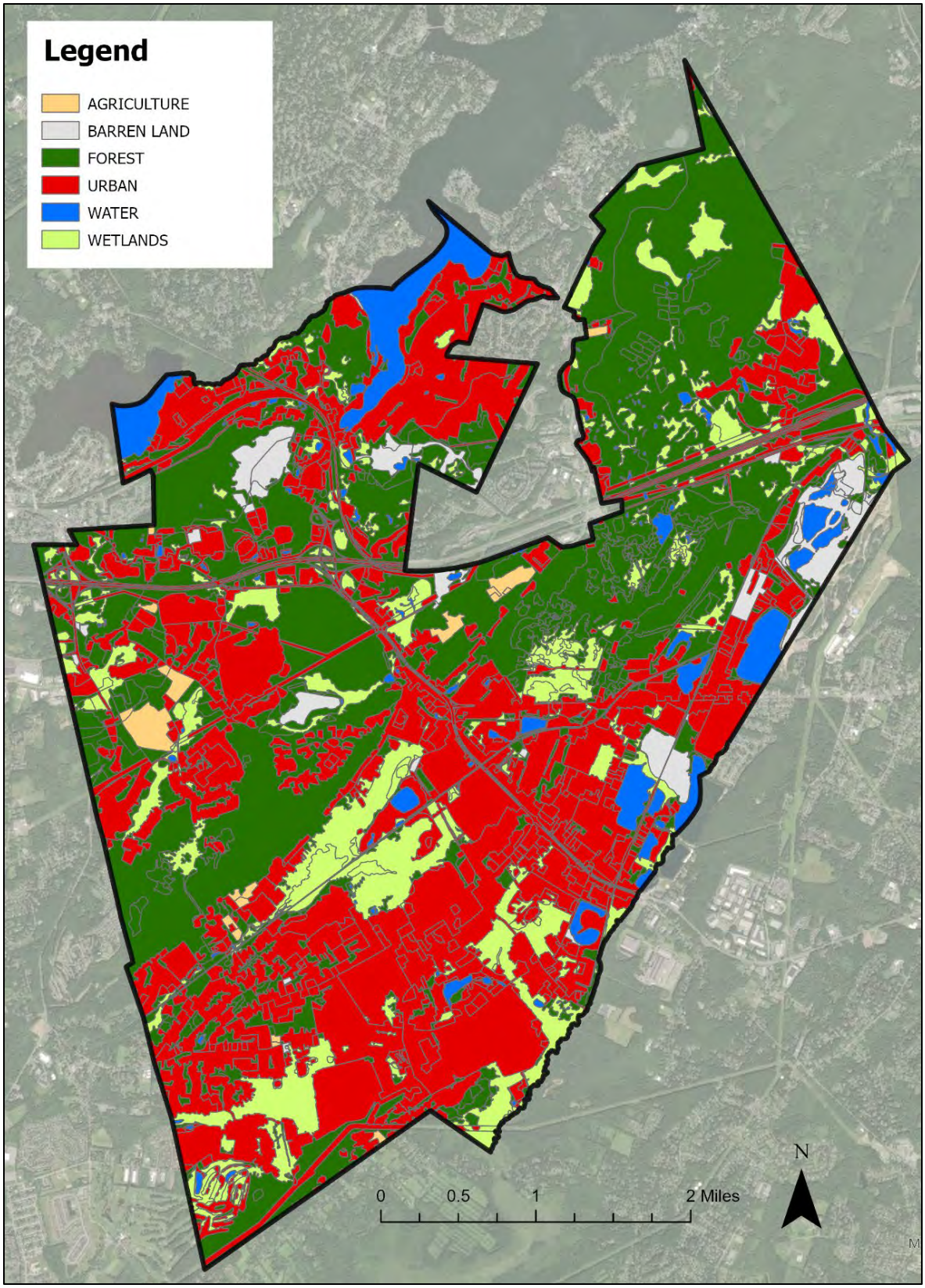


Figure 3: Land Use in Roxbury Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Roxbury Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103030040				
Agriculture	1.0	1.3	9.6	289.4
Barren Land	0.1	0.0	0.4	4.6
Forest	537.3	53.7	1,611.9	21,491.4
Urban	152.1	212.9	2,281.1	21,290.6
Water	11.1	1.1	33.4	444.9
Wetlands	118.3	11.8	354.9	4,732.1
TOTAL =	**819.8**	**280.9**	**4,291.3**	**48,252.9**
02030103030070				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	129.5	64.8	647.6	7,771.8
Forest	817.2	81.7	2,451.7	32,689.8
Urban	168.4	235.8	2,526.1	23,577.0
Water	63.3	6.3	189.8	2,531.3
Wetlands	146.8	14.7	440.3	5,870.5
TOTAL =	**1,325.2**	**403.3**	**6,255.6**	**72,440.3**
02030105010010				
Agriculture	89.1	115.8	890.5	26,716.3
Barren Land	92.9	46.5	464.6	5,575.4
Forest	1,902.8	190.3	5,708.4	76,112.1
Urban	1,877.0	2,627.7	28,154.4	262,774.1
Water	41.0	4.1	122.9	1,638.8
Wetlands	563.7	56.4	1,691.1	22,547.9
TOTAL =	**4,566.4**	**3,040.7**	**37,031.9**	**395,364.7**
02030105010020				
Agriculture	2.7	3.5	26.6	798.5
Barren Land	1.5	0.8	7.7	92.2
Forest	217.6	21.8	652.8	8,704.6
Urban	531.4	744.0	7,971.7	74,402.6
Water	6.7	0.7	20.1	268.6
Wetlands	203.9	20.4	611.6	8,155.0
TOTAL =	**963.9**	**791.1**	**9,290.6**	**92,421.6**
02030105050010				
Agriculture	27.0	35.2	270.5	8,114.0
Barren Land	105.1	52.5	525.5	6,306.0
Forest	1,099.5	110.0	3,298.6	43,981.9
Urban	1,108.1	1,551.3	16,621.6	155,135.0
Water	203.4	20.3	610.1	8,134.9
Wetlands	219.3	21.9	657.8	8,770.5

TOTAL =	**2,762.4**	**1,791.3**	**21,984.1**	**230,442.3**
02030105050020				
Agriculture	3.6	4.7	35.9	1,076.1
Barren Land	2.2	1.1	11.2	134.4
Forest	109.7	11.0	329.0	4,386.4
Urban	1,114.6	1,560.5	16,719.2	156,045.5
Water	36.9	3.7	110.6	1,475.1
Wetlands	245.2	24.5	735.7	9,809.6
TOTAL =	**1,512.2**	**1,605.4**	**17,941.6**	**172,927.0**
02040105150020				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	27.8	13.9	138.9	1,667.4
Forest	192.2	19.2	576.6	7,688.1
Urban	375.5	525.7	5,632.1	52,566.6
Water	199.9	20.0	599.6	7,995.1
Wetlands	32.7	3.3	98.2	1,309.4
TOTAL =	**828.1**	**582.0**	**7,045.5**	**71,226.5**
02040105150030				
Agriculture	1.6	2.0	15.6	467.0
Barren Land	41.4	20.7	207.1	2,485.8
Forest	441.5	44.2	1,324.6	17,661.0
Urban	369.9	517.8	5,547.8	51,779.5
Water	74.9	7.5	224.7	2,996.6
Wetlands	52.6	5.3	157.7	2,103.3
TOTAL =	**981.9**	**597.4**	**7,477.6**	**77,493.1**
02040105150070				
Agriculture	4.6	6.0	46.4	1,392.2
Barren Land	4.5	2.2	22.3	268.2
Forest	133.6	13.4	400.8	5,344.2
Urban	83.1	116.3	1,246.1	11,630.6
Water	0.5	0.0	1.4	19.1
Wetlands	53.6	5.4	160.9	2,145.1
TOTAL =	**279.9**	**143.3**	**1,878.0**	**20,799.3**
All HUCs				
Agriculture	129.5	168.4	1,295.1	38,853.4
Barren Land	405.1	202.5	2,025.5	24,305.5
Forest	5,451.5	545.1	16,354.5	218,059.5
Urban	5,780.0	8,092.0	86,700.2	809,201.5
Water	637.6	63.8	1,912.8	25,504.3
Wetlands	1,636.1	163.6	4,908.3	65,443.4
TOTAL =	**14,039.8**	**9,235.4**	**113,196.3**	**1,181,367.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Roxbury Township 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 Roxbury Township. Based upon the NJDEP impervious surface data, Roxbury Township has impervious cover totaling 18.6%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Roxbury Township 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, Roxbury Township's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contribute to the degradation of the state's surface water quality standards.

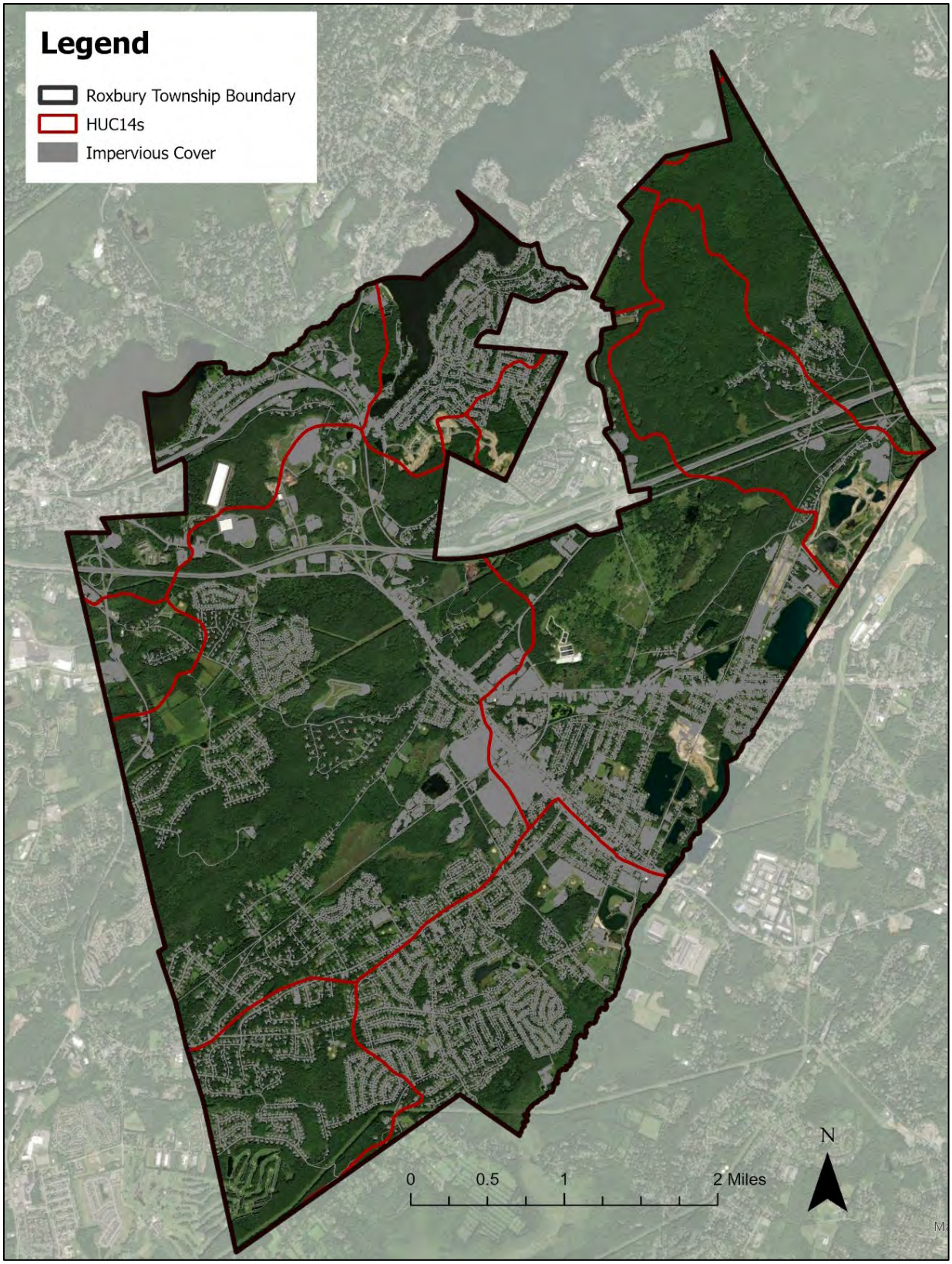


Figure 4: Impervious Cover in Roxbury Township

Table 3: Impervious Cover Analysis by HUC14 for Roxbury Township

Class	Area (acres)	HUC Impervious Cover (%)
02030103030040		
Building	7.83	
Other	25.46	
Road	22.73	
TOTAL =	**56.0**	**6.8%**
02030103030070		
Building	5.74	
Other	66.24	
Road	32.42	
TOTAL =	**104.4**	**7.9%**
02030105010010		
Building	167.69	
Other	375.83	
Road	267.92	
TOTAL =	**811.4**	**17.8%**
02030105010020		
Building	34.59	
Other	65.75	
Road	50.96	
TOTAL =	**151.3**	**15.7%**
02030105050010		
Building	108.73	
Other	345.38	
Road	153.89	
TOTAL =	**608.0**	**22.0%**
02030105050020		
Building	99.40	
Other	198.04	
Road	133.45	
TOTAL =	**430.9**	**28.5%**
02040105150020		
Building	41.41	
Other	90.82	
Road	63.44	
TOTAL =	**195.7**	**23.6%**
02040105150030		
Building	22.04	
Other	128.88	
Road	66.35	
TOTAL =	**217.3**	**22.1%**
02040105150070		
Building	5.68	
Other	16.31	
Road	14.66	
TOTAL =	**36.6**	**13.1%**

All HUCs		
Building	493.12	
Other	1,312.70	
Road	805.82	
TOTAL =	**2,611.6**	**18.6%**

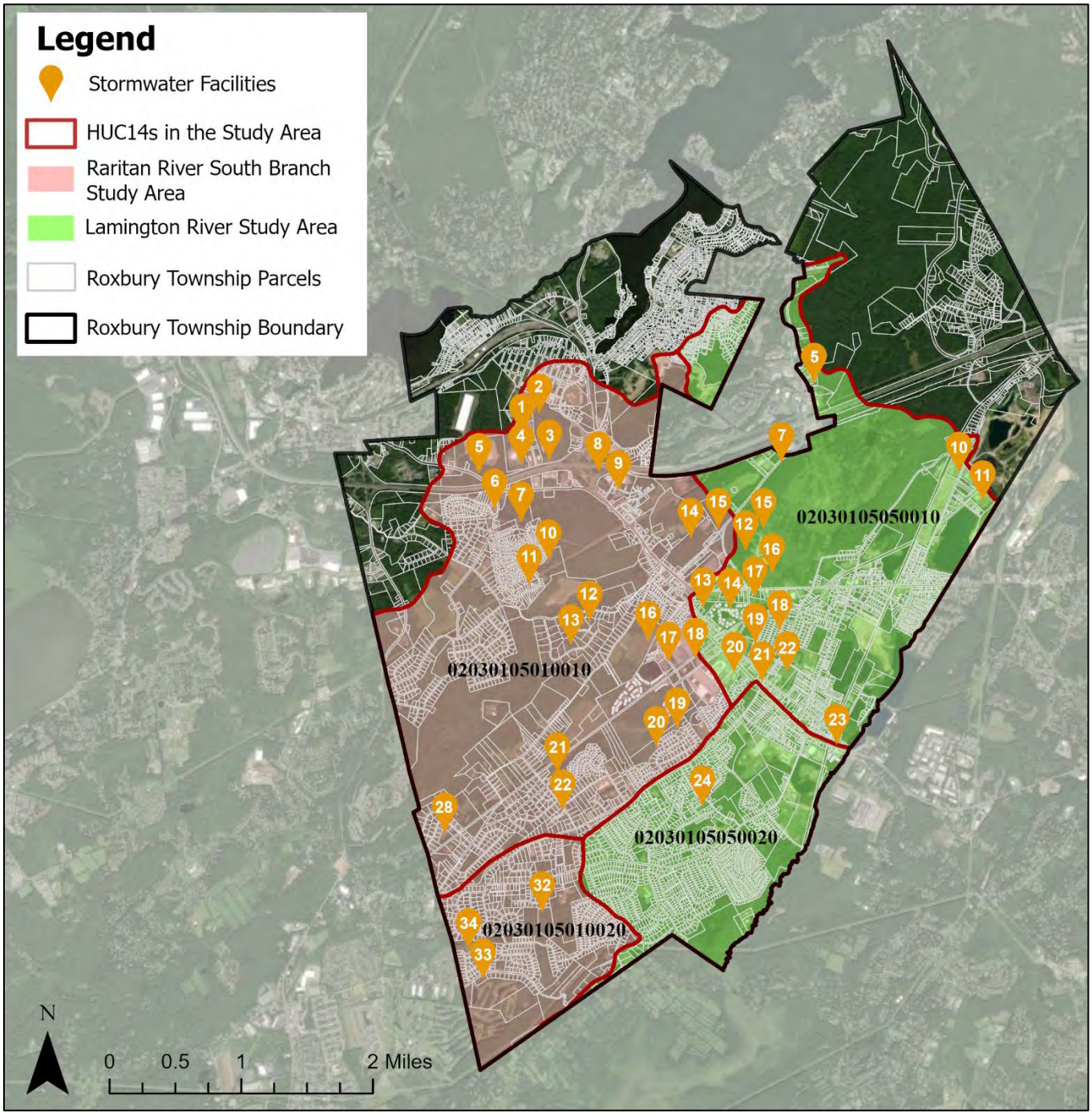


Figure 5: Stormwater Facilities in the Study Area of Roxbury Township

Table 4: Location of Stormwater Facilities in the Study Area of Roxbury Township

Lamington River Study Area		
ID	**Address**	**Type**
1	125 Howard Blvd	N
2	125 Howard Blvd	N
3	2 Hillside Dr	D
4	181 Howard Blvd	N
5	172-176-180 Howard Blvd	N
6	400 Valley Rd	N
7	127 Howard Blvd	N
8	500 Valley Rd	N
9	Woodmont Court	D
10	95 N Dell Ave	D
11	96 N Dell Ave	D
12	1115 Route 46, Ledge	RB
13	1131 Us-46	N
14	1103 Route 46, Ledge	D
15	1103 Route 46, Ledge	I
16	950 Route 46, Ken	D
17	950 Route 46, Ken	N
18	16 Cliff Ct	N
19	240 Route 10	R
20	235 Route 10	I
21	112 Main St	I
22	109 Main St	I
28	1578 Sussex Tpke	D
33	85 Pleasant Hill Rd	D
34	233 North Rd	N
Raritan River South Branch Study Area		
ID	**Address**	**Type**
5	1881 Route 46, Ledge	RB
7	1830 Route 46, Ledge	RB
10	138 Mountain Rd	N
11	138 Mountain Rd	N
12	8 Vanover Dr	N
13	9 Vanover Dr	N
14	1 Howard Blvd	N
15	1115 Us-46	RB
16	20 Mary Louise Ave	D
17	Righter Rd	N
18	10 Commerce Blvd	N
19	Valley Rd, Rear	N

20	Valley Rd, Rear	D
21	11 Meredith Ct	D
22	2 Shepherds Ln	D
23	8 Southwind Dr	N
24	12 Arrow Ct	N

“D” = Detention, “R” = Retention, “N” = Naturalized, “I” = Infiltration, “RB” = Retention with Buffer

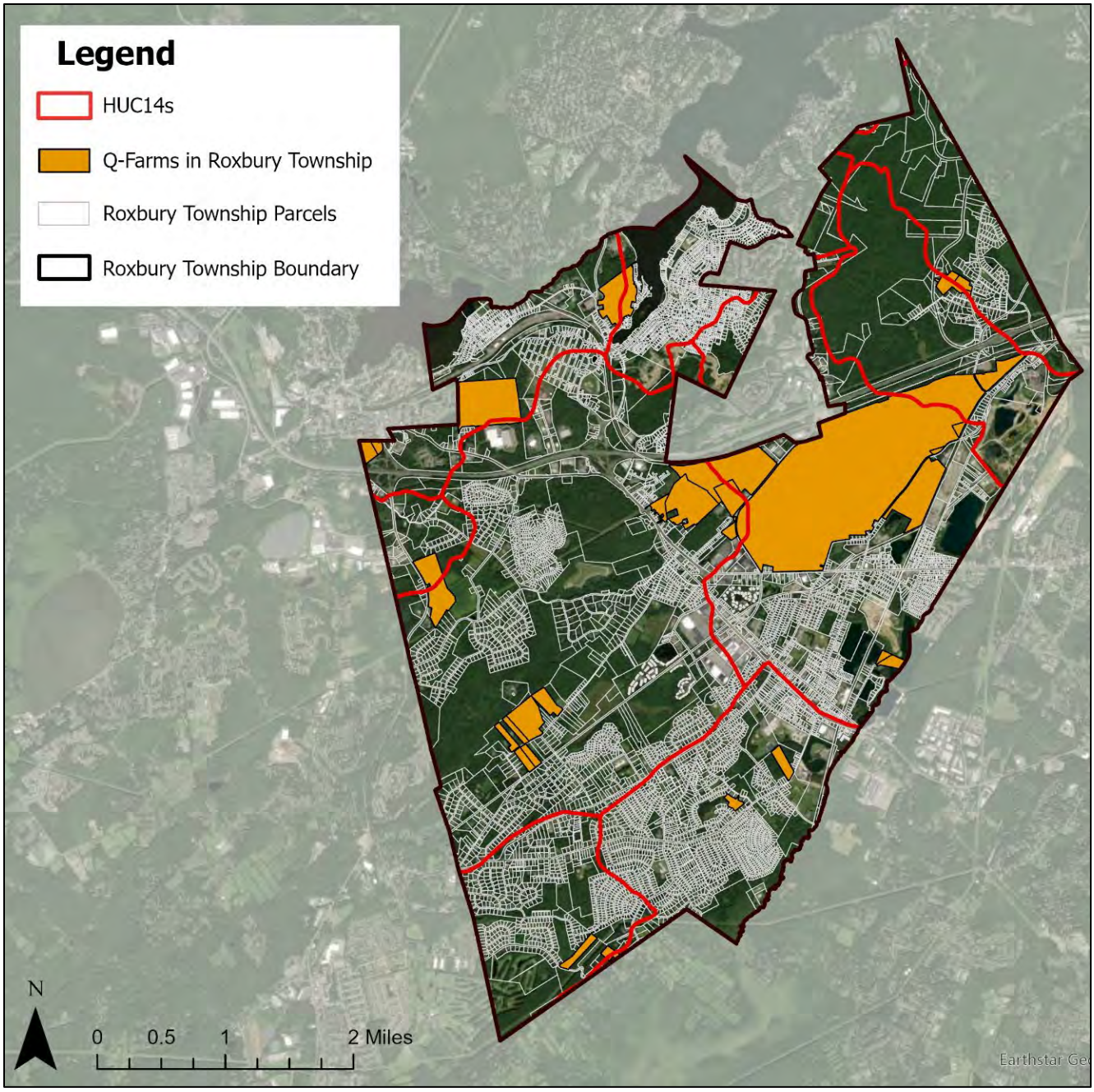


Figure 6: Q-Farm Parcels in Roxbury Township

Table 5: Q-Farm Parcels in Roxbury Township

Block	Lot	Q-Code	Prop Class	Location
51.01	7.02	QFARM	3B	316 Pleasant Hill Rd
102	54	QFARM	3B	160 Pleasant Hill Rd
102	48	QFARM	3B	12 Reger Rd
1801	13	QFARM		Eyland Ave
2202	5	QFARM	3B	30 Green Ln
2202	4	QFARM	3B	32 Green Ln
3301	12.01	QFARM	3B	40A Condit St
5503	10	QFARM	3B	208A Emmans Rd
5601	2	QFARM	3B	194 Emmans Rd
5601	3	QFARM	3B	186 Emmans Rd
5601	10	QFARM	3B	154 Emmans Rd
5701	7	QFARM	3B	219 Emmans Rd
5701	6	QFARM	3B	221 Emmans Rd
6601	33.01	QFARM	3B	5 Howard Blvd
6701	4	QFARM	3B	Berkshire Valley Rd
6701	5	QFARM	3B	Berkshire Valley Rd
6701	1	QFARM	3B	Berkshire Valley Rd
6802	11	QFARM	3B	60 Berkshire Valley Rd
7204	2	QFARM	3B	Berkshire Valley Rd
8701	1	QFARM	3B	1405 Route 46, Ledge
8901	5	QFARM	3B	Mt Arlington Rd
8901	2.02	QFARM	3B	15 Salmon Lane, Ledge
8901	2.01	QFARM	3B	15 Salmon Lane, Ledge
9002	1.01	QFARM	3B	186 Route 206
*9301	2	QFARM	3B	27 Route 183
9301	1	QFARM	3B	29 Route 183
9501	1	QFARM		Old Traveled Rd
11001	1	QFARM	3B	Lakeside Blvd
12901	4	QFARM	3B	21 Carr Ln
12901	51	QFARM	3B	283 Berkshire Valley Rd
12901	52	QFARM	3B	281 Berkshire Valley Rd

*Only a portion of the Q-Farm is within the Roxbury Township boundary

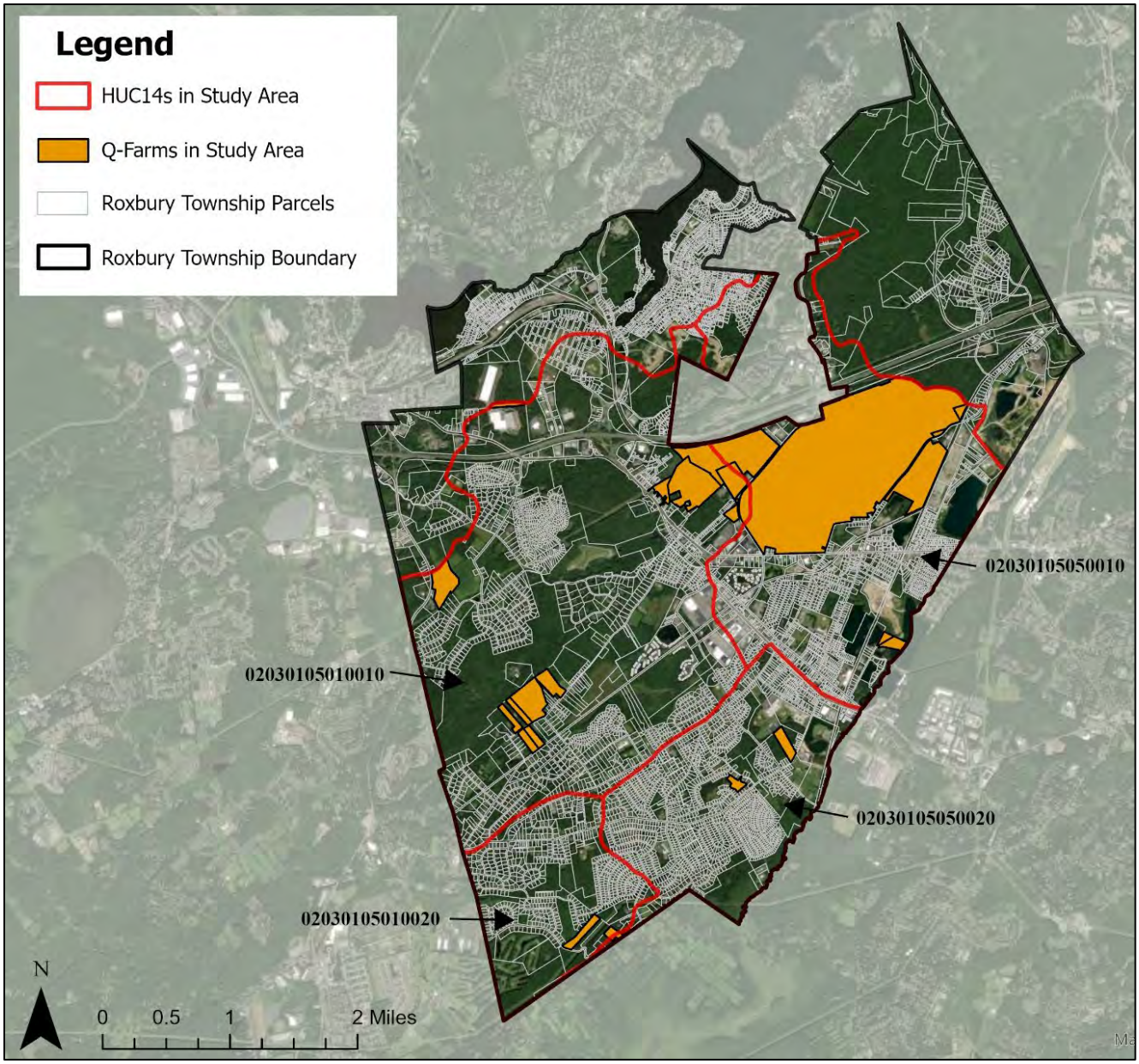


Figure 7: Q-Farm Parcels in the Study Area of Roxbury Township

Table 6: Q-Farm Parcels in the Study Area of Roxbury Township

Block	Lot	Q-Code	Prop Class	Location
51.01	7.02	QFARM	3B	316 Pleasant Hill Rd
102	54	QFARM	3B	160 Pleasant Hill Rd
102	48	QFARM	3B	12 Reger Rd
1801	13	QFARM		Eyland Ave
2202	5	QFARM	3B	30 Green Ln
2202	4	QFARM	3B	32 Green Ln
3301	12.01	QFARM	3B	40A Condit St
5503	10	QFARM	3B	208A Emmans Rd
5601	2	QFARM	3B	194 Emmans Rd
5601	3	QFARM	3B	186 Emmans Rd
5601	10	QFARM	3B	154 Emmans Rd
5701	7	QFARM	3B	219 Emmans Rd
5701	6	QFARM	3B	221 Emmans Rd
6601	33.01	QFARM	3B	5 Howard Blvd
6701	4	QFARM	3B	Berkshire Valley Rd
6701	5	QFARM	3B	Berkshire Valley Rd
*6701	1	QFARM	3B	Berkshire Valley Rd
6802	11	QFARM	3B	60 Berkshire Valley Rd
8701	1	QFARM	3B	1405 Route 46, Ledge
8901	5	QFARM	3B	Mt Arlington Rd
8901	2.02	QFARM	3B	15 Salmon Lane, Ledge
8901	2.01	QFARM	3B	15 Salmon Lane, Ledge
*9002	1.01	QFARM	3B	186 Route 206
*9501	1	QFARM		Old Traveled Rd

*Only a portion of the Q-Farm is within the study area

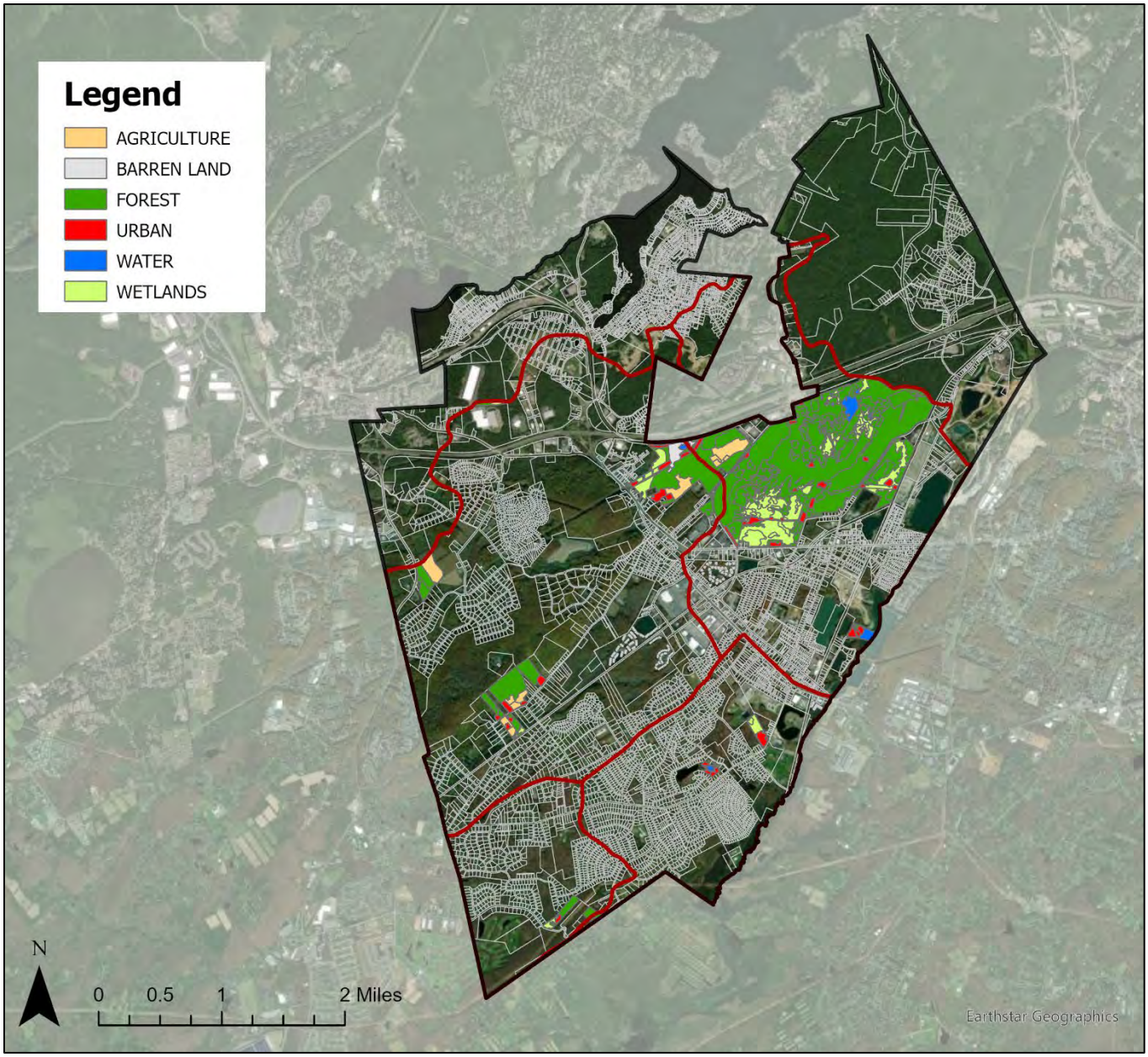


Figure 8: Land Use on Q-Farms in the Study Area of Roxbury Township

Table 7: Land Use on Q-Farms in the Study Area of Roxbury Township

Land Use	Area (acres)
Agriculture	63.0
Barren Land	13.4
Forest	923.2
Urban	74.9
Water	23.6
Wetlands	184.6
Total:	**1,282.7**

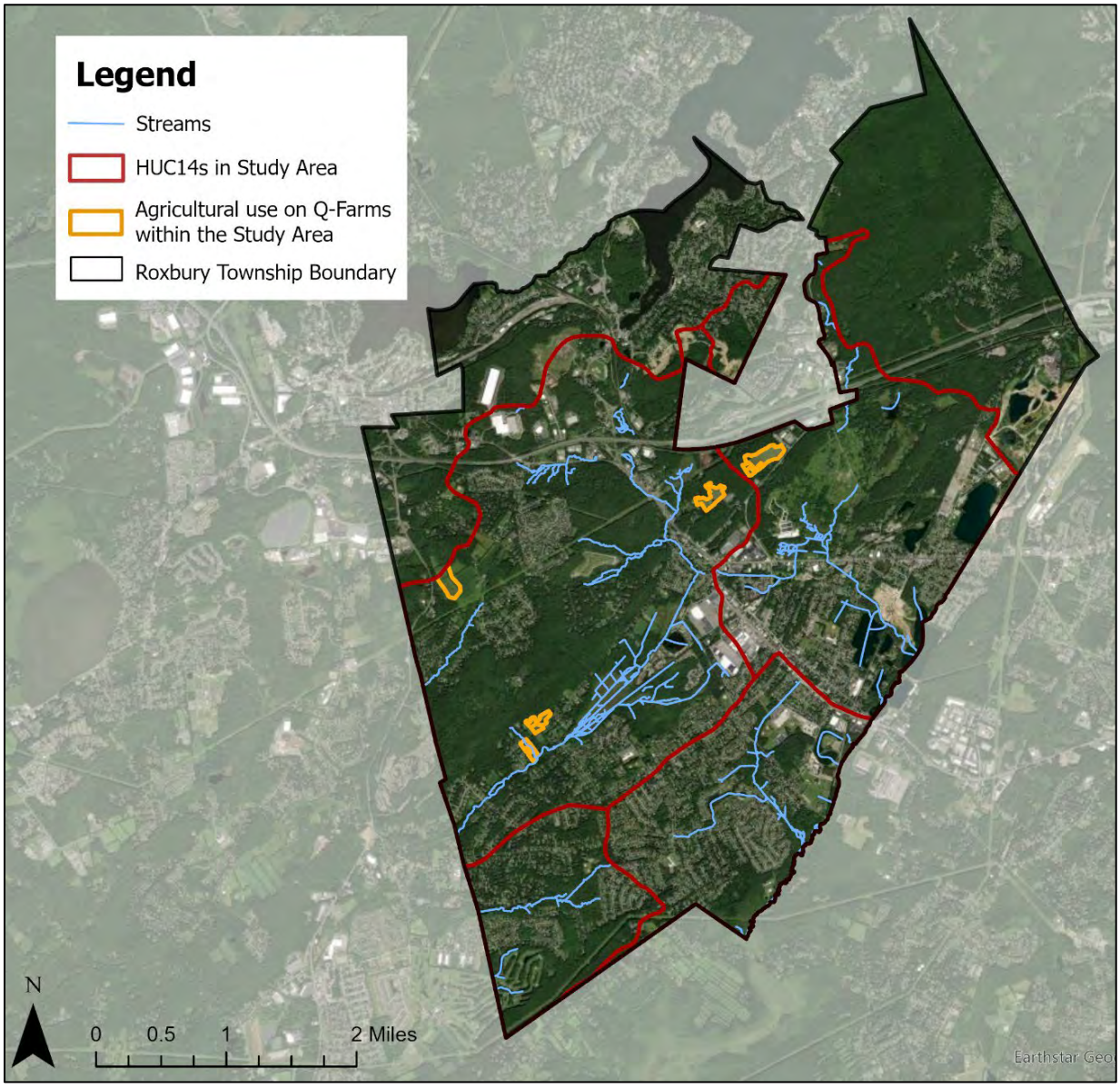


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Roxbury Township

Table 8: Recommendations for Specific Farms in the Study Area of Roxbury Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
2202	4	QFARM				X		
2202	5	QFARM				X		

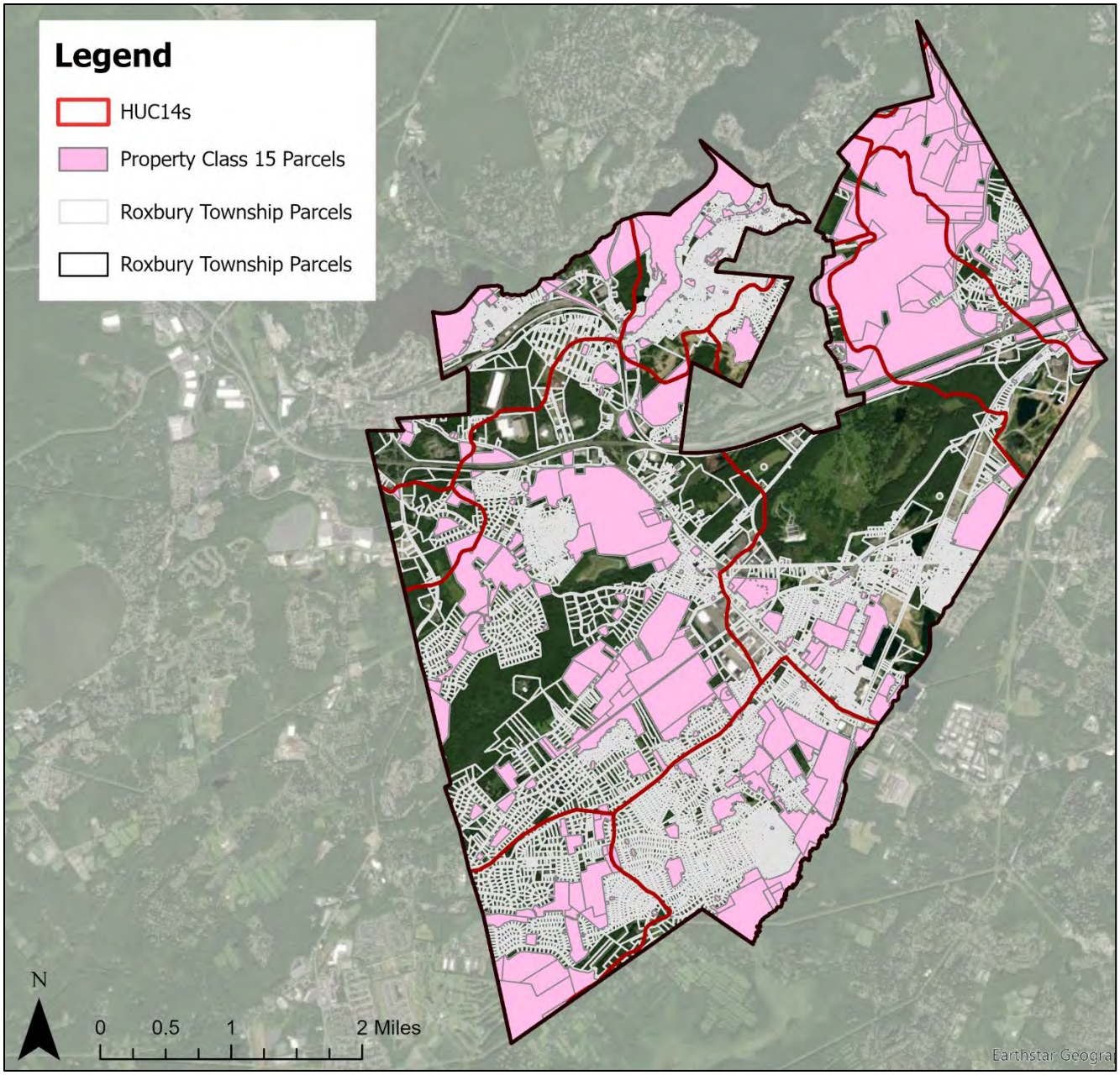


Figure 10: Property Class 15 Parcels in Roxbury Township

Table 9: Property Class 15 Parcels in Roxbury Township

Block	Lot	Prop Class	Location	Facility Type
1201	19	15A	20 Pleasant Hill Rd	School
1801	4	15A	Eyland Ave, Rear	Schools
1801	2	15A	1 Bryant Dr	School
1801	3	15A	Eyland Ave	Schools
3801	16	15A	25 Meeker St	School
3901	2	15A	N Hillside Ave	School
3901	31	15A	Meeker St	Park
4501	10	15A	19 Corn Hollow Rd	School
11601	52	15A	281 Mt Arlington Blvd	School
11903	1	15A	Mt Arlington Blvd	Tool Shed
4601	13	15B	126 S Hillside Ave	Schools
*5	16	15C	Southard Rd	Vacant Land
*43	1	15C	302 Howard Blvd	Tax Lien Foreclosure
101	6	15C	5 Reger Rd	Golf Course
101	5	15C	Reger Rd	Golf Course
101	1	15C	49 Reger Rd	Park
101	2	15C	45 Reger Rd	Vacant Land
101	14	15C	Reger Rd, Rear	Park
101	15	15C	Reger Rd	Golf Course
102	32	15C	Parkview Dr	Vacant Land
201	10	15C	Wright Ct	Vacant Land
201	2	15C	8 Phyllis Dr	Sewer Disposal
*210	22	15C	Minnisink Rd	Vacant Land
*252	3.01	15C	Minnisink Rd	Vacant Land
256	6.02	15C	Berkshire Valley Rd	Vacant Land
301	34	15C	42 Reger Rd	Vacant Land
301	1	15C	24 Phyllis Dr	Vacant Land
501	47	15C	16 Parkwood Rd	Road
503	6	15C	Golf Course Rd	Sewer Disposal
*506	7	15C	7 Zucker Ln	Land
701	2	15C	Cynthia Dr, Rear	Vacant Land
701	1	15C	2 Cynthia Dr	Vacant Land
801	1	15C	Eyland Ave - Rear	Park
801	22	15C	Parkview Dr	Vacant Land
901	32	15C	80A Toby Dr	Park
901	1	15C	Eyland Ave, Rear	Heritage Ret'N Basin
901	19	15C	9 Makin Ln	Park
1001	7	15C	Eyland Ave	Vacant Land
1401	1	15C	2 Lamington Dr	Vacant Land
1401	3	15C	Ajax Terr	Sewer Disposal
1401	5	15C	Ajax Terr	Sewer Plant
1401	4	15C	Ajax Terr	Sewer Plant
1401	2	15C	Golf Course Rd	Golf Course
1401	7	15C	Righter Rd	Golf Course
1401	6	15C	Ajax Terr	Golf Course
1505	1	15C	22 Lamington Dr	Vacant Land

1703	24	15C	Eyland Ave	Vacant Land
1705	5	15C	9 Midland Rd	Park
1801	14	15C	Eyland Ave & Righter Rd	Park
1801	1	15C	Righter Rd	Vacant Land
1802	15	15C	Righter Rd	Vacant Land
1802	14	15C	Righter Rd	Golf Course
1802	13	15C	Righter Rd	Vacant Land
1802	7	15C	72 Eyland Ave	Vacant Land
1802	11	15C	Eyland Ave - Rear	Vacant Land
1802	8	15C	25 Righter Rd	Township Hall
1802	1.02	15C	7 Righter Rd	Vacant Land
2001	2	15C	1 Main St, Succ	Lake
2001	3.02	15C	Mark Lane	Lake
2301	19.031	15C	Chesler Sq. Rear	Vacant Land
2301	19.03	15C	Kenvil Ave, Rear	Vacant Land
2301	19.02	15C	89 Kenvil Ave	Vacant Land
2404	2	15C	Academy St	Vacant Land
2614	10	15C	21 N First Ave	Tax Lien Foreclosure
*2619	8	15C	40 N First Ave	Vacant Land
2802	5	15C	281 Eyland Ave	Park
2904	9	15C	8 Alcott Way	Vacant Land
3201	27	15C	5 Apollo Ct	Road
3203	8	15C	Morningside Dr	Detention Basin
3301	28	15C	Morningside Dr	Detention Basin
3303	1	15C	39 Condit St	Vacant Land
3402	7	15C	24 Condit St	Detention Basin
3403	23	15C	Righter Rd	Vacant Land
3603	24	15C	Mapledale Ave, Rear	Sewer Disposal
3703	1	15C	60 Route 10	Jug Handle
3801	2	15C	103 Main St, Succ	Library
3901	20	15C	Spring St	Vacant Land
4001	22	15C	24 Ballantine St	Tax Lien Foreclosure
4001	2	15C	N Hillside Ave	Vacant Land
4002	13	15C	735 Route 46, Ken	Railroad
4102	2	15C	260 Emmans Rd	Vacant Land
4103	9	15C	Emmans Rd	Vacant Land
4401	30	15C	12 Tamarack Dr	Water Supply
4401	4	15C	11 Meredith Ct	Park
*4600	2	15C	123 Route 206	Park
4801	40	15C	Mt View Rd	Vacant Land
4801	1	15C	Valley Rd, Rear	Vacant Land
4901	1	15C	175 Righter Rd	Park
4901	3	15C	175 Righter Rd	Dialysis Center
4901	2	15C	Righter Rd	Vacant Land
5004	6	15C	Highland Ave	Sewer Disposal
5004	1	15C	199 Righter Rd	Vacant Land
5106	2	15C	Main St	Vacant Land
5301	18	15C	75 N Hillside Ave	Pumping Station
5403	12	15C	Emmans Rd, Rear	Well House

5501	3	15C	Emmans Rd	Detention Basin
5503	1	15C	250 Emmans Rd	Vacant Land
5702	11	15C	Sandra Ct, Rear	Vacant Land
5801	13	15C	Emmans Rd, Rear	Vacant Land
5801	12	15C	Emmans Rd, Rear	Shed
5801	11	15C	Emmans Rd	Shed
5801	10	15C	Emmans Rd	Vacant Land
5901	10	15C	132 Emmans Rd	Vacant Land
5901	1	15C	136A Emmans Rd	Vacant Land
5901	13	15C	114 Emmans Rd	Vacant Land
6001	5	15C	8 Vanover Dr	Retention Basin
6001	12	15C	35 Mountain Rd	Radio Station
6001	23	15C	Mountain Rd	Vacant Land
6101	2	15C	75 Emmans Rd	Park
6201	2	15C	Emmans Rd	Vacant Land
6405	18	15C	Canal St,Ledge	Park
6408	2	15C	211 Main St, Ledge	Historic Site
6408	1	15C	213 Main St, Ledge	Historic Site
6501	10	15C	197 Main St, Ledge	Shed
6501	9	15C	181 Main St, Ledge	Vacant Land
6901	2	15C	56 N Dell Ave	Playground
7101	8	15C	96 N Dell Ave	Dpw Garage
7101	22	15C	N Dell Ave, Rear	Vacant Land
7101	25.04	15C	404 W Dewey Ave	Vacant Land
7101	25.03	15C	402 W Dewey Ave	Vacant Land
7101	25.02	15C	400 W Dewey Ave	Vacant Land
7101	25.01	15C	398 W Dewey Ave	Vacant Land
7204	21	15C	411 W Dewey Ave	Vacant Land
7301	1	15C	Route 206	Vacant Land
7402	9	15C	9 Vanover Dr	Retention Basin
7404	2.02	15C	62 Mountain Rd	Vacant Land
7501	23	15C	Emmans Rd	Park
7501	10	15C	Mountain Rd, Rear	Park
7501	11	15C	Mountain Rd	Park
7701	26	15C	195 Mooney Rd	Vacant Land
7701	2	15C	30 Patricia Dr	Vacant Land
7701	1	15C	32 Patricia Dr	Vacant Land
7701	27	15C	10 Mildred Ter	Playground
7801	1	15C	31 Patricia Dr	Sewer Plant
7905	3	15C	Lincoln Dr, Rear	Vacant Land
8002	12	15C	125 Mountain Rd	Vacant Land
8101	2	15C	Conkling Rd, Rear	Pumping Station
8101	1	15C	99 Mooney Rd	Vacant Land
8403	25	15C	138 Mountain Rd	Vacant Land
8501	12	15C	Route 46, Ledge	Park
8501	8	15C	Route 46, Ledge, Rear	Vacant Land
8501	7	15C	Route 46, Ledge, Rear	Vacant Land
8501	4	15C	1830 Route 46, Ledge	Vacant Land
8501	5	15C	1750 Route 46, Ledge	Park

8501	4	15C	1830 Route 46, Ledge	Com/Ind Purpose
8501	5	15C	1750 Route 46, Ledge	Com/Ind Purpose
8501	5	15C	1750 Route 46, Ledge	Com/Ind Purpose
8602	28	15C	Arlington Ave	Tax Lien Foreclosure
8602	25	15C	Arlington Ave	Vacant Land
8602	26	15C	Arlington Ave	Tax Lien Foreclosure
8602	27	15C	Arlington Ave	Vacant Land
8701	2	15C	Drake Ave	Jughandle
9002	7	15C	180 Mooney Rd	Vacant Land
9002	3	15C	Mooney Rd, Rear	Water Tank
9002	1.02	15C	102 Mooney Rd	Vacant Land
9103	16	15C	Timberline Dr	Pump House
9202	4.25	15C	2 Fox Chase Ln	Drainage
9202	22	15C	Mountain Rd	Park
9202	3	15C	Route 80	Vacant Land
9203	6	15C	18 Hampton Ct	Well-Retention Basin
9302	4	15C	1450 Route 46, Ledge	Vacant Land
9303	8	15C	85 Route 206	Police Station
9401	19	15C	12 Route 206	Maintenance Bldg
9401	2	15C	Mc Mullen St	Vacant Land
9401	12	15C	Mc Mullen St	Vacant Land
9603	5	15C	1715 Route 46, Ledge	Municipal Bldg
9701	1	15C	Shippenport Rd	Vacant Land
9701	2	15C	Shippenport Rd	Vacant Land
9701	5	15C	Shippenport Rd	Vacant Land
9702	21	15C	Orben Dr,Rear	Vacant Land
9707	8	15C	28 Harriet Way	Vacant Land
9707	10	15C	Roosevelt Way	Vacant Land
9707	11	15C	Roosevelt Way	
9707	14	15C	Roosevelt Way	Vacant Land
9801	6	15C	Kings Hwy	Vacant Land
10012	1	15C	2Nd Ave, Landing	Park
10020	10	15C	130 Ledge-Landing Rd	Commercial Bldg.
10020	9	15C	124 Ledge-Landing Rd	Commercial Bldg.
10101	8	15C	229 Ledge-Landing Rd	Tax Lien Foreclosure
10101	13	15C	Ledge-Landing Rd,Rear	Tax Lien Foreclosure
10101	23	15C	165 Ledge-Landing Rd	Vacant Land
10101	49	15C	101 Ledge-Landing Rd	Com/Ind Purpose
10101	35	15C	130 Shippenport Rd	Vacant Land
10201	3	15C	7 Orben Dr	Vacant Land
10201	4	15C	Orben Dr	Vacant Land
10301	1	15C	354 Center St	Vacant Land
10301	7	15C	Main St, Land, Rear	Canal
10301	11	15C	Main St, Land, Rear	Canal
10301	21	15C	Lake St, Rear	Canal
10301	25	15C	Palmer St, Rear	Canal
10301	26	15C	Lake Musconetcong	Game Preserve
10401	1	15C	323 Center St	Vacant Land
10405	12	15C	23 Washington St	Park

10406	1	15C	Washington St	Park
10407	2	15C	River St	Vacant Land
10407	1	15C	River St	Park
10407	3	15C	River St	Vacant Land
10501	9	15C	36 Washington St	Playground
10501	14	15C	597 Main St, Land	Vacant Land
10501	34	15C	Center St Rear	Game Preserve
10502	5	15C	580 Main St, Land	Volunteer Fire Co
10503	42	15C	219 Center St	Vacant Land
10503	43	15C	Center St	Vacant Land
10601	1	15C	180 Center St	Vacant Land
10602	1	15C	185 Center St	Vacant Land
10701	2	15C	170 Center St	Well
10801	1	15C	Lakeside Blvd	Vacant Land
10802	1	15C	Lakeside Blvd	Park
10901	7	15C	113 Center St	Well
10903	3	15C	117 Lakeside Blvd	Commercial Bldg.
10903	2	15C	119 Lakeside Blvd	Road
10903	1	15C	121 Lakeside Blvd	Administrative Bldg.
10904	3	15C	105 Lakeside Blvd	Road
10904	1	15C	109 Lakeside Blvd	Commercial Bldg.
10905	1	15C	104 Ledge-Landing Rd	Road
11101	1	15C	Lakeside Blvd	Vacant Land
11102	20	15C	2 Ford Rd	Well
11102	3	15C	Shippenport Rd, Rear	Water Supply
11105	28	15C	31 Ford Rd	Vacant Land
11105	16	15C	50 Vail Rd	Vacant Land
11204.04	34	15C	Williams Rd	Vacant Land
11301	4	15C	59 Vail Rd	Vacant Land
11301	10	15C	170 Mt Arlington Blvd	Pumping Station
11308	35	15C	Condict Rd	Vacant Land
11403	3	15C	504 Henmar Dr	Tax Lien Foreclosure
11408	2	15C	192 Mt Arlington Blvd	Playground
11410	1	15C	Rogers Dr	Pond
11501	1	15C	Lake Hopatcong	Game Preserve
11105	28	15C	31 Ford Rd	Vacant Land
11105	16	15C	50 Vail Rd	Vacant Land
11204.04	34	15C	Williams Rd	Vacant Land
11301	4	15C	59 Vail Rd	Vacant Land
11301	10	15C	170 Mt Arlington Blvd	Pumping Station
11308	35	15C	Condict Rd	Vacant Land
11403	3	15C	504 Henmar Dr	Tax Lien Foreclosure
11408	2	15C	192 Mt Arlington Blvd	Playground
11410	1	15C	Rogers Dr	Pond
11501	1	15C	Lake Hopatcong	Game Preserve
11704	7	15C	Williams Rd, Rear	Road Barrier
11705	24	15C	Jeffrey Rd, Rear	Vacant Land
11705	9	15C	3 Jocelyn Rd	Park
*11802	1	15C	501 Edith Rd	Vacant Land

11902	1	15C	1 Auriemma Ct	Vacant Land
11911	6	15C	King Rd	Vacant Land
11913	7	15C	Mt Arlington Blvd	Pumping Station
11913	4	15C	Mt Arlington Blvd	Vacant Land
11913	6	15C	King Rd	Pumping Station
11913	12	15C	King Rd	Vacant Land
12002	4	15C	270 Mt Arlington Blvd	Vacant Land
12005	11	15C	Ogden Rd	Vacant Land
12006	5	15C	501 Atlas Rd	Tax Lien Foreclosure
12006	6	15C	529 Logan Dr	Tax Lien Foreclosure
12006	3	15C	509 Atlas Rd	Vacant Land
12006	1	15C	536 Wills Rd	Vacant Land
12006	4	15C	503 Atlas Rd	Tax Lien Foreclosure
12006	7	15C	525 Logan Dr	Vacant Land
12006	9	15C	519 Logan Dr	Vacant Land
12006	2	15C	Ogden Rd	Vacant Land
12007	1	15C	522 Ogden Rd	Vacant Land
12007	2	15C	524 Ogden Rd	Vacant Land
12007	3	15C	526 Ogden Rd	Vacant Land
12012	9	15C	328 Mt Arlington Blvd	Vacant Land
12012	2	15C	310 Mt Arlington Blvd	Vacant Land
12102	14	15C	54 Oneida Ave	Vacant Land
12103	2	15C	374 Mt Arlington Blvd	Vacant Land
12104	1	15C	57 Iroquois Ave	Tax Lien Foreclosure
12104	3	15C	63 Iroquois Ave	Vacant Land
12104	4	15C	67 Iroquois Ave	Vacant Land
12107	8	15C	52 Cayuga Ave	Vacant Land
12107	10	15C	58 Cayuga Ave	Vacant Land
12301	1	15C	200 Stierli Ct	Office Bldg
12301	3	15C	170 Howard Blvd	Vacant Land
12401	3	15C	Minisink Rd, Rear	Vacant Land
12401	1	15C	Route 80	Vacant Land
12402	2	15C	Route 80	Vacant Land
12501	2	15C	Berkshire Valley Rd	Vacant Land
12501	31	15C	245 Berkshire Valley Rd	Vacant Land
12501	24.02	15C	3 Stone Cottage Ln	Drainage
12501	27	15C	Berkshire Valley Rd	Vacant Land
12501	21	15C	271 Berkshire Valley Rd	Volunteer Fire Co
12602	17	15C	Berkshire Valley Rd Rear	Game Preserve
12602	21	15C	Berkshire Valley Rd,Rear	Vacant Land
12701	4	15C	Mill Pond Rd	Vacant Land
12701	5	15C	Mill Pond Rd	Vacant Land
12702	7	15C	Mill Rd	Vacant Land
12703	1	15C	353 Mill Rd	Vacant Land
12703	3	15C	Mill Rd	Vacant Land
12704	1	15C	Little Lane, Rear	Vacant Land
12705	1	15C	Mill Rd	Vacant Land
12705	2	15C	Little Ln	Vacant Land
12705	3	15C	Mill Rd	Vacant Land

12706	1	15C	Mill Rd	Vacant Land
12706	2	15C	Mill Rd	Vacant Land
12706	3	15C	Mill Rd	Vacant Land
12801	2	15C	Gordon Rd, Rear	Vacant Land
12801	1	15C	Gordon Rd, Rear	Recreation
12801	9	15C	Gordon Rd, Rear	Vacant Land
12801	8	15C	44 Gordon Rd	Vacant Land
12801	10	15C	Gordon Rd, Rear	Vacant Land
12901	50	15C	Will Lane, Rear	Vacant Land
12901	11	15C	Route 80	Vacant Land
12901	13	15C	Berkshire Valley Rd, Rear	Vacant Land
12901	15	15C	Berkshire Valley Rd, Rear	Rifle Range
12901	14	15C	Berkshire Valley Rd, Rear	Vacant Land
12901	17	15C	Berkshire Valley Rd	Vacant Land
12901	19	15C	Berkshire Valley Rd	Vacant Land
12901	12	15C	Berkshire Valley Rd	Vacant Land
12901	21	15C	Minisink Rd, Rear	Vacant Land
12901	22	15C	Berkshire Valley Rd	Vacant Land
12901	20	15C	Berkshire Valley Rd,Rear	Vacant Land
12901	34	15C	315 Berkshire Valley Rd	Vacant Land
13002	11	15C	79 Mill Rd	Nutrition Center
13004	14	15C	84A Mill Rd	Vacant Land
13103	12	15C	19 Mettle Ln	Well
13201	1	15C	250 Howard Blvd	Vacant Land
13201	2	15C	240 Howard Blvd	Vacant Land
13201	10	15C	Howard Blvd, Rear	Vacant Land
13201	5	15C	Larson Ln Rear	Vacant Land
13202	1	15C	Howard Blvd	Vacant Land
13301	16	15C	Minisink Rd	Vacant Land
13301	17	15C	Minisink Rd	Vacant Land
13301	13	15C	Howard Blvd Rear	Vacant Land
13301	6	15C	Berkshire Ave Mt Ar Rear	Vacant Land
13301	5	15C	Berkshire Ave Rear	Vacant Land
13301	11	15C	Howard Blvd, Rear	Vacant Land
13301	15	15C	Minisink Rd	Vacant Land
13301	10	15C	Chestnut St, Rear	Vacant Land
13301	12	15C	Minisink Rd, Rear	Vacant Land
13302	1	15C	Minisink Rd	Vacant Land
13401	14	15C	Parker Rd, Rear	L Hopatcong Pipeline
13401	15	15C	Howard Blvd Rear	Vacant Land
1003	2	15D	4 Ridge Rd	Dormitory
2611	24	15D	102A S First Ave	Dormitory
2802	20	15D	217 S Hillside Ave	Synagogue
2904	2	15D	185 S Hillside Ave	Church
3005	30	15D	203 Eyland Ave	Church
3102	4	15D	1 Tonneson Dr	Parsonage
3103	1	15D	113 S Hillside Ave	Church
3604	3	15D	7 Hunter St	Rectory
3801	1	15D	Kenvil Ave, Rear	Church

3801	20	15D	91 Main St, Succ	Church&Cemetery
3801	19	15D	99 Main St, Succ	Church&Cemetery
3802	7	15D	98 Main St, Succ	Parsonage
4103	3	15D	319 Emmans Rd	Dormitory
5103	1.01	15D	145 Main St, Succ	Church
5701	8	15D	197 Emmans Rd	Rectory
5701	9	15D	197 Emmans Rd	Church
6406	5.01	15D	233 Main St	Parsonage
6501	2.262	15D	87 Drake Ln	Group Home
6501	2.154	15D	134 Drake Ln	Dormitory
6501	2.023	15D	216 Drake Ln	Dormitory
6501	2.151	15D	128 Drake Ln	Group Home
6501	2.143	15D	118 Drake Ln	Dormitory
6501	2.171	15D	170 Drake Ln	Group Home
6501	2.191	15D	184 Drake Ln	Dormitory
6501	2.202	15D	200 Drake Ln	Group Home
6501	2.254	15D	77 Drake Ln	Group Home
8001	1	15D	1 Kennedy Dr	Dormitory
8201	11	15D	152 Mountain Rd	Group Home
8201	9	15D	156 Mountain Rd	Church
8403	24	15D	34 Lazarus Dr	Parsonage
9302	2	15D	1500 Route 46, Ledge	Church
9402	11	15D	1915 Route 46, Ledge	Dog Pound
9402	10	15D	1919 Route 46, Ledge	Dog Pound
10101	30	15D	125 Ledge-Landing Rd	Administrative Bldg.
10403	4	15D	540 Main St, Land	Parking Area
10403	5	15D	296 Center St	Church
10403	6	15D	546 Main St, Land	Parsonage
13002	1	15D	294 Berkshire Valley Rd	Jewish Organization
501	6	15F	59 Pleasant Hill Rd	Disabled Veteran
1001	6	15F	260 Eyland Ave	Disabled Veteran
1002	3	15F	248 Eyland Ave	Disabled Veteran
1102	20	15F	75 Toby Dr	Disabled Veteran
1302	24	15F	7 Lamington Dr	Disabled Veteran
1604	9	15F	10 Carol Dr	Disabled Veteran
1905	19	15F	17-19 Route 10	Common Element
2107	7	15F	3 Chesler Ter	Disabled Veteran
2301	4	15F	49 Kenvil Ave	Disabled Veteran
3906	3	15F	4 Corwin St	Disabled Veteran
4403	6	15F	39 Tamarack Dr	Disabled Veteran
4701	1	15F	140 Woods Edge Dr	Common Element
4803	23	15F	3 Mt View Rd	Disabled Veteran
5201	6	15F	124 Main St, Succ	Volunteer Fire Co
5203	37	15F	3 Cliff Ct	Disabled Veteran
5203	57	15F	119-121 Main St, Succ	Common Element
5901	15	15F	102 Emmans Rd	Disabled Veteran
6201	3	15F	Willow Walk Righter Rd	Common Element
6201	5.2	15F	Righter Rd	Common Element
6303	9	15F	15 Riggs Ave	Disabled Veteran

6401	6	15F	4 Nalron Dr	Disabled Veteran
6403	38	15F	3 Canal St,Ledge	Disabled Veteran
6501	2	15F	Main St	Common Element
6501	2.156	15F	138 Drake Ln	Disabled Veteran
7204	9	15F	377 W Dewey Ave	Disabled Veteran
7204	4	15F	West Dewey Ave	Common Element
7401	9	15F	19 Lookout Dr	Disabled Veteran
8201	15	15F	144 Mountain Rd	Disabled Veteran
9102	15	15F	20 Timberline Dr	Disabled Veteran
9701	7	15F	Orben Dr	Canal
10020	7	15F	Kings Highway	Common Element
10101	41	15F	110 Shippenport Rd	Volunteer Fire Co
10902	7	15F	333 Boonton St	Disabled Veteran
11101	31	15F	171 Mt Arlington Blvd	Disabled Veteran
11306	34	15F	67 Salmon Rd	Disabled Veteran
11313	8	15F	20 Salmon Rd	Disabled Veteran
11314	37	15F	92 Mansel Dr	Disabled Veteran
11703	6	15F	510 Curtis Rd	Disabled Veteran
11801	22	15F	504 Dell Rd	Disabled Veteran
11903	3	15F	295 Mt Arlington Blvd	Disabled Veteran
11909	3	15F	11 King Rd	Disabled Veteran
12014	24	15F	641 Succasunna Rd	Disabled Veteran
12201	1	15F	172-176-180 Howard Blvd	Common Element
12901	53	15F	273 Berkshire Valley Rd	Disabled Veteran
13001	5	15F	4 Birch Ln	Disabled Veteran

*Only a portion of the parcel is within the Roxbury Township boundary

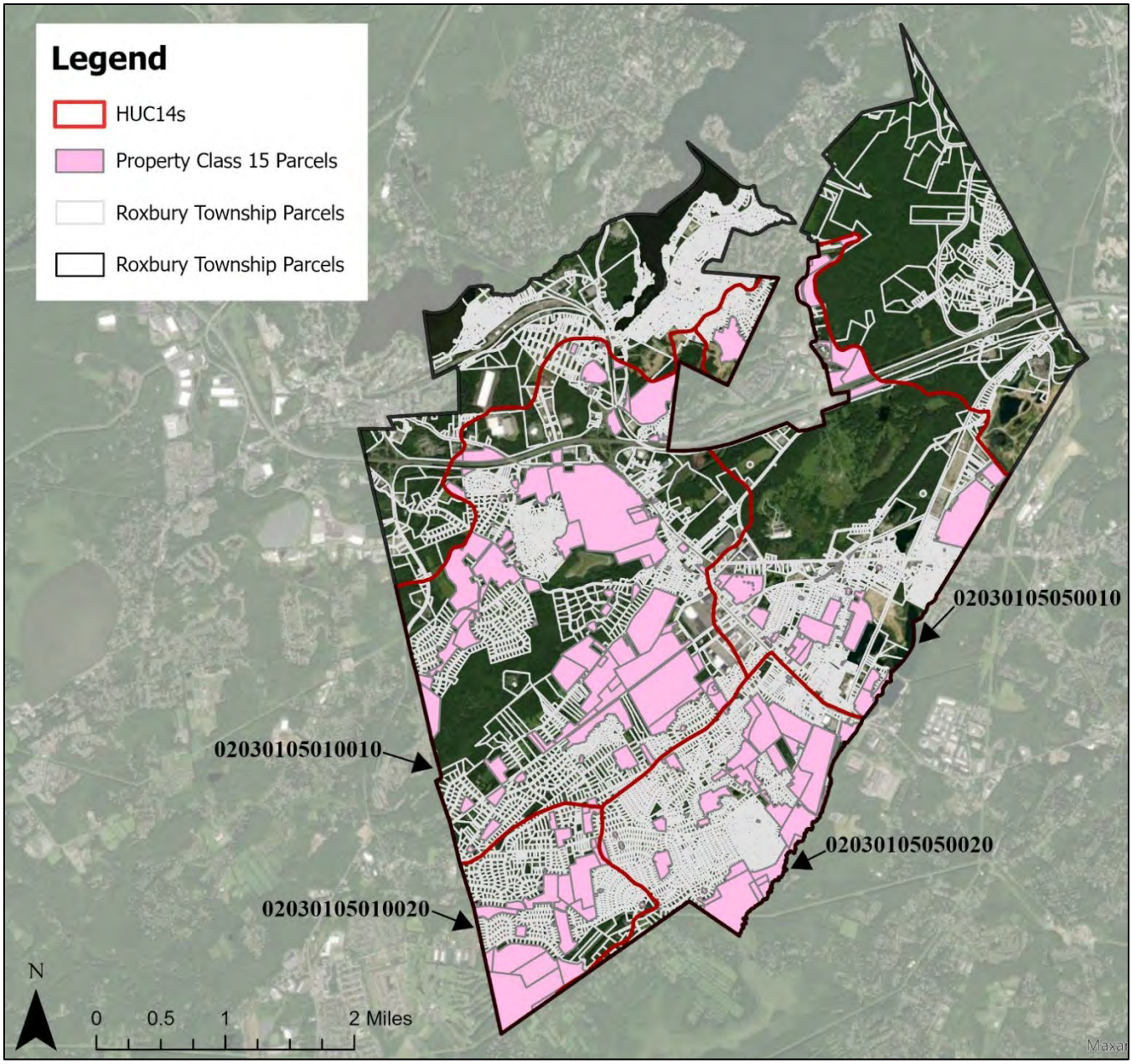


Figure 11: Property Class 15 parcels in the Study Area of Roxbury Township

Table 10: Property Class 15 Parcels in the Study Area of Roxbury Township

Block	Lot	Prop Class	Location	Facility Type
***1201**	**19**	**15A**	**20 Pleasant Hill Rd**	**School**
1801	4	15A	Eyland Ave, Rear	Schools
***1801[1]**	**2**	**15A**	**1 Bryant Dr**	**School**
***1801[1]**	**3**	**15A**	**Eyland Ave**	**Schools**
3801	16	15A	25 Meeker St	School
***3901**	**2**	**15A**	**N Hillside Ave**	**School**
3901	31	15A	Meeker St	Park
***4501**	**10**	**15A**	**19 Corn Hollow Rd**	**School**
***4601**	**13**	**15B**	**126 S Hillside Ave**	**Schools**
101	6	15C	5 Reger Rd	Golf Course
101	5	15C	Reger Rd	Golf Course
101	1	15C	49 Reger Rd	Park
101	2	15C	45 Reger Rd	Vacant Land
101	14	15C	Reger Rd, Rear	Park
101	15	15C	Reger Rd	Golf Course
102	32	15C	Parkview Dr	Vacant Land
201	10	15C	Wright Ct	Vacant Land
201	2	15C	8 Phyllis Dr	Sewer Disposal
301	34	15C	42 Reger Rd	Vacant Land
301	1	15C	24 Phyllis Dr	Vacant Land
501	47	15C	16 Parkwood Rd	Road
503	6	15C	Golf Course Rd	Sewer Disposal
506	7	15C	7 Zucker Ln	Land
701	2	15C	Cynthia Dr, Rear	Vacant Land
701	1	15C	2 Cynthia Dr	Vacant Land
801	1	15C	Eyland Ave - Rear	Park
801	22	15C	Parkview Dr	Vacant Land
901	32	15C	80A Toby Dr	Park
901	1	15C	Eyland Ave, Rear	Heritage Ret'N Basin
***901**	**19**	**15C**	**9 Makin Ln**	**Park**
1001	7	15C	Eyland Ave	Vacant Land
1401	1	15C	2 Lamington Dr	Vacant Land
1401	3	15C	Ajax Terr	Sewer Disposal
1401	5	15C	Ajax Terr	Sewer Plant
1401	4	15C	Ajax Terr	Sewer Plant
1401	2	15C	Golf Course Rd	Golf Course
1401	7	15C	Righter Rd	Golf Course
1401	6	15C	Ajax Terr	Golf Course
1505	1	15C	22 Lamington Dr	Vacant Land
1703	24	15C	Eyland Ave	Vacant Land
1705	5	15C	9 Midland Rd	Park
1801	14	15C	Eyland Ave & Righter Rd	Park
1801	1	15C	Righter Rd	Vacant Land
1802	15	15C	Righter Rd	Vacant Land
1802	14	15C	Righter Rd	Golf Course
1802	13	15C	Righter Rd	Vacant Land

1802	7	15C	72 Eyland Ave	Vacant Land
1802	11	15C	Eyland Ave - Rear	Vacant Land
***1802**	**8**	**15C**	**25 Righter Rd**	**Township Hall**
1802	1.02	15C	7 Righter Rd	Vacant Land
2001	2	15C	1 Main St, Succ	Lake
2001	3.02	15C	Mark Lane	Lake
2301	19.031	15C	Chesler Sq. Rear	Vacant Land
2301	19.03	15C	Kenvil Ave, Rear	Vacant Land
2301	19.02	15C	89 Kenvil Ave	Vacant Land
2404	2	15C	Academy St	Vacant Land
2614	10	15C	21 N First Ave	Tax Lien Foreclosure
2619	8	15C	40 N First Ave	Vacant Land
***2802**	**5**	**15C**	**281 Eyland Ave**	**Park**
2904	9	15C	8 Alcott Way	Vacant Land
3201	27	15C	5 Apollo Ct	Road
3203	8	15C	Morningside Dr	Detention Basin
3301	28	15C	Morningside Dr	Detention Basin
3303	1	15C	39 Condit St	Vacant Land
3402	7	15C	24 Condit St	Detention Basin
3403	23	15C	Righter Rd	Vacant Land
3603	24	15C	Mapledale Ave, Rear	Sewer Disposal
3703	1	15C	60 Route 10	Jug Handle
3801	2	15C	103 Main St, Succ	Library
3901	20	15C	Spring St	Vacant Land
2619	8	15C	40 N First Ave	Vacant Land
2802	5	15C	281 Eyland Ave	Park
2904	9	15C	8 Alcott Way	Vacant Land
3201	27	15C	5 Apollo Ct	Road
3203	8	15C	Morningside Dr	Detention Basin
3301	28	15C	Morningside Dr	Detention Basin
3303	1	15C	39 Condit St	Vacant Land
3402	7	15C	24 Condit St	Detention Basin
3403	23	15C	Righter Rd	Vacant Land
3603	24	15C	Mapledale Ave, Rear	Sewer Disposal
3703	1	15C	60 Route 10	Jug Handle
3801	2	15C	103 Main St, Succ	Library
3901	20	15C	Spring St	Vacant Land
4001	22	15C	24 Ballantine St	Tax Lien Foreclosure
4001	2	15C	N Hillside Ave	Vacant Land
4002	13	15C	735 Route 46, Ken	Railroad
4102	2	15C	260 Emmans Rd	Vacant Land
4103	9	15C	Emmans Rd	Vacant Land
4401	30	15C	12 Tamarack Dr	Water Supply
4401	4	15C	11 Meredith Ct	Park
4600	2	15C	123 Route 206	Park
4801	40	15C	Mt View Rd	Vacant Land
4801	1	15C	Valley Rd, Rear	Vacant Land
4901	1	15C	175 Righter Rd	Park
4901	3	15C	175 Righter Rd	Dialysis Center

4901	2	15C	Righter Rd	Vacant Land
5004	6	15C	Highland Ave	Sewer Disposal
5004	1	15C	199 Righter Rd	Vacant Land
5106	2	15C	Main St	Vacant Land
5301	18	15C	75 N Hillside Ave	Pumping Station
5403	12	15C	Emmans Rd, Rear	Well House
5501	3	15C	Emmans Rd	Detention Basin
5503	1	15C	250 Emmans Rd	Vacant Land
5702	11	15C	Sandra Ct, Rear	Vacant Land
5801	13	15C	Emmans Rd, Rear	Vacant Land
5801	12	15C	Emmans Rd, Rear	Shed
5801	11	15C	Emmans Rd	Shed
5801	10	15C	Emmans Rd	Vacant Land
5901	10	15C	132 Emmans Rd	Vacant Land
5901	1	15C	136A Emmans Rd	Vacant Land
5901	13	15C	114 Emmans Rd	Vacant Land
6001	5	15C	8 Vanover Dr	Retention Basin
6001	12	15C	35 Mountain Rd	Radio Station
6001	23	15C	Mountain Rd	Vacant Land
6101	2	15C	75 Emmans Rd	Park
6201	2	15C	Emmans Rd	Vacant Land
6405	18	15C	Canal St, Ledge	Park
***6408**	**2**	**15C**	**211 Main St, Ledge**	**Historic Site**
6408	1	15C	213 Main St, Ledge	Historic Site
6501	10	15C	197 Main St, Ledge	Shed
6501	9	15C	181 Main St, Ledge	Vacant Land
6901	2	15C	56 N Dell Ave	Playground
7101	8	15C	96 N Dell Ave	Dpw Garage
7301	1	15C	Route 206	Vacant Land
7402	9	15C	9 Vanover Dr	Retention Basin
7404	2.02	15C	62 Mountain Rd	Vacant Land
7501	23	15C	Emmans Rd	Park
7501	10	15C	Mountain Rd, Rear	Park
7501	11	15C	Mountain Rd	Park
7701	26	15C	195 Mooney Rd	Vacant Land
7701	2	15C	30 Patricia Dr	Vacant Land
7701	1	15C	32 Patricia Dr	Vacant Land
7701	27	15C	10 Mildred Ter	Playground
7801	1	15C	31 Patricia Dr	Sewer Plant
7905	3	15C	Lincoln Dr, Rear	Vacant Land
8002	12	15C	125 Mountain Rd	Vacant Land
8101	2	15C	Conkling Rd, Rear	Pumping Station
8101	1	15C	99 Mooney Rd	Vacant Land
8403	25	15C	138 Mountain Rd	Vacant Land
8501	12	15C	Route 46, Ledge	Park
8501	8	15C	Route 46, Ledge, Rear	Vacant Land
8501	7	15C	Route 46, Ledge, Rear	Vacant Land
8501	4	15C	1830 Route 46, Ledge	Vacant Land
8501	5	15C	1750 Route 46, Ledge	Park

8501	4	15C	1830 Route 46, Ledge	Com/Ind Purpose
8501	5	15C	1750 Route 46, Ledge	Com/Ind Purpose
8501	5	15C	1750 Route 46, Ledge	Com/Ind Purpose
8602	28	15C	Arlington Ave	Tax Lien Foreclosure
8602	25	15C	Arlington Ave	Vacant Land
8602	26	15C	Arlington Ave	Tax Lien Foreclosure
8602	27	15C	Arlington Ave	Vacant Land
8701	2	15C	Drake Ave	Jughandle
9002	7	15C	180 Mooney Rd	Vacant Land
9002	3	15C	Mooney Rd, Rear	Water Tank
9002[2]	1.02	15C	102 Mooney Rd	Vacant Land
9103	16	15C	Timberline Dr	Pump House
9202	4.25	15C	2 Fox Chase Ln	Drainage
9202[2]	22	15C	Mountain Rd	Park
9202	3	15C	Route 80	Vacant Land
9302	4	15C	1450 Route 46, Ledge	Vacant Land
***9603**	**5**	**15C**	**1715 Route 46, Ledge**	**Municipal Bldg**
9701	1	15C	Shippenport Rd	Vacant Land
9701	2	15C	Shippenport Rd	Vacant Land
9701	5	15C	Shippenport Rd	Vacant Land
9702	21	15C	Orben Dr,Rear	Vacant Land
9707	8	15C	28 Harriet Way	Vacant Land
9707	10	15C	Roosevelt Way	Vacant Land
9707	11	15C	Roosevelt Way	
9707	14	15C	Roosevelt Way	Vacant Land
10012	1	15C	2Nd Ave, Landing	Park
10020	10	15C	130 Ledge-Landing Rd	Commercial Bldg.
10020	9	15C	124 Ledge-Landing Rd	Commercial Bldg.
10101	8	15C	229 Ledge-Landing Rd	Tax Lien Foreclosure
10101	13	15C	Ledge-Landing Rd,Rear	Tax Lien Foreclosure
10101	23	15C	165 Ledge-Landing Rd	Vacant Land
10101[2]	35	15C	130 Shippenport Rd	Vacant Land
10201	3	15C	7 Orben Dr	Vacant Land
10201[2]	4	15C	Orben Dr	Vacant Land
11204.04	34	15C	Williams Rd	Vacant Land
11704	7	15C	Williams Rd, Rear	Road Barrier
11705	24	15C	Jeffrey Rd, Rear	Vacant Land
11705[2]	9	15C	3 Jocelyn Rd	Park
12301	1	15C	200 Stierli Ct	Office Bldg
12301[2]	3	15C	170 Howard Blvd	Vacant Land
12401[2]	1	15C	Route 80	Vacant Land
12402[2]	2	15C	Route 80	Vacant Land
13201	1	15C	250 Howard Blvd	Vacant Land
13201	2	15C	240 Howard Blvd	Vacant Land
13201[2]	5	15C	Larson Ln Rear	Vacant Land
13202	1	15C	Howard Blvd	Vacant Land
1003	2	15D	4 Ridge Rd	Dormitory
2611	24	15D	102A S First Ave	Dormitory
***2802**	**20**	**15D**	**217 S Hillside Ave**	**Synagogue**

***2904**	**2**	**15D**	**185 S Hillside Ave**	**Church**
3005	30	15D	203 Eyland Ave	Church
3102	4	15D	1 Tonneson Dr	Parsonage
***3103**	**1**	**15D**	**113 S Hillside Ave**	**Church**
3604	3	15D	7 Hunter St	Rectory
3801	1	15D	Kenvil Ave, Rear	Church
3801	20	15D	91 Main St, Succ	Church&Cemetery
3801	19	15D	99 Main St, Succ	Church&Cemetery
3802	7	15D	98 Main St, Succ	Parsonage
4103	3	15D	319 Emmans Rd	Dormitory
***5103**	**1.01**	**15D**	**145 Main St, Succ**	**Church**
5701	8	15D	197 Emmans Rd	Rectory
***5701**	**9**	**15D**	**197 Emmans Rd**	**Church**
***6406**	**5.01**	**15D**	**233 Main St**	**Parsonage**
6501	2.262	15D	87 Drake Ln	Group Home
6501	2.154	15D	134 Drake Ln	Dormitory
6501	2.023	15D	216 Drake Ln	Dormitory
6501	2.151	15D	128 Drake Ln	Group Home
6501	2.143	15D	118 Drake Ln	Dormitory
6501	2.171	15D	170 Drake Ln	Group Home
6501	2.191	15D	184 Drake Ln	Dormitory
6501	2.202	15D	200 Drake Ln	Group Home
6501	2.254	15D	77 Drake Ln	Group Home
8001	1	15D	1 Kennedy Dr	Dormitory
8201	11	15D	152 Mountain Rd	Group Home
***8201**	**9**	**15D**	**156 Mountain Rd**	**Church**
8403	24	15D	34 Lazarus Dr	Parsonage
9302[2]	2	15D	1500 Route 46, Ledge	Church
10101[2]	30	15D	125 Ledge-Landing Rd	Administrative Bldg.
501	6	15F	59 Pleasant Hill Rd	Disabled Veteran
1001	6	15F	260 Eyland Ave	Disabled Veteran
1002	3	15F	248 Eyland Ave	Disabled Veteran
1102	20	15F	75 Toby Dr	Disabled Veteran
1302	24	15F	7 Lamington Dr	Disabled Veteran
1604	9	15F	10 Carol Dr	Disabled Veteran
1905	19	15F	17-19 Route 10	Common Element
2107	7	15F	3 Chesler Ter	Disabled Veteran
2301	4	15F	49 Kenvil Ave	Disabled Veteran
3906	3	15F	4 Corwin St	Disabled Veteran
4403	6	15F	39 Tamarack Dr	Disabled Veteran
4701	1	15F	140 Woods Edge Dr	Common Element
4803	23	15F	3 Mt View Rd	Disabled Veteran
5201	6	15F	124 Main St, Succ	Volunteer Fire Co
5203	37	15F	3 Cliff Ct	Disabled Veteran
5203	57	15F	119-121 Main St, Succ	Common Element
5901	15	15F	102 Emmans Rd	Disabled Veteran
6201	3	15F	Willow Walk Righter Rd	Common Element
6201	5.2	15F	Righter Rd	Common Element
6303	9	15F	15 Riggs Ave	Disabled Veteran

6401	6	15F	4 Nalron Dr	Disabled Veteran
6403	38	15F	3 Canal St,Ledge	Disabled Veteran
6501	2	15F	Main St	Common Element
6501	2.156	15F	138 Drake Ln	Disabled Veteran
7401	9	15F	19 Lookout Dr	Disabled Veteran
8201	15	15F	144 Mountain Rd	Disabled Veteran
9102	15	15F	20 Timberline Dr	Disabled Veteran
9701	7	15F	Orben Dr	Canal
10101[2]	41	15F	110 Shippenport Rd	Volunteer Fire Co
11313	8	15F	20 Salmon Rd	Disabled Veteran
11314[2]	37	15F	92 Mansel Dr	Disabled Veteran
11703	6	15F	510 Curtis Rd	Disabled Veteran
12201	1	15F	172-176-180 Howard Blvd	Common Element

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

[1] Site includes two tax exempt parcels
[2] Only a portion of the parcel is within the study area

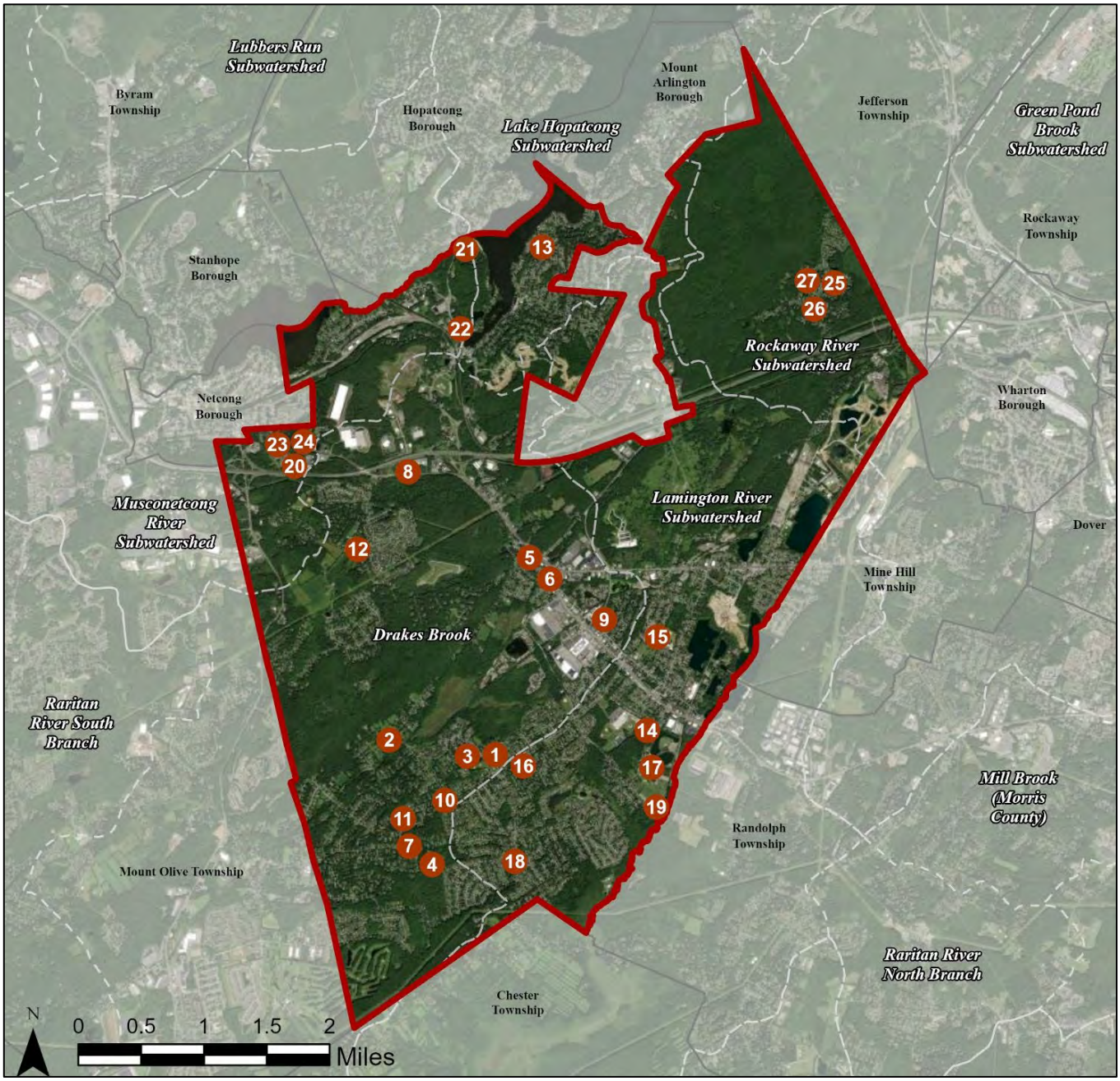


Figure 12: Sites with Green Infrastructure Opportunities in Roxbury Township

AMERICAN CHRISTIAN SCHOOL- SOUTH CAMPUS

RAP ID: 1

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 193,601 sq. ft.

Address: 126 South Hillside Avenue
Succasunna, NJ 07876

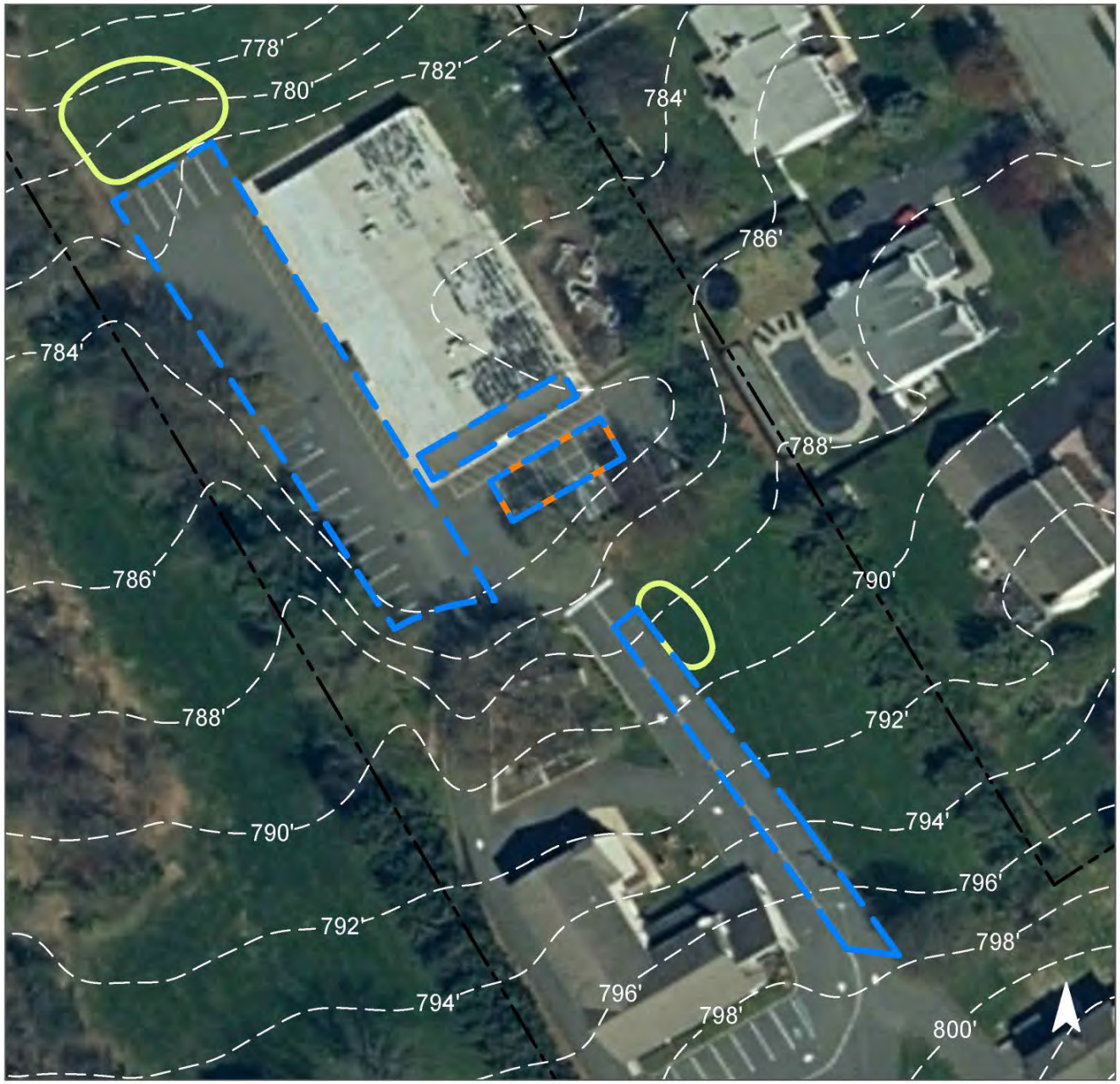
Block and Lot: Block 4601, Lot 13

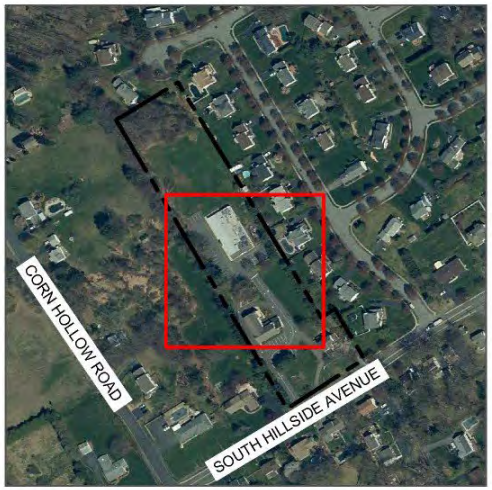
The pavement in the front of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof via already disconnected downspouts; the western downspout may require redirection towards the porous pavement. A rain garden with a curb cut can be installed in the grass area near the northwest corner of the building and a rain garden with a trench drain can be installed south of the building to capture, treat, and infiltrate stormwater runoff from the pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
31	60,281	2.9	30.4	276.8	0.047	1.88

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	10,960	0.325	48	22,860	0.86	2,740	$27,400
Pervious pavement	1,615	0.048	8	3,370	0.13	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS





American Christian School - South Campus

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

0 30' 60'

HOLY WISDOM BYZANTINE CATHOLIC CHURCH

RAP ID: 2

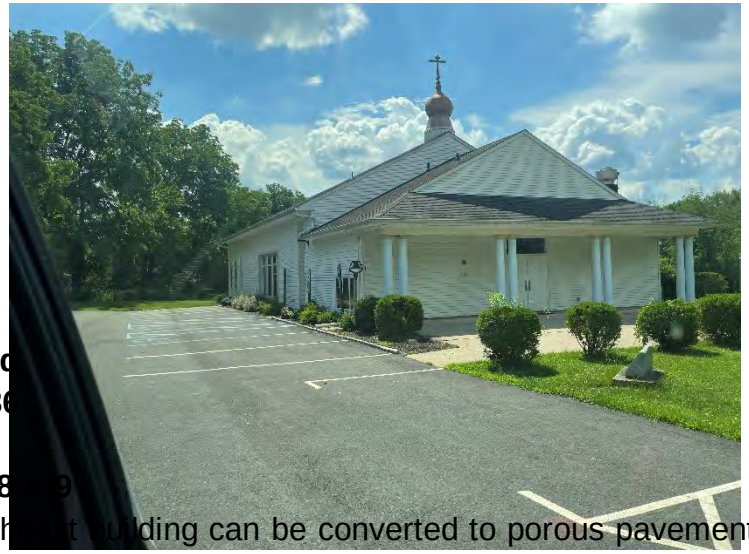
Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 393,578 sq. ft.

Address: 197 Emmans Road
Roxbury, NJ 07836

Block and Lot: Block 5701, Lots 8, 9



Parking spaces in the lot next to the southeast building can be converted to porous pavement to capture and infiltrate stormwater runoff from the asphalt and rooftop via already disconnected downspouts. Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the roofs and pavement. Trench drains and downspout disconnection and redirection will be required for some of these gardens. 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 50"
7	27,418	1.3	13.8	125.9	0.021	0.85

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	4,340	0.129	19	9,050	0.34	1,090	$10,900
Pervious pavement	3,070	0.091	13	6,400	0.24	1,790	$44,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Holy Wisdom Byzantine Catholic Church

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

0 30' 60'

JEFFERSON ELEMENTARY SCHOOL

RAP ID: 3

Subwatershed: Drakes Brook

Site Area: 628,219 sq. ft.

Address: 35 Corn Hollow Road
Succasunna, NJ 07876

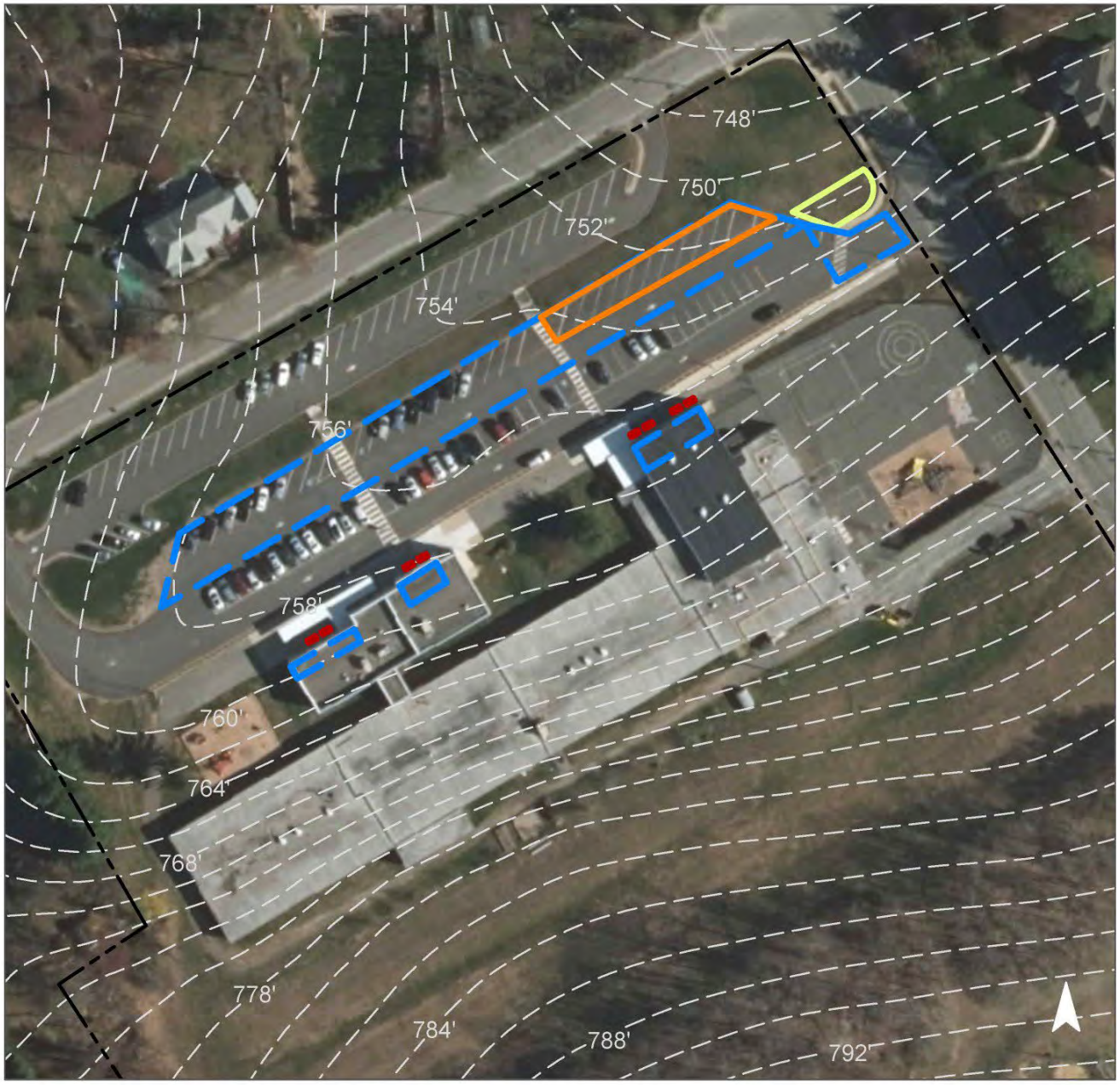
Block and Lot: Block 4501, Lot 10

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. Downspout planter boxes can be installed on multiple locations north of the building. A rain garden can be installed in the parking island to capture, treat, and infiltrate additional stomwater runoff. Downspout planter boxes can be installed near the entrances to capture rooftop runoff and provide visual interest. 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"
31	192,288	9.3	97.1	882.9	0.150	5.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.034	6	2,480	0.09	740	$3,700
Pervious pavement	0.462	77	33,940	1.28	178	$4,450
Planter boxes	n/a	5	n/a	n/a	8 (boxes)	$8,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Jefferson Elementary School

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

0 50' 100'

KIWANIS PARK

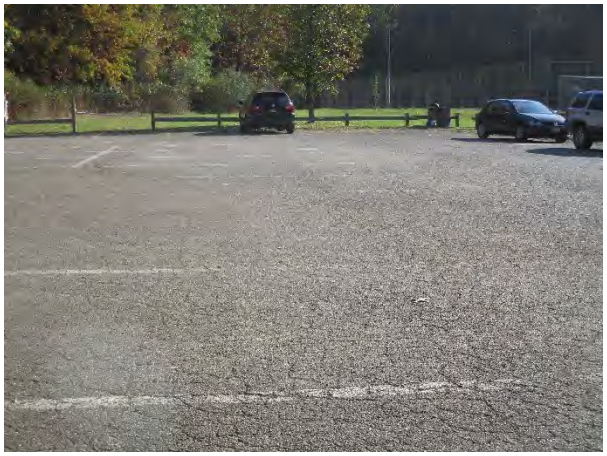
RAP ID: 4

Subwatershed: Drakes Brook

Site Area: 4,578,278 sq. ft.

Address: 9 Makin Lane
Succasunna, NJ 07876

Block and Lot: Block 901, Lot 19



Parking spaces can be replaced with pervious pavement on the southernmost parking strip in the lot to capture and infiltrate stormwater. A rain garden can be installed near the tennis court to capture 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"
2	88,107	4.2	44.5	404.5	0.069	2.42

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	0.066	11	4,820	0.18	1,630	$8,150
Pervious pavement	0.505	85	37,040	1.39	3,460	$86,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Kiwanis Park

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

0 30' 60'

LEDGEWOOD BAPTIST CHURCH

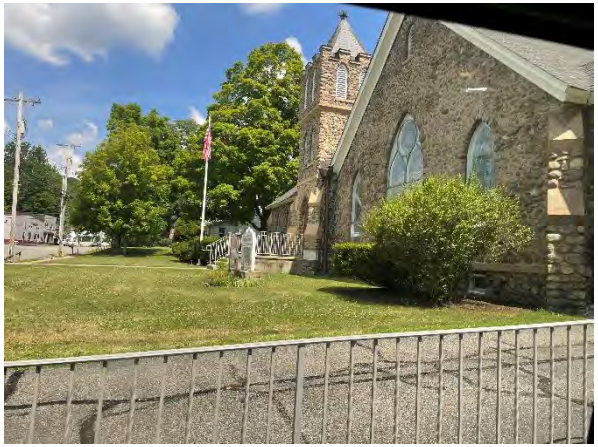
RAP ID: 5

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 100,592 sq. ft.

Address: 233 Main Street
Ledgewood, NJ 07852



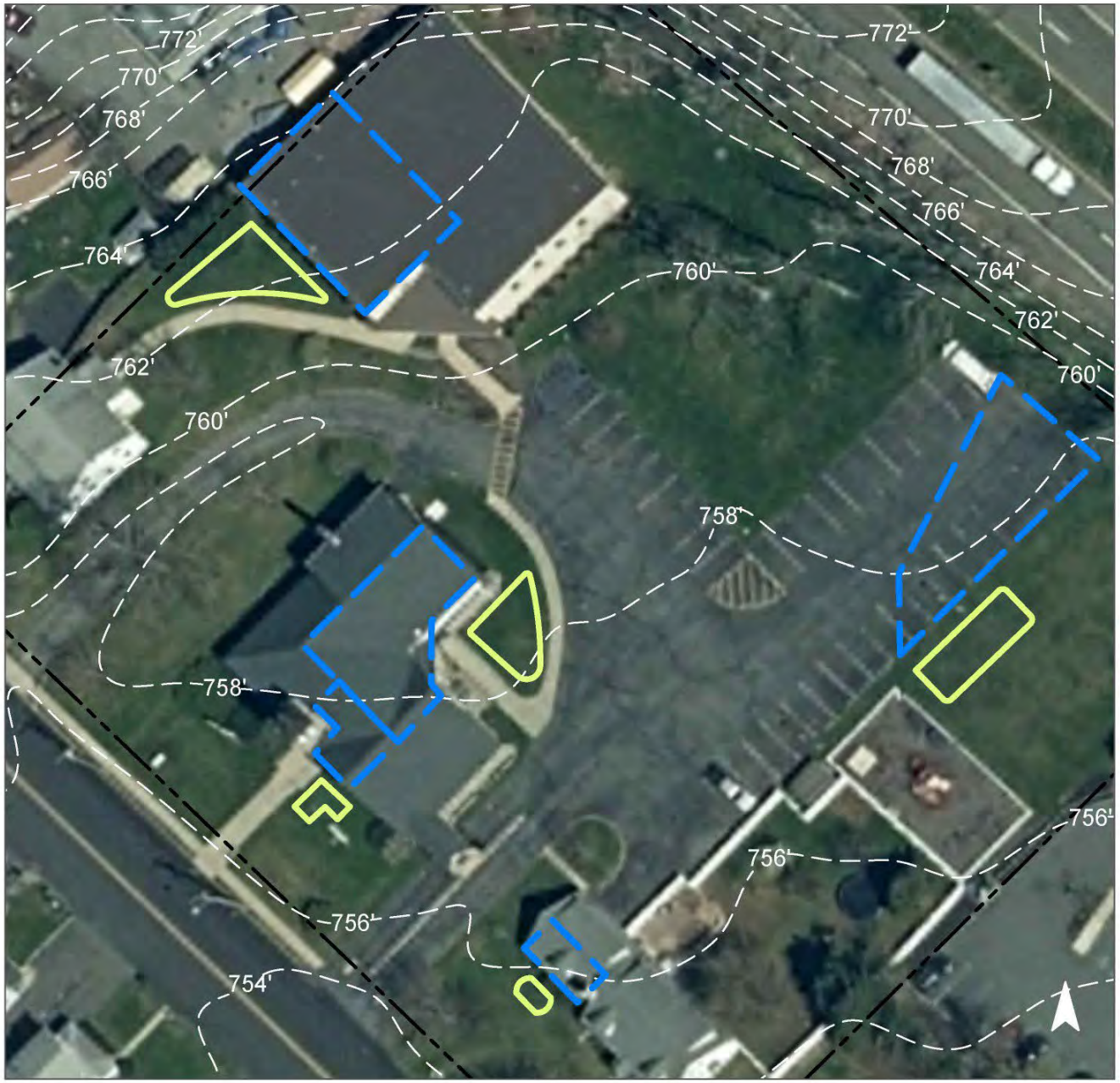
Block and Lot: Block 6406, Lot 5.01

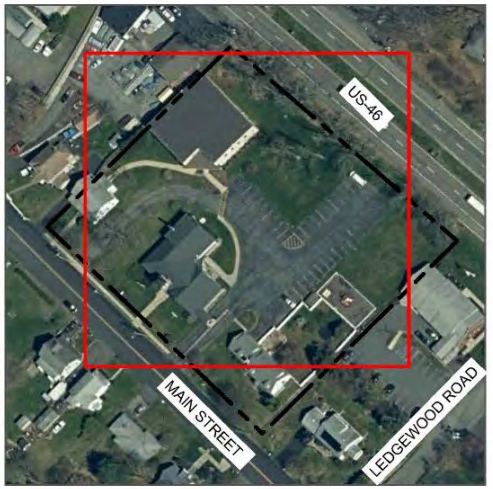
Four rain gardens that require downspout disconnection and redirection can be installed in the grass areas around the property building to capture, treat, and infiltrate stormwater runoff from the roofs. One rain garden can be installed in the grass area on the east side of the site to capture, treat, and infiltrate 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 50"
57	57,354	2.8	29.0	263.3	0.045	1.79

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	7,585	0.225	32	15,820	0.59	1,895	$18,950

GREEN INFRASTRUCTURE RECOMMENDATIONS





Ledgewood Baptist Church

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

0 25' 50'

LEDGEWOOD HISTORIC PARK

RAP ID: 6

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 72,124 sq. ft.

Address: 211-209 East Main Street
Ledgewood, NJ 07852

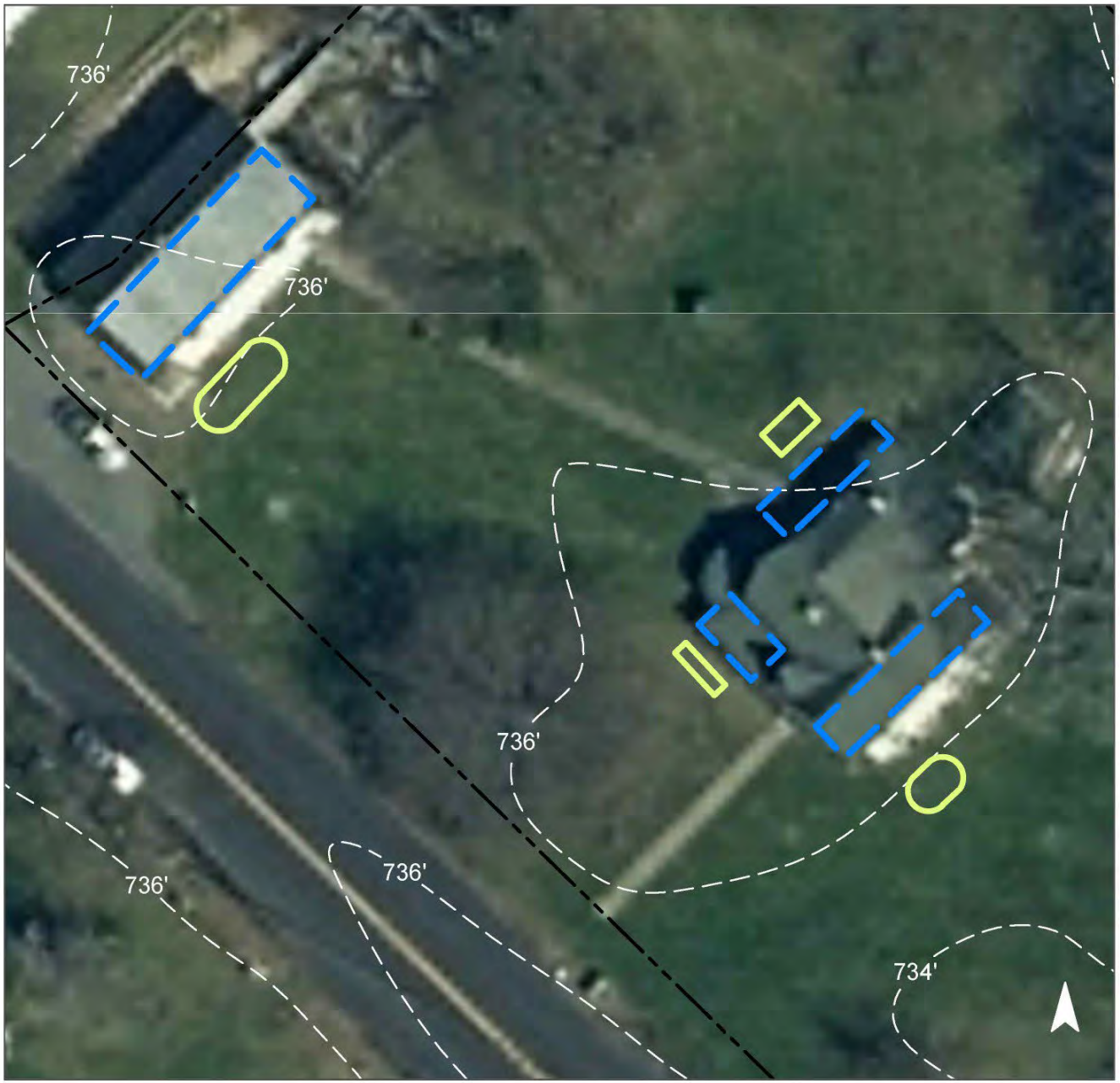
Block and Lot: Block 6408, Lot 2

A rain garden can be installed in the grass area next to the west building to capture, treat, and infiltrate stormwater runoff from the roof. Three rain gardens, one of which requires downspout disconnection, can be installed next to the east building to capture, treat, and infiltrate stormwater runoff from the roof. 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 50"
13	9,086	0.4	4.6	41.7	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	1,370	0.041	6	2,860	0.11	345	$3,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Ledgewood Historic Park

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

0 15' 30'

ROXBURY COMMUNITY GARDEN

RAP ID: 7

Subwatershed: Drakes Brook

Site Area: 371,852 sq. ft.

Address: 281 Eyland Avenue
Succasunna, NJ 07876

Block and Lot: Block 2802, Lot 5

A cistern can be installed to capture stormwater from the roof of the shed in front of the garden, and the water can be reused for watering plants or other non-potable purposes. 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"
4	16,186	0.8	8.2	74.3	0.013	0.44

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Rainwater harvesting	0.007	1	200	0.01	200 (gal)	$400

GREEN INFRASTRUCTURE RECOMMENDATIONS

Roxbury Community Garden

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

0 10' 20'

ROXBURY TOWNSHIP COURT CLERK & POLICE DEPARTMENT

RAP ID: 8

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 227,319 sq. ft.

Address: 1715 US-46
Ledgewood, NJ 07852

Block and Lot: Block 9603, Lot 5

Three rain gardens can be installed in the grass areas on the east and west sides at the front of the building to capture, treat, and infiltrate stormwater runoff from the pavement. The gardens will require curb cuts and trench drains. Parking spaces on the west side of the building and behind the building can be converted to porous pavement to capture and infiltrate 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 50"
55	125,744	6.1	63.5	577.3	0.098	3.92

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	10,635	0.315	46	22,190	0.83	2,660	$26,600
Pervious pavement	36,420	1.078	160	75,970	2.85	6,505	$162,625

GREEN INFRASTRUCTURE RECOMMENDATIONS

Roxbury Township Court Clerk and Police Department

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

0 50' 100'

SAINT THERESE CHURCH

RAP ID: 9

Subwatershed: Drakes Brook

Site Area: 727,688 sq. ft.

Address: 151 Main Street
Succasunna, NJ 07876

Block and Lot: Block 5103, Lot 1

A rain garden can be installed on the east side of the building to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
36	264,110	12.7	133.4	1,212.6	0.206	7.24

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	0.156	26	11,410	0.43	1,450	$7,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Saint Therese Church

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

0 25' 50'

ST. DUNSTAN'S EPISCOPAL CHURCH

RAP ID: 10

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 214,839 sq. ft.

Address: 179 South Hillside Avenue
Succasunna, NJ 07876

Block and Lot: Block 2904, Lot 2

Parking spaces in the lot can be converted to porous pavement using trench drains to redirect, capture and infiltrate stormwater runoff from the pavement. A rain garden with a curb cut can be installed in the grass area near the entrance of the parking lot to capture, treat, and infiltrate stormwater runoff from the pavement. Two rain gardens can be installed near the building entrance to capture, treat, and infiltrate stormwater runoff from the roof via already disconnected downspouts that will require redirection. 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 50"
19	41,200	2.0	20.8	189.2	0.032	1.28

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	7,870	0.233	34	16,420	0.62	1,970	$19,700
Pervious pavement	15,945	0.472	70	33,260	1.25	2,885	$72,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Dunstan's Episcopal Church

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

0 30' 60'

TEMPLE SHALOM

RAP ID: 11

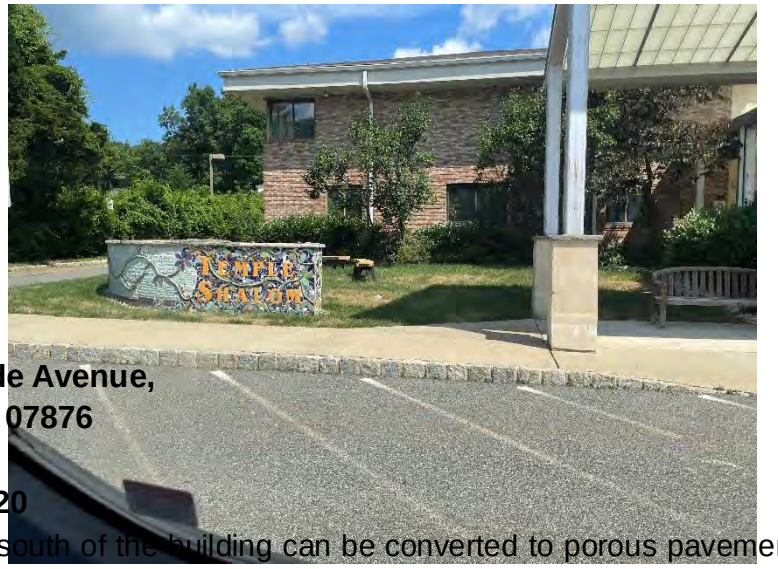
Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 178,553 sq. ft.

Address: 215 South Hillside Avenue,
Succasunna, NJ 07876

Block and Lot: Block 2802, Lot 20



Parking spaces in the lot to the north and south of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof and asphalt; this requires downspout disconnection and trench drains for redirection. A rain garden requiring downspout disconnection can be installed in the grass area in the rear of the building to capture, treat, and infiltrate stormwater runoff from the roof. 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 50"
58	103,414	5.0	52.2	474.8	0.081	3.22

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	995	0.029	4	2,070	0.08	250	$2,500
Pervious pavement	25,725	0.762	112	53,650	2.02	4,620	$115,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Temple Shalom

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

0 50' 100'

THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS

RAP ID: 12

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 251,582 sq. ft.

Address: 156 Mountain Road
Ledgewood, NJ 07852

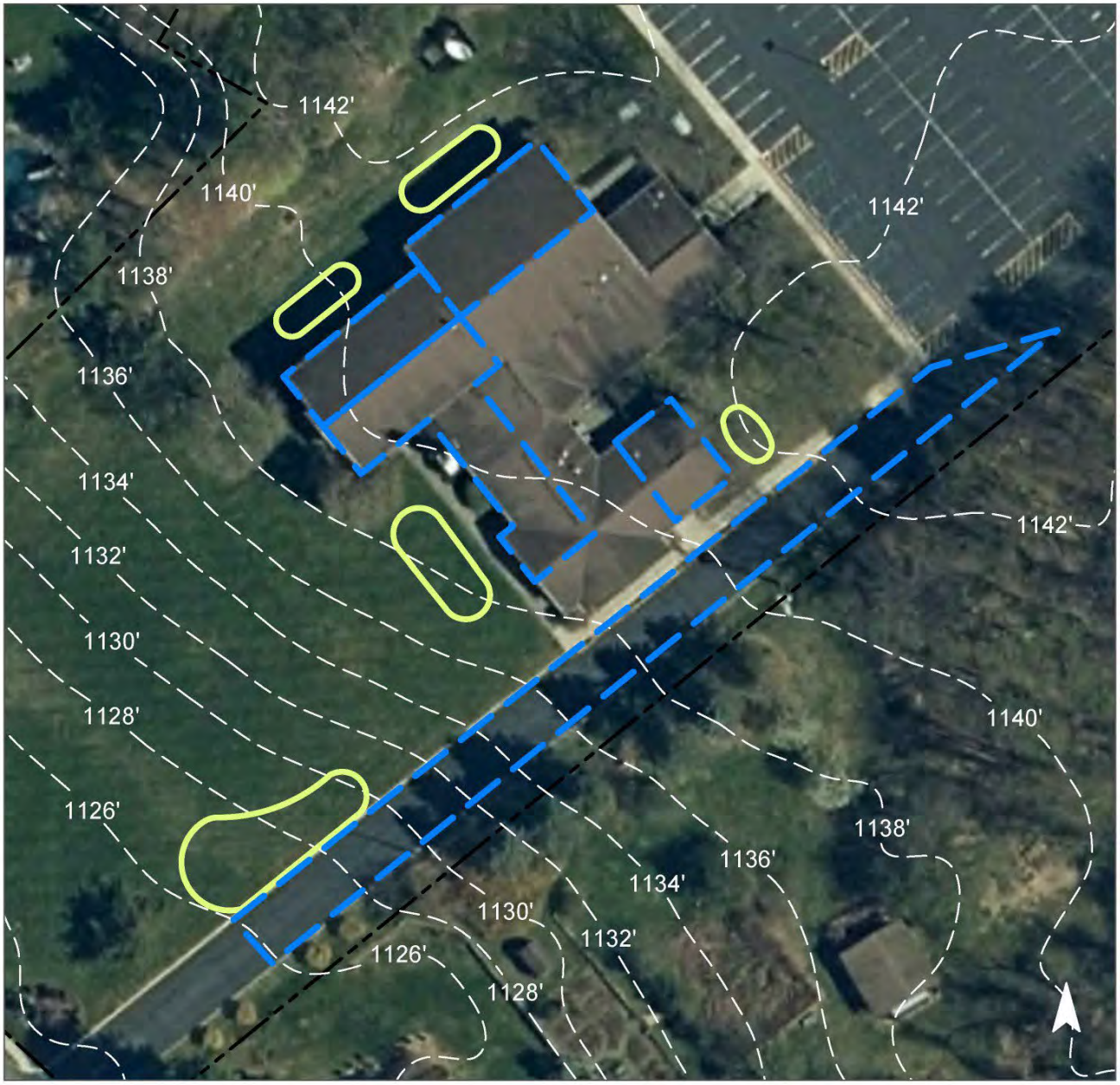
Block and Lot: Block 8201, Lot 9

Several rain gardens that require downspout disconnection and redirection can be installed in the grass areas around the building to capture, treat, and infiltrate stormwater runoff from the roof. One rain garden that requires a curb cut and trench drain can be installed in the grass area southwest of the building to capture, treat, and infiltrate stormwater runoff from the pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
39	98,786	4.8	49.9	453.6	0.077	3.08

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	16,651	0.493	72	34,730	1.31	4,170	$41,700

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Church of Jesus Christ of Latter-Day Saints

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

0 30' 60'

GREEN INFRASTRUCTURE RECOMMENDATIONS

Nixon Elementary School

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

0 30' 60'

EISENHOWER MIDDLE SCHOOL & ROXBURY HIGH SCHOOL

RAP ID: 14

Subwatershed: Lamington River

Site Area: 3,538,538 sq. ft.

Address: 47 Eyland Avenue
Succasunna, NJ 07876

Block and Lot: Block 1801, Lots 2, 3, 4

Three rain gardens can be installed to capture, treat, and infiltrate runoff from rooftops and paved areas. Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater runoff from the parking lot areas. A cistern can be installed to capture roof runoff from a maintenance shed. 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"
32	1,137,347	54.8	574.4	5,222.0	0.886	31.19

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.627	105	46,020	1.73	6,020	$30,100
Pervious pavement	3.845	644	282,110	10.60	26,350	$658,750
Rainwater harvesting	0.048	8	1,450	0.06	1,450 (gal)	$2,900

GREEN INFRASTRUCTURE RECOMMENDATIONS

Eisenhower Middle School & Roxbury High School

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

0 150' 300'

FRANKLIN ELEMENTARY SCHOOL & LINCOLN ROOSEVELT SCHOOL

RAP ID: 15

Subwatershed: Lamington River

Site Area: 1,431,171 sq. ft.

Address: 8 Meeker Street
Succasunna, NJ 07876

Block and Lot: Block 3901, Lot 2

Rain gardens can be installed at the entrances of both buildings near downspouts to capture, treat, and infiltrate rooftop runoff. Another rain garden can be installed in the turfgrass area near a catch basin to capture water from the parking lot. A section of parking spaces can be converted to porous pavement to capture and infiltrate 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"
29	415,275	20.0	209.7	1,906.7	0.324	11.39

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	0.354	59	26,010	0.98	5,405	$27,025
Pervious pavement	0.475	79	34,840	1.31	3,260	$81,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Franklin Elementary School & Lincoln Roosevelt School

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

0 100' 200'

HILLSIDE LUTHERAN BRETHREN CHURCH

RAP ID: 16

Subwatershed: Lamington River

Site Area: 253,933 sq. ft.

Address: 113 South Hillside Avenue
Succasunna, NJ 07876

Block and Lot: Block 3103, Lot 1

Rain gardens can be installed north and west of the building near downspouts to capture, treat, and infiltrate rooftop runoff. Another rain garden can be installed near the parking lot to capture runoff from the road. Parking spaces can be replaced with pervious pavement to capture and infiltrate 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"
46	117,092	5.6	59.1	537.6	0.091	3.21

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.202	34	14,830	0.56	1,945	$9,725
Pervious pavement	0.484	81	35,540	1.34	3,320	$83,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hillside Lutheran Brethren Church

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

0 50' 100'

HORSESHOE LAKE RECREATION COMPLEX

RAP ID: 17

Subwatershed: Lamington River

Site Area: 3,768,003 sq. ft.

Address: 72 Eyland Avenue
Succasunna, NJ 07876

Block and Lot: Block 1802, Lot 7-8

There are four downspouts along the north side of the building where downspout planter boxes can be installed. A rain garden can be installed at end of the parking lot that will capture stormwater from the parking lot. Another rain garden can be installed on the north side of the building near downspouts. Pervious pavement can be installed to capture and infiltrate runoff from the southern 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"
17	647,900	31.2	327.2	2,974.7	0.505	17.77

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	0.106	18	7,780	0.29	581	$2,905
Pervious pavement	0.190	32	13,920	0.52	1,300	$32,500
Planter boxes	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Horseshoe Lake Recreation Complex

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

0 50' 100'

KENNEDY ELEMENTARY SCHOOL

RAP ID: 18

Subwatershed: Lamington River

Site Area: 587,551 sq. ft.

Address: 20 Pleasant Hill Road
Succasunna, NJ 07876

Block and Lot: Block 1201, Lot 19

Two rains gardens can be installed in the turfgrass in front of the building to capture, treat, and infiltrate roadway runoff. Another rain garden can be installed south of the building to capture runoff from the basketball court. Pervious pavement can be installed in the parking lot to capture and infiltrate 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"
26	150,355	7.2	75.9	690.3	0.117	4.12

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	0.271	45	19,920	0.75	2,605	$13,025
Pervious pavement	0.141	24	10,320	0.39	970	$24,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Kennedy Elementary School

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

0 50' 100'

ROXBURY DAY CARE CENTER

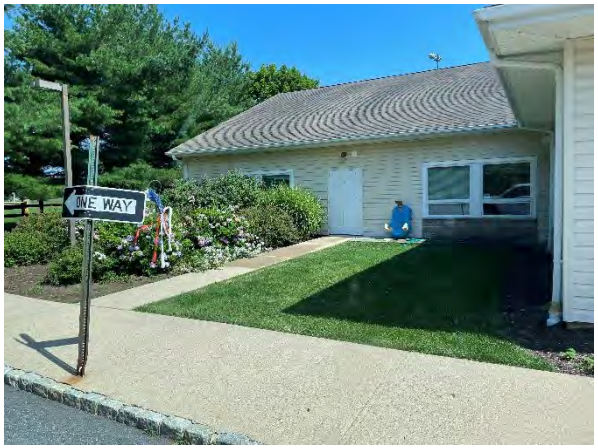
RAP ID: 19

Subwatershed: Lamington River

HUC14 ID: 02030105050020

Site Area: 3,105,783 sq. ft.

Address: 25 Righter Road,
Succasunna, NJ 07876



Block and Lot: Block 1802, Lot 8

Parking spaces in the lot to the south of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the asphalt using trench drains for redirection. Two rain gardens requiring downspout disconnection can be installed in the grass areas near the entrance of the building to capture, treat, and infiltrate stormwater runoff from the roof. A rain garden with a curb cut can be installed in the grass area east of the building to capture, treat, and infiltrate 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 50"
14	443,013	21.4	223.7	2,034.0	0.345	13.81

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	5,565	0.165	25	11,610	0.44	1,395	$13,950
Pervious pavement	6,230	0.184	27	12,990	0.49	1,220	$30,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Roxbury Day Care Center

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

0 20' 40'

GRACE CHURCH ON THE MOUNT

RAP ID: 20

Subwatershed: Musconetcong River

Site Area: 388,820 sq. ft.

Address: 1500 US-46
Netcong, NJ 07857

Block and Lot: Block 9302, Lot 2

A rain garden can be installed near a connected downspout and a catch basin to capture, treat, and infiltrate rooftop runoff. Downspout planter boxes can be constructed along the building to allow roof runoff to be reused. A section of parking spaces can be converted to porous pavement to capture and infiltrate 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"
39	149,927	7.2	75.7	688.4	0.117	4.11

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	0.026	4	1,910	0.07	250	$1,250
Pervious pavement	0.190	32	13,920	0.52	1,300	$32,500
Planter boxes	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Grace Church on the Mount

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

0 30' 60'

LAKE HOPATCONG HISTORICAL MUSEUM AND STATE PARK

RAP ID: 21

Subwatershed: Musconetcong River

Site Area: 2,240,313 sq. ft.

Address: State Park
Landing, NJ 07850

Block and Lot: Block 10802, Lot 1

The basketball court area in the parking lot can be converted to porous pavement to capture and infiltrate runoff from the parking lot. A rain garden can be installed near the bathrooms to capture, treat, and infiltrate runoff from the rooftop. Downspout planter boxes can be installed near the main building at the ends of downspouts to filter rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	415,348	20.0	209.8	1,907.0	0.324	11.39

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	3,060	0.11	400	$2,000
Pervious pavement	1.984	332	145,610	5.47	13,600	$340,000
Planter boxes	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Lake Hopatcong Historical Museum and State Park

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

0 50' 100'

LANDING POST OFFICE

RAP ID: **22**

Subwatershed: **Musconetcong River**

Site Area: **19,049 sq. ft.**

Address: **130 Lakeside Boulevard**
Landing, NJ 07850

Block and Lot: **Block 11001, Lot 6**

Pervious pavement can be installed near a downspout to capture and infiltrate stormwater runoff from the rooftop and 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"
82	15,714	0.8	7.9	72.2	0.012	0.43

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
Pervious pavement	0.111	19	8,160	0.31	800	$20,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Landing Post Office

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

0 25' 50'

SAINT HUBERT'S ANIMAL WELFARE CENTER NOAH'S ARK

RAP ID: **23**

Subwatershed: **Musconetcong River**

Site Area: **31,535 sq. ft.**

Address: **1915 US-46**
Ledgewood, NJ 07852

Block and Lot: **Block 9402, Lot 11**

A rain garden can be installed south of the building near a disconnected downspout to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
41	12,816	0.6	6.5	58.8	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	0.016	3	1,170	0.04	155	$775

GREEN INFRASTRUCTURE RECOMMENDATIONS

Saint Hubert's Animal Welfare Center Noah's Ark

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

0 20' 40'

THE ANIMAL HOSPITAL OF ROXBURY

RAP ID: 24

Subwatershed: Musconetcong River

Site Area: 35,733 sq. ft.

Address: 1901 US-46
Ledgewood, NJ 07852

Block and Lot: Block 9402, Lot 13-15

Connected downspouts can be rerouted into the existing planter boxes to be converted into downspout planter boxes. Downspout planter boxes can be constructed along the building to allow roof runoff to be reused. Porous pavement can be installed in the main parking spaces to capture and infiltrate 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"
57	20,257	1.0	10.2	93.0	0.016	0.56

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	0.150	25	10,970	0.41	1,025	$25,625
Planter boxes	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

The Animal Hospital of Roxbury

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

0 25' 50'

BERKSHIRE VALLEY PARK

RAP ID: **25**

Subwatershed: **Rockaway River**

Site Area: **187,097 sq. ft.**

Address: **79 Mill Road**
Wharton, NJ 07885

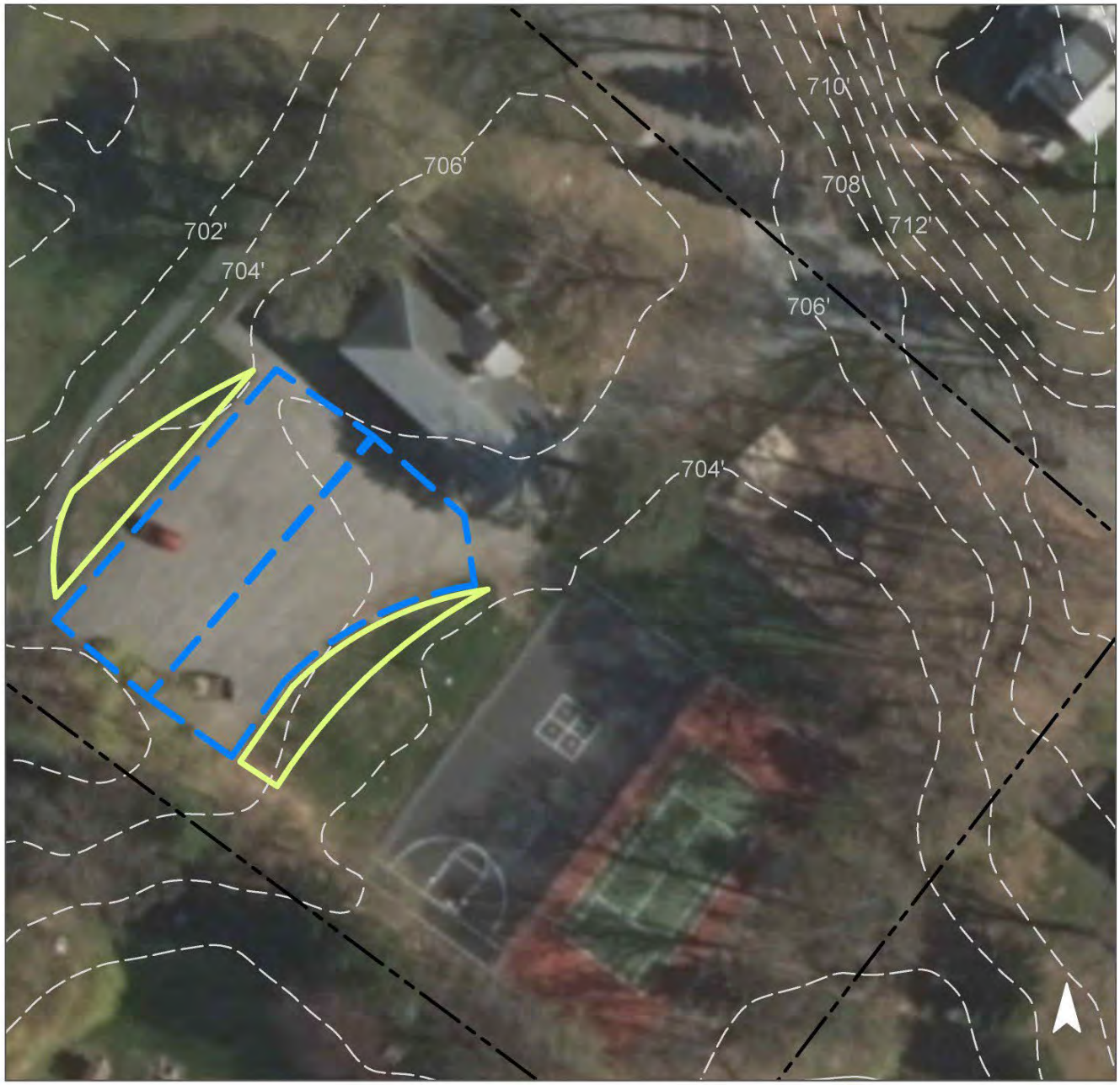
Block and Lot: **Block 13002, Lot 11**

Two rain gardens can be installed on either side of the parking lot to capture, treat, and infiltrate 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"
30	55,632	2.7	28.1	255.4	0.043	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
Bioretention systems	0.225	38	16,480	0.62	2,155	$10,775

GREEN INFRASTRUCTURE RECOMMENDATIONS



Berkshire Valley Park

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

0 25' 50'

ROXBURY FIRE COMPANY 3

RAP ID: 26

Subwatershed: Rockaway River

Site Area: 76,303 sq. ft.

Address: 271 Berkshire Valley Road
Wharton, NJ 07885

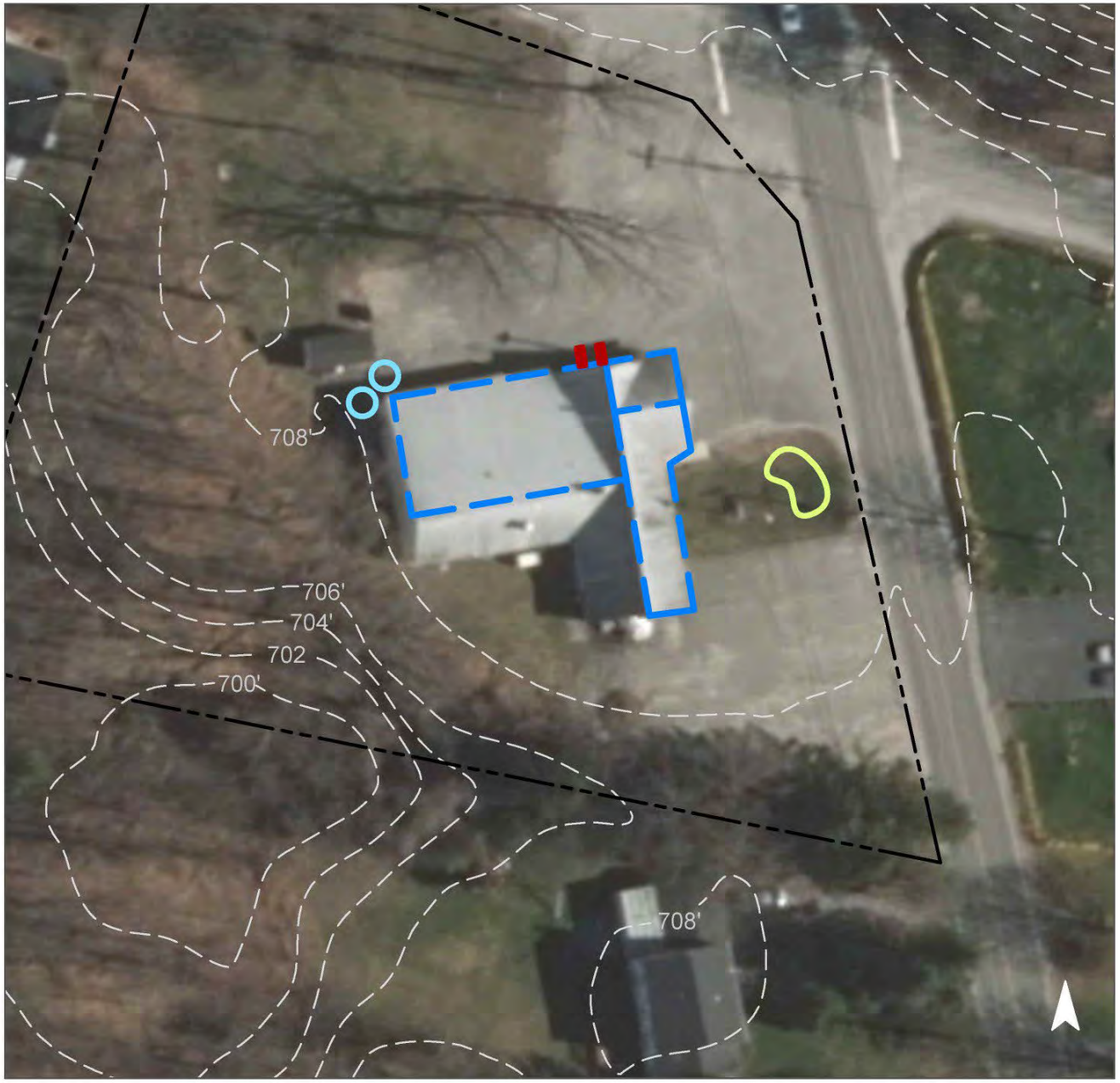
Block and Lot: Block 12501, Lot 21

A rain garden can be installed near the entrance of the building to capture, treat, and infiltrate rooftop runoff. A cistern can be installed at the back of the building to capture roof runoff, which can be used for watering gardens, washing vehicles, or for other non-potable uses. Downspout planter boxes can be installed in front of the building to filter rooftop runoff and provide visual interest. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
43	32,868	1.6	16.6	150.9	0.026	0.90

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	0.030	5	2,190	0.08	285	$1,425
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000
Rainwater harvesting	0.067	11	2,000	0.08	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Roxbury Fire Company 3

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

0 25' 50'

UNITED METHODIST CHURCH

RAP ID: 27

Subwatershed: Rockaway River

Site Area: 8,786 sq. ft.

Address: 296 Berkshire Valley Road
Wharton, NJ 07885

Block and Lot: Block 13002, Lot 1

A connected downspout can be disconnected and led into a rain garden on the north side of the building near the entrance to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
30	2,633	0.1	1.3	12.1	0.002	0.07

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.026	4	1,910	0.07	154	$770

GREEN INFRASTRUCTURE RECOMMENDATIONS

United Methodist Church

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

0 10' 20'

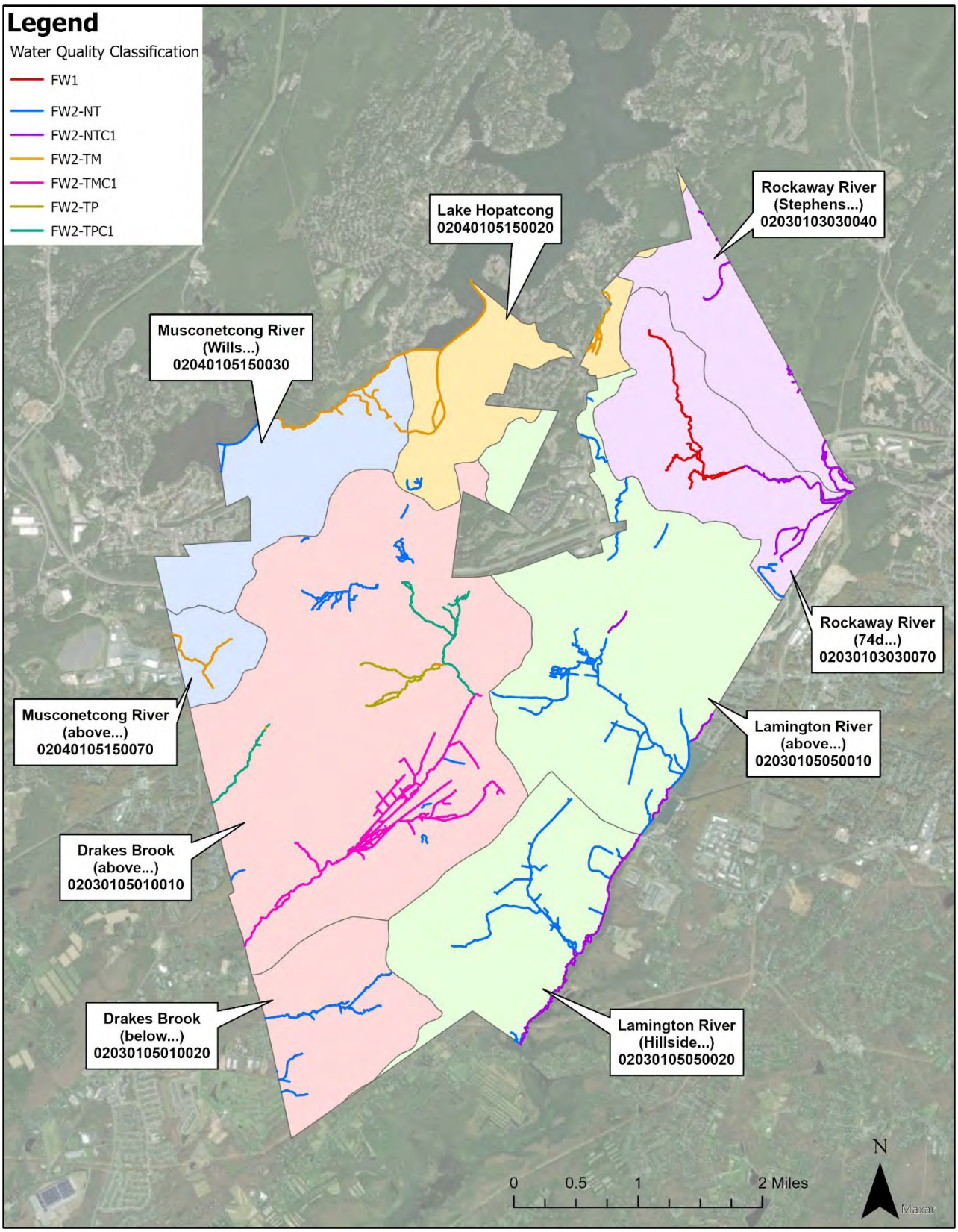


Figure 13. Water Quality Classification of Surface Waters in Roxbury Township

Table 11. Water Quality Classification of Surface Waters in Roxbury Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 1	FW1	3.1	5.5%
Freshwater 2, non-trout	FW2-NT	21.5	38.2%
Freshwater 2, non-trout, Category One	FW2-NTC1	8.5	15.1%
Freshwater 2, trout production, Category One	FW2-TPC1	3.3	5.8%
Freshwater 2, trout maintenance	FW2-TM	7.0	12.4%
Freshwater 2, trout production	FW2-TP	1.7	3.1%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	11.3	20.0%

Tewksbury Township

Introduction

Located in Hunterdon County in New Jersey, Tewksbury Township covers about 31.8 square miles. With a population of 5,870 (2020 United States Census), Tewksbury Township consists of 23.1% of urban land uses by area. Of that urban land use, approximately 82.1% is comprised of rural residential property (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, mixed urban, recreational and transportation. Natural lands (forests, wetlands, and water) make up approximately 48.1% of Tewksbury Township.

Tewksbury Township contains portions of nine subwatersheds (Table 1). There are approximately 101.7 miles of rivers and streams within the municipality; these include Boulder Hill Brook and its tributaries, Cold Brook and its tributaries, Frog Hollow Brook and its tributaries, Guinea Hollow Brook and its tributaries, Hollow Brook and its tributaries, Lamington River and its tributaries, North Branch Rockaway Creek and its tributaries, Rockaway Creek and its tributaries, South Branch Raritan River and its tributaries, South Branch Rockaway Creek and its tributaries, Turtleback Brook, and several uncoded tributaries. Tewksbury Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan)

Table 1: Subwatersheds of Tewksbury Township

Subwatershed	HUC14
Raritan River South Branch (Califon bridge to Long Valley)	02030105010060
Raritan River South Branch (Stone Mill gage to Califon)	02030105010070
Lamington River (Pottersville gage to Furnace Road)	02030105050040
Cold Brook	02030105050060
Lamington River (Halls Bridge Road to Herzog Brook)	02030105050070
Rockaway Creek (above McCrea Mills)	02030105050080
Rockaway Creek (below McCrea Mills)	02030105050090
Rockaway Creek South Branch	02030105050100

Lamington River (Herzog Brook to Pottersville gage)	02030105050130

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Tewksbury Township. 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 Tewksbury Township's existing stormwater infrastructure were provided by the township and were manipulated, if necessary, for the specific purposes of this report.

Analysis by Municipality

An analysis was completed by municipality. Figure 1 shows Tewksbury Township in relation to the study area. Figure 2 shows the portions of the nine HUC14s in Tewksbury Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Tewksbury Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Tewksbury Township and is presented in Table 2. Figure 4 shows the impervious cover in Tewksbury Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Tewksbury Township 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 without vegetative shoreline buffers were identified in Tewksbury Township within the study area.

The Q-Farms in Tewksbury Township 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 Tewksbury Township 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 5,735.8 acres of agricultural land use in Tewksbury Township, of which, 3,324.1 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 229 Q-Farms and portions of 34 Q-Farms in the study area portion of Tewksbury Township, totaling 5,973.4 acres. Within the 229 Q-Farms and portions of 34 Q-Farms, there are approximately 2,833.1 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Tewksbury Township are presented in Table 8.

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. Six HUC14s are included in the study area (02030105010060, 02030105010070, 02030105050040, 02030105050060, 02030105050070, 02030105050130). Within these six HUC14s, there are 87.6 acres of buildings and 200.4 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 Tewksbury Township, approximately 11.0 acres of rooftop runoff would be managed with 2.19 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Tewksbury Township, approximately 20.0 acres of roadway would be managed, or 5.5 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 Tewksbury Township are shown in Figure 10 and presented in Table 9. 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 11). Available information for each parcel in the study Area is presented in Table 10. 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 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 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 six classifications that apply to the streams in Tewksbury Township. Figure 13 depicts the water quality classifications of surface waters throughout Tewksbury Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

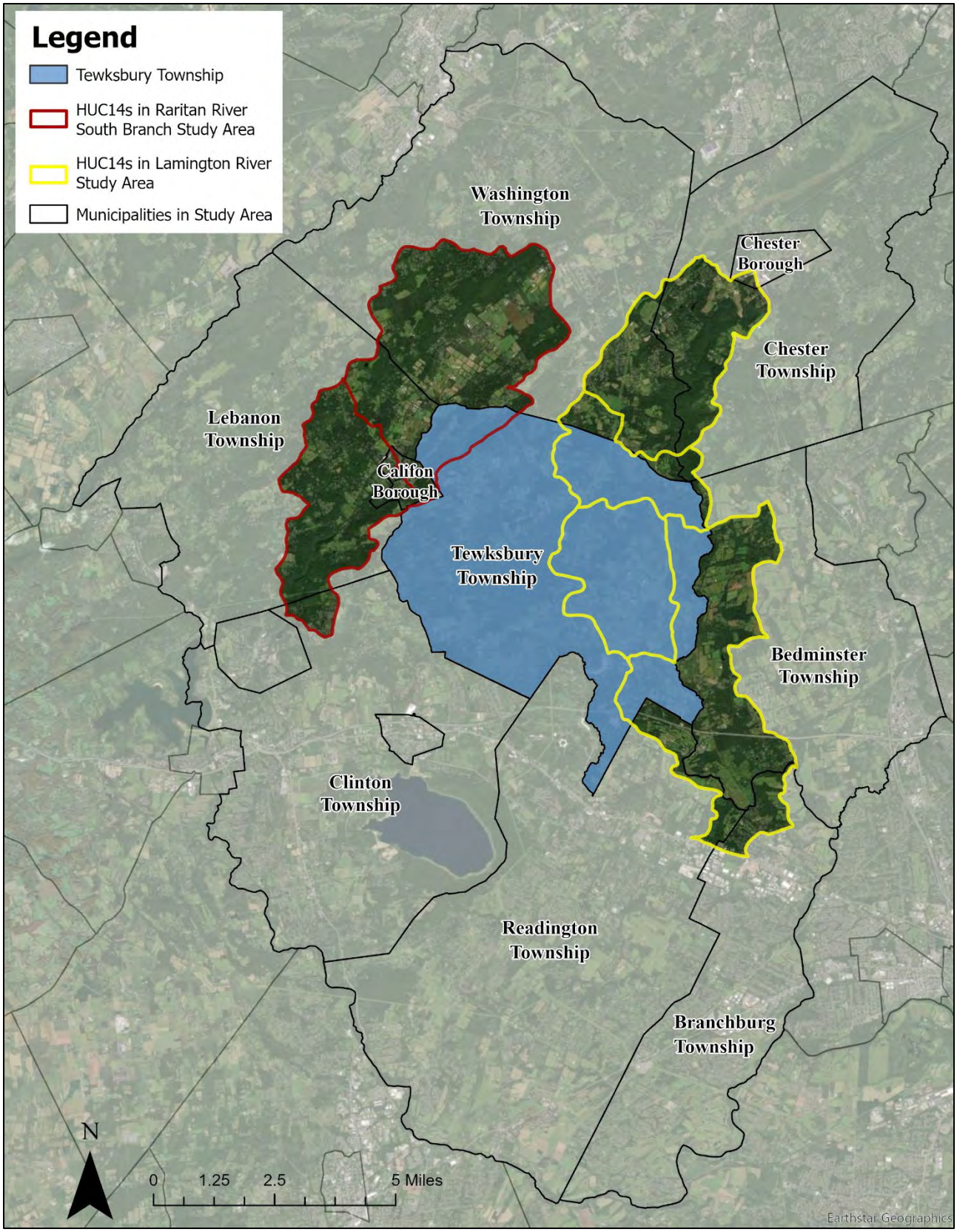


Figure 1: Municipalities in the Study Area

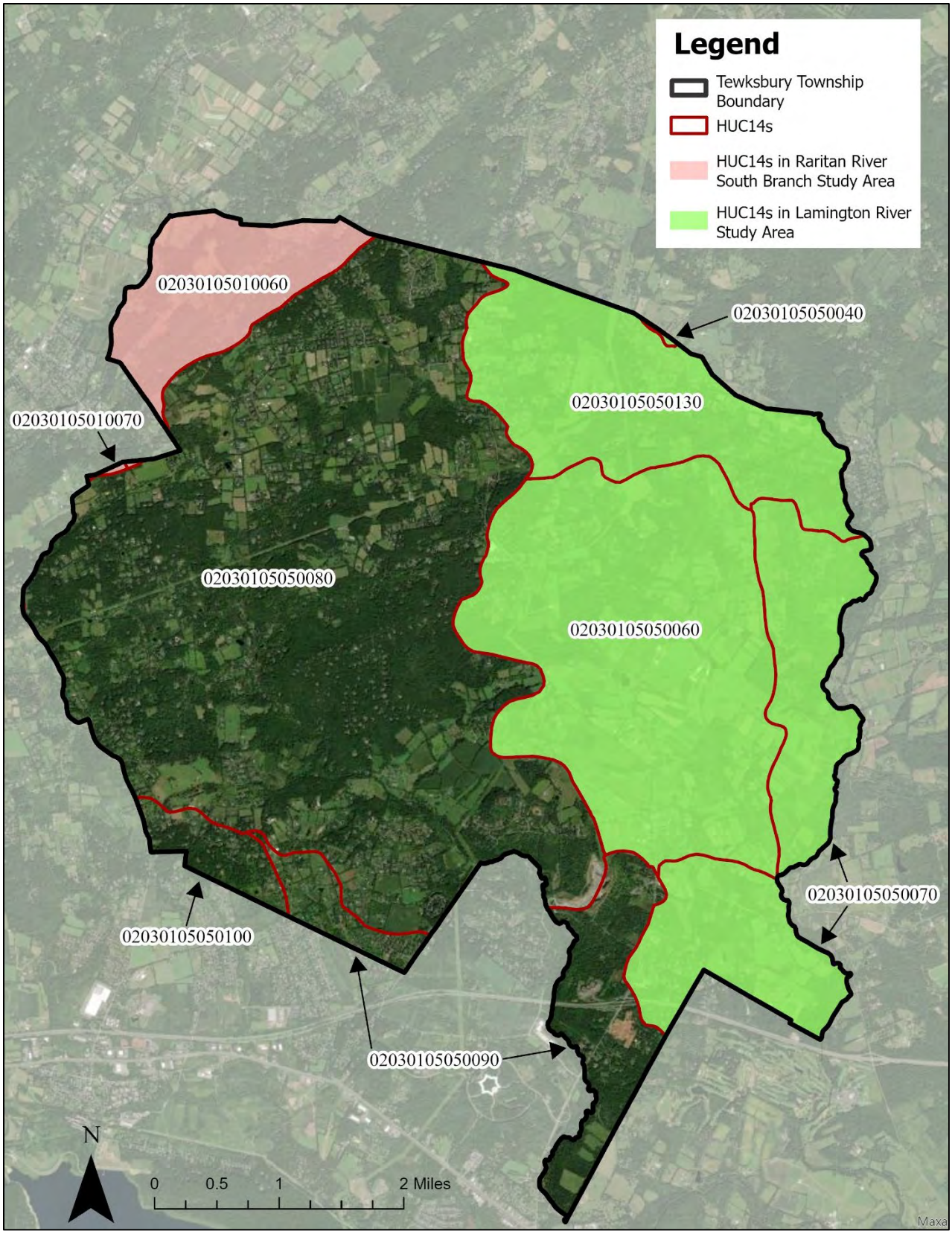


Figure 2: Portions of nine HUC14s are in Tewksbury Township

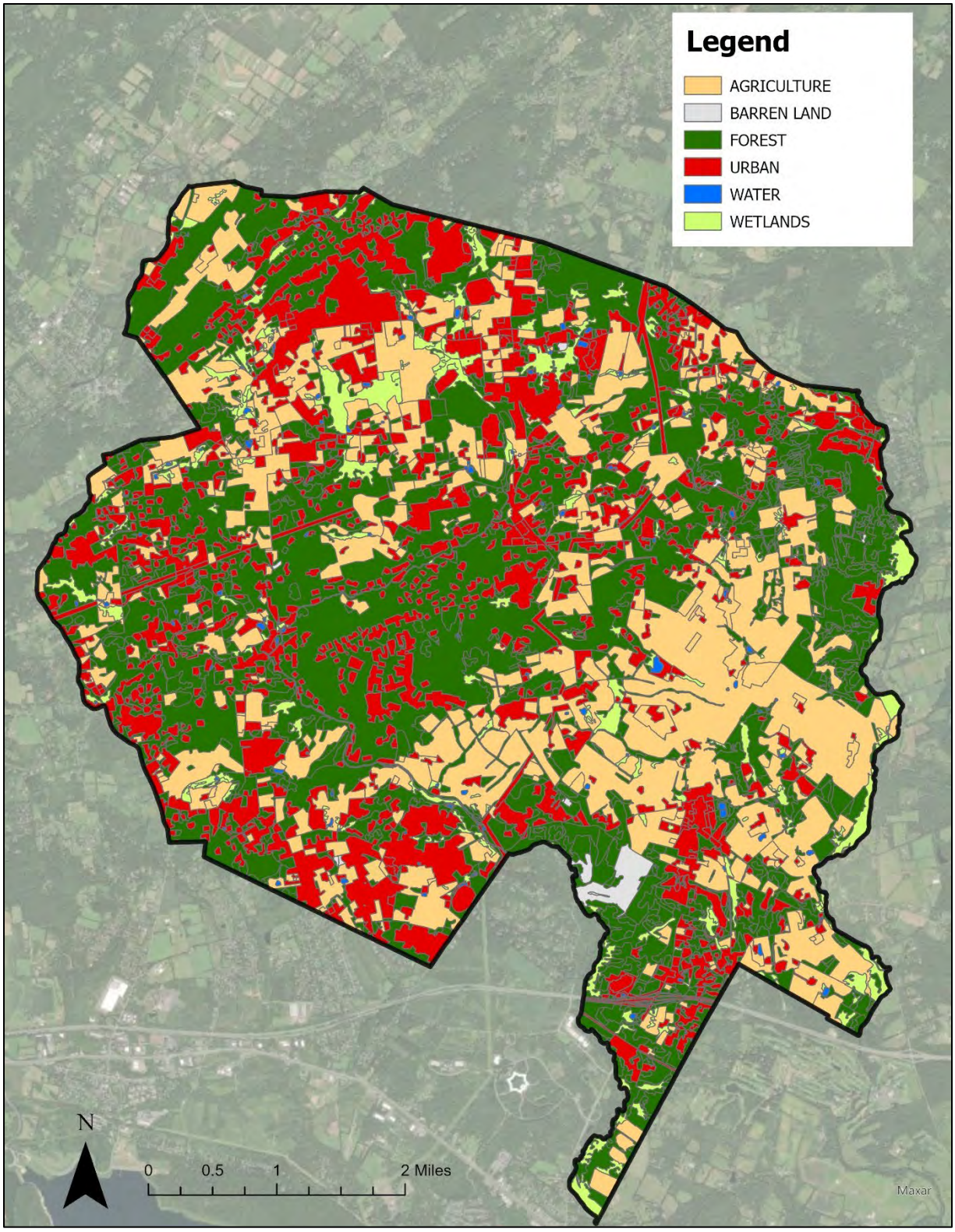


Figure 3: Land Use in Tewksbury Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Tewksbury Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010060				
Agriculture	207.8	270.1	2,078.0	62,339.1
Barren Land	0.0	0.0	0.0	0.0
Forest	573.6	57.4	1,720.9	22,945.5
Urban	238.7	334.2	3,580.9	33,422.0
Water	7.4	0.7	22.2	295.5
Wetlands	29.9	3.0	89.6	1,195.2
TOTAL =	**1,057.4**	**665.4**	**7,491.6**	**120,197.3**
02030105010070				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	7.4	0.7	22.1	294.7
Urban	1.3	1.8	18.8	175.6
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**8.6**	**2.5**	**40.9**	**470.4**
02030105050040				
Agriculture	0.02	0.03	0.2	6.1
Barren Land	0.0	0.0	0.0	0.0
Forest	3.0	0.3	9.1	121.3
Urban	5.3	7.4	79.0	737.2
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**8.3**	**7.7**	**88.3**	**864.6**
02030105050060				
Agriculture	1,910.8	2,484.0	19,108.0	573,239.7
Barren Land	1.7	0.9	8.6	103.2
Forest	1,294.1	129.4	3,882.2	51,762.3
Urban	655.9	918.3	9,838.7	91,827.6
Water	22.9	2.3	68.7	915.8
Wetlands	104.0	10.4	312.0	4,160.4
TOTAL =	**3,989.4**	**3,545.3**	**33,218.1**	**722,009.0**
02030105050070				
Agriculture	712.2	925.9	7,122.3	213,669.7
Barren Land	0.9	0.5	4.7	56.8
Forest	915.0	91.5	2,745.1	36,601.6
Urban	250.3	350.4	3,753.9	35,036.0
Water	31.4	3.1	94.3	1,257.6
Wetlands	172.7	17.3	518.1	6,907.7

TOTAL =	**2,082.6**	**1,388.7**	**14,238.4**	**293,529.4**
02030105050080				
Agriculture	2,211.2	2,874.5	22,111.5	663,345.5
Barren Land	68.5	34.2	342.4	4,109.4
Forest	4,273.3	427.3	12,819.9	170,931.8
Urban	2,614.7	3,660.5	39,220.0	366,053.6
Water	61.0	6.1	183.0	2,440.6
Wetlands	402.5	40.3	1,207.6	16,101.0
TOTAL =	**9,631.1**	**7,043.0**	**75,884.5**	**1,222,981.8**
02030105050090				
Agriculture	173.3	225.3	1,733.4	52,001.0
Barren Land	32.1	16.1	160.6	1,927.1
Forest	586.1	58.6	1,758.4	23,444.9
Urban	297.7	416.8	4,466.2	41,684.2
Water	12.8	1.3	38.3	510.8
Wetlands	86.1	8.6	258.2	3,443.0
TOTAL =	**1,188.2**	**726.7**	**8,415.0**	**123,011.0**
02030105050100				
Agriculture	27.2	35.4	272.0	8,161.4
Barren Land	0.0	0.0	0.0	0.0
Forest	161.3	16.1	483.9	6,451.4
Urban	118.3	165.6	1,774.7	16,563.6
Water	1.5	0.1	4.4	58.3
Wetlands	0.9	0.1	2.7	35.4
TOTAL =	**309.1**	**217.4**	**2,537.6**	**31,270.2**
02030105050130				
Agriculture	493.2	641.2	4,932.1	147,964.3
Barren Land	2.6	1.3	12.8	153.3
Forest	933.8	93.4	2,801.5	37,353.2
Urban	519.4	727.1	7,790.7	72,713.7
Water	14.6	1.5	43.8	583.4
Wetlands	94.5	9.5	283.5	3,780.3
TOTAL =	**2,058.1**	**1,473.9**	**15,864.4**	**262,548.1**
All HUCs				
Agriculture	5,735.8	7,456.5	57,357.6	1,720,726.7
Barren Land	105.8	52.9	529.1	6,349.7
Forest	8,747.7	874.8	26,243.0	349,906.6
Urban	4,701.5	6,582.1	70,522.9	658,213.5
Water	151.6	15.2	454.7	6,062.1
Wetlands	890.6	89.1	2,671.7	35,623.1
TOTAL =	**20,332.9**	**15,070.5**	**157,779.0**	**2,776,881.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Tewksbury Township 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 Tewksbury Township. Based upon the NJDEP impervious surface data, Tewksbury Township has impervious cover totaling 6.3%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Tewksbury Township 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, Tewksbury Township's impervious cover percentage would suggest that its waterways are primarily sensitive and most likely preventing degradation of the state's surface water quality standards.

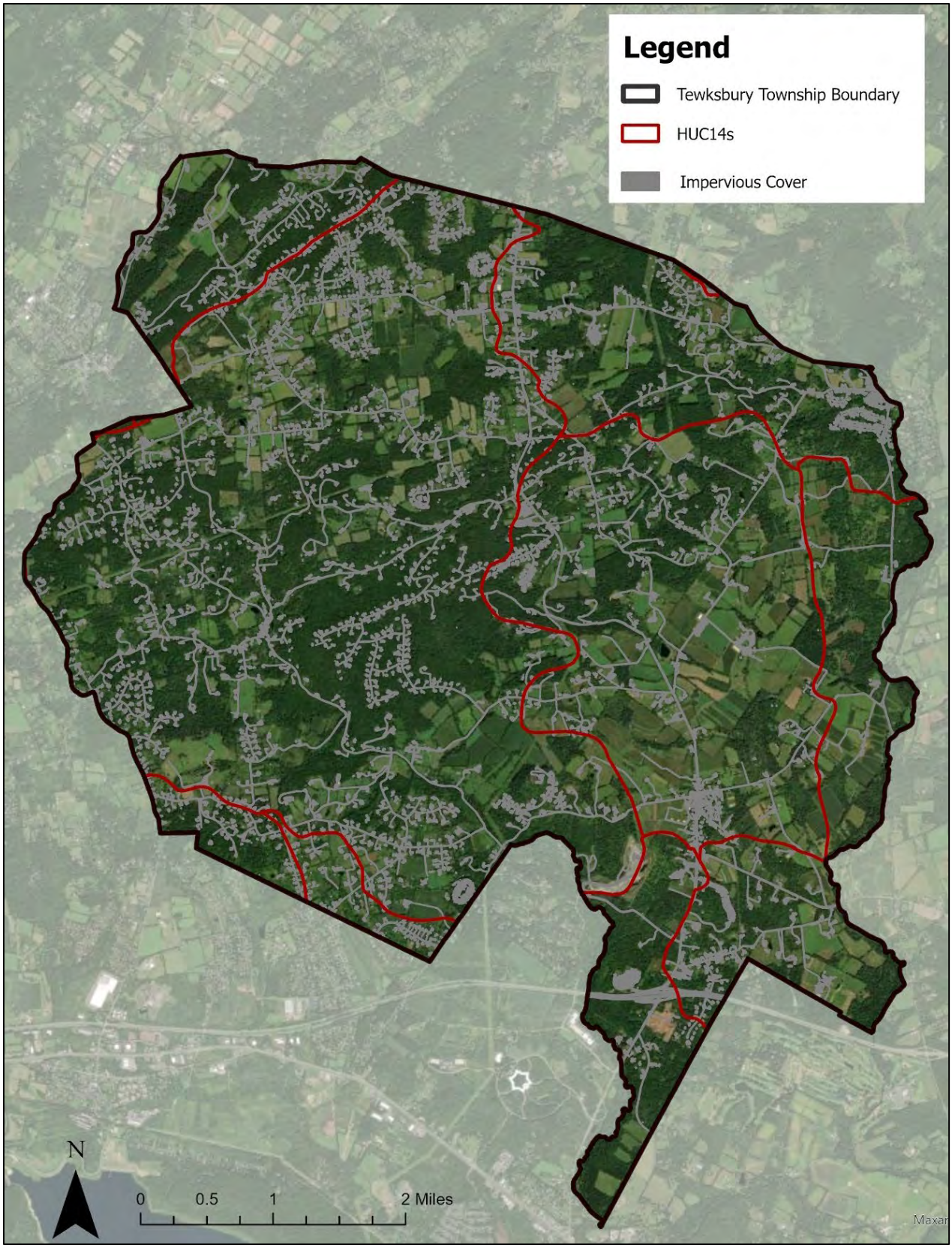


Figure 4: Impervious Cover in Tewksbury Township

Table 3: Impervious Cover Analysis by HUC14 for Tewksbury Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010060		
Building	10.73	
Other	30.45	
Road	30.22	
TOTAL =	**71.4**	**6.8%**
02030105010070		
Building	0.03	
Other	0.11	
Road	0.12	
TOTAL =	**0.3**	**3.1%**
02030105050040		
Building	0.25	
Other	0.42	
Road	0.29	
TOTAL =	**1.0**	**11.6%**
02030105050060		
Building	37.45	
Other	109.15	
Road	81.05	
TOTAL =	**227.6**	**5.7%**
02030105050070		
Building	15.01	
Other	41.89	
Road	36.70	
TOTAL =	**93.6**	**4.5%**
02030105050080		
Building	122.22	
Other	314.56	
Road	203.70	
TOTAL =	**640.5**	**6.7%**
02030105050090		
Building	11.94	
Other	31.68	
Road	36.13	
TOTAL =	**79.7**	**6.7%**
02030105050100		
Building	4.86	
Other	11.28	
Road	9.01	
TOTAL =	**25.1**	**8.1%**
02030105050130		
Building	24.11	
Other	71.05	
Road	52.05	
TOTAL =	**147.2**	**7.2%**

All HUCs		
Building	226.60	
Other	610.58	
Road	449.27	
TOTAL =	**1,286.4**	**6.3%**

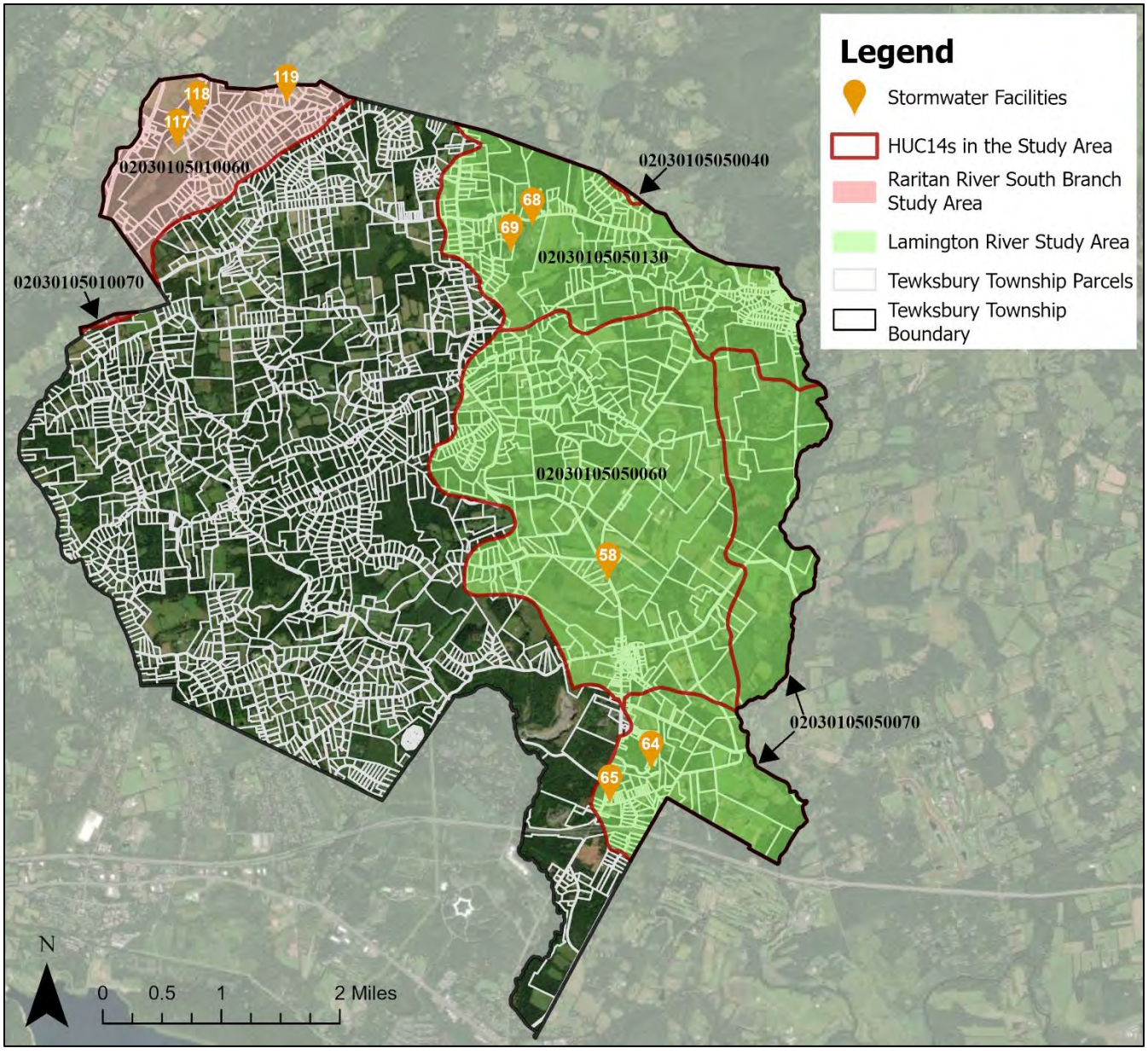


Figure 5: Stormwater Facilities in the Study Area of Tewksbury Township

Table 4: Location of Stormwater Facilities in the Study Area of Tewksbury Township

Lamington River Study Area		
ID	**Address**	**Type**
58	83 Old Turnpike Rd	N
64	1210 Farley Rd	D
65	130 Oldwick Rd	I
68	113 Fairmount Rd East	N
69	16 Apple Lane	D
Raritan River South Branch Study Area		
ID	**Address**	**Type**
117	Beavers Rd	N
118	Barclay Rd	I
119	3 Logan Dr	RB

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

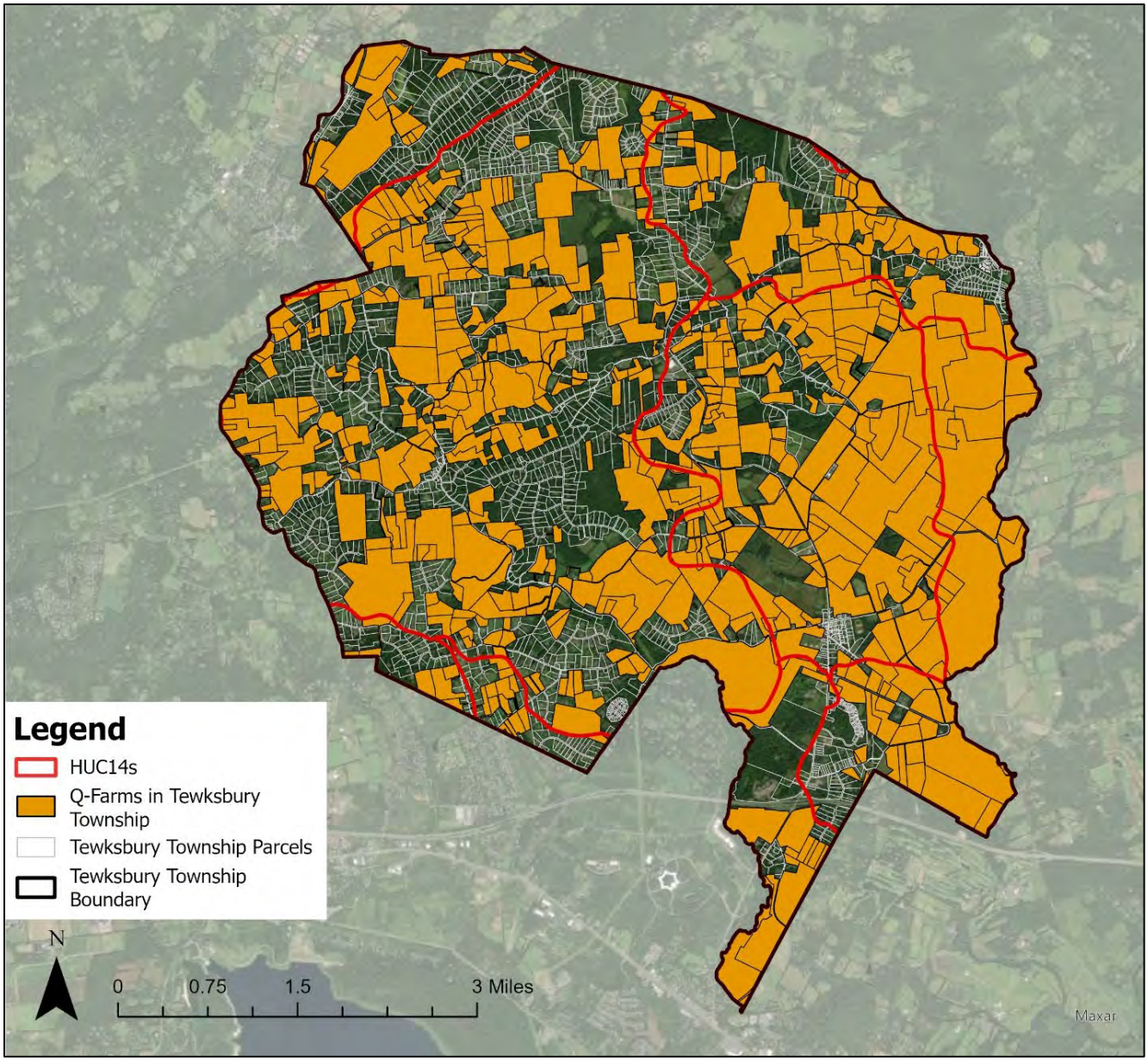


Figure 6: Q-Farm Parcels in Tewksbury Township

Table 5: Q-Farm Parcels in Tewksbury Township

Block	Lot	Q-Code	Prop Class	Location
3	4	Q0002	3B	45 Beavers Rd
3	4.01	Q0002	3B	30 Beavers Rd
3	1	Q0002	3B	65 Vernoy Rd
3	4.02	Q0002	3B	67 Beavers Rd
4	4.02	Q0002	3B	1 Barclay Rd
4	4.15	Q0002	3B	4 Barclay Rd
2	8	Q0003	3B	12 Vernoy Rd
3	33	Q0003	3B	9 Vernoy Rd
3	8	Q0003	3B	11 Vernoy Rd
4	4.01	Q0004	3B	36 Beavers Rd
4	10	Q0005	3B	2 Logan Drive
5	12.01	Q0006	3B	9 Fairmount Rd West
5	12.02	Q0006	3B	11 Fairmount Rd West
4	13	Q0007	3B	80 Frog Hollow Rd
4	10.05	Q0007	3B	10 Logan Dr
5	2	Q0008	3B	47A Fairmount Rd West
2	1	Q0009	3B	65 Vernoy Rd
5	10.02	Q0010	3B	25 Fairmount Rd West
5	10.04	Q0010		Fairmount Rd W
5	10.03	Q0010	3B	23 Fairmount Rd West
5	11	Q0010	3B	19 Fairmount Rd West
5	12	Q0011	3B	1 Fairmount Rd West
5	2.16	Q0012	3B	33A Fairmount Rd West
6.04	3.01	Q0013	3B	7 Beacon Light Rd
6.04	7.02	Q0014	3B	131 Fairmount Rd West
6.04	7.21	Q0015	3B	243 Old Turnpike Rd
6.04	7.04	Q0016		245 Old Turnpike Rd
6.04	7.20	Q0017		35 Salters Farm Rd
6.04	23.01	Q0018	3B	95 Fairmount Rd West
6.04	23.27	Q0018		12 Barlow Dr
6.04	24.01	Q0020	3B	14 Tamarack Farm Ln
7	1.01	Q0021	3B	260 Old Turnpike Rd
7	1.02	Q0021	3B	258 Old Turnpike Rd
7	1	Q0021	3B	262 Old Turnpike Rd
7	4.04	Q0023		289 County Road 517
7	4.05	Q0024		252 Old Turnpike Road
7	6	Q0025	3B	232 Fairmount Rd East
4	4.19	Q0026	3B	38 Frog Hollow Rd
4	4.18	Q0026	3B	40 Frog Hollow Rd
4	4.17	Q0026	3B	42 Frog Hollow Rd
3	4.03	Q0027	3B	1 Indian Ln

16	11	Q0028	3B	103 Fairmount East
7.01	1	Q0029	3B	2 Van Pelt Rd
7	8	Q0030	3B	136 Fairmount Rd East
7	17	Q0031	3B	108 Fairmount Rd East
5	2.09	Q0032	3B	49 Fairmount Rd West
7	8.01	Q0033	3B	134 Fairmount Road East
7	40	Q0034	3B	80 Fairmount Rd East
7	21.03	Q0034	3B	78 Fairmount Rd East
7	39	Q0035	3B	82 Fairmount Rd East
10	5.02	Q0036	3B	70 Sutton Rd
8	2	Q0037	3B	1222 Califon-Cokesbury Rd
8	2.01	Q0038	3B	1218 Califon-Cokesbury Rd
9	6	Q0039	3B	26 Sutton Rd
7	10	Q0040	3B	132 Fairmount Rd East
10	1.01	Q0041	3B	6 Fairmount Rd West
10	6.13	Q0042	3B	25 Farmersville Road
10	4.01	Q0043	3B	60 Sutton Rd
14	5.06	Q0044	3B	10 Farmersville Road
14	5.05	Q0044	3B	18 Farmersville Road
14	5	Q0044	3B	14 Farmersville Rd
6.04	37	Q0045	3B	89 Frog Hollow Rd
10	5.06	Q0046	3B	74 Sutton Rd
10	5.03	Q0047	3B	30 Fairmount Rd West
10	6	Q0048	3B	23 Farmersville Rd
10	6.12	Q0048	3B	27 Farmersville Rd
5	2.04	Q0049	3B	19 Beavers Rd
7	22	Q0050		7 Van Pelt Rd
11	5	Q0051	3B	1210 Califon-Cokesbury Rd
11	5.06	Q0051	3B	1208 Califon-Cokesbury Rd
11	21.01	Q0052		Water St
11	11	Q0053		30 Longview Rd
11	10	Q0053		Longview Rd
11	35	Q0054	3B	1116 Califon-Cokesbury Rd
11	12	Q0055	3B	22 Long View Rd
11	16.03	Q0055	3B	16 Long View Rd
11	38	Q0055	3B	554 Cokesbury Rd
11	1	Q0055	3B	1172 Califon-Cokesbury Rd
11	38.01	Q0055	3B	24 Long View Rd
11	7	Q0056		9 Sutton Rd
11	22.09	Q0057		1018 Califon Cokesbury Rd
11	22.04	Q0057		1016 Califon Cokesbury Rd
11	9.07	Q0058	3B	14 Glennon Farm Ln
11	22	Q0059		11 Water St
11	32.02	Q0060	3B	1028 Califon-Cokesbury Rd

11	33	Q0062	3B	1108 Califon-Cokesbury Rd
11	33.01	Q0062	3B	1102 Califon-Cokesbury Rd
12	1	Q0064	3B	35 Sutton Rd
12	12.01	Q0065	3B	30 Guinea Hollow Rd
12	26.01	Q0066	3B	65 Philhower Rd
12	26	Q0066	3B	69 Philhower Rd
12	27.01	Q0068	3B	61 Philhower Rd
12	32	Q0069	3B	43 Philhower Rd
12	48	Q0071	3B	19 Philhower Rd
12	47	Q0071	3B	23 Philhower Rd
13	1	Q0072	3B	7 Guinea Hollow Rd
13	1.01	Q0072	3B	43 Sutton Rd
13	10	Q0074	3B	41 Guinea Hollow Rd
13	8	Q0074	3B	31 Guinea Hollow Rd
13	14	Q0075	3B	1 Boulder Hill Rd
13	17	Q0076	3B	15 Boulder Hill Rd
13	16	Q0076	3B	9 Boulder Hill Rd
13	20.02	Q0077	3B	65 Sutton Rd
13	20	Q0077	3B	39 Boulder Hill Rd
13	21	Q0079	3B	59 Sutton Rd
13	22	Q0080	3B	47 Sutton Rd
14	1	Q0081	3B	50 Fairmount Rd West
14	5.01	Q0082		Farmersville Rd
14	9.01	Q0083		66 Farmersville Rd
14	9.02	Q0084	3B	50 Farmersville Rd
14	5.04	Q0085	3B	30 Farmersville Rd
14	5.07	Q0085	3B	24 Farmersville Rd
14	23.02	Q0086	3B	90 Fairmount West
14	12	Q0087	3B	70 Farmersville Rd
13	19	Q0088	3B	25 Boulder Hill Rd
13	20.01	Q0088	3B	29 Boulder Hill Rd
14	10.02	Q0089	3B	58 Farmersville Rd
14	16	Q0090		1 Whitenack Rd
15	19	Q0090		103 Farmersville Rd
14	17	Q0091	3B	110 Farmersville Rd
15	18	Q0092	3B	111 Farmersville Rd
14	1.05	Q0093	3B	44 Fairmount Rd West
14	20.05	Q0094	3B	112 Fairmount Rd West
14	20.07	Q0096	3B	114 Fairmount Rd West
14	1.04	Q0097	3B	48 Fairmount Rd West
14	23.01	Q0098		98 Fairmount Rd W
18	6	Q0099	3B	9 Wildwood Rd
14	25	Q0100	3B	62 Fairmount Rd West
14	25.01	Q0101	3B	72 Fairmount Rd West

14	29	Q0102	3B	213 Old Turnpike Rd
15	3	Q0103	3B	24 Boulder Hill Rd
15	4.03	Q0104	3B	5 Burrell Rd
15	4.04	Q0105	3B	9 Burrell Rd
15	1	Q0106	3B	30 Boulder Hill Rd
15	8	Q0107		Burrell Rd
15	8.02	Q0107		27 Burrell Rd
15	7	Q0108	3B	23 Burrell Rd
26	10	Q0108	3B	20 Burrell Rd
15	8.01	Q0109	3B	37 Burrell Rd
15	8.03	Q0109	3B	33 Burrell Rd
14	9.03	Q0110	3B	38 Farmersville Rd
15	14.02	Q0112	3B	58 Sawmill Rd
15	17	Q0112	3B	181 Old Turnpike Rd
14	25.03	Q0113	3B	68 Fairmount Rd West
14	15	Q0114	3B	100 Farmersville Rd
14	22	Q0114	3B	84 Farmersville Rd
15	20	Q0114	3B	101 Farmersville Rd
15	21	Q0115	3B	75 Farmersville Rd
15	24.01	Q0117	3B	45 Farmersville Rd
15	25	Q0118	3B	37 Farmersville Rd
15	26	Q0118	3B	39 Farmersville Rd
16	20	Q0119	3B	71 Hollow Brook Rd
19	13.01	Q0120	3B	32 Homestead Rd
16	17	Q0121	3B	59 Hollow Brook Rd
19	13.10	Q0122	3B	34 Homestead Rd
16	7	Q0123	3B	17 Hollow Brook Rd
23	4.02	Q0124	3B	25 Homestead Rd
23	4	Q0124	3B	25 Homestead Rd
16	12.03	Q0125	3B	39 Hollow Brook Rd
16	13	Q0126	3B	43 Hollow Brook Rd
19	12	Q0126	3B	38 Hollow Brook Rd
19	13.07	Q0126	3B	32 Hollow Brook Rd
16	15	Q0127	3B	53 Hollow Brook Rd
16	25	Q0127	3B	81 Fairmount Rd East
16	15.01	Q0128	3B	49 Hollow Brook Rd
16	23	Q0130	3B	63 Fairmount Rd East
16	24	Q0131	3B	71 Fairmount Rd East
*20	2	Q0132	3B	46 Fairmount Rd East
23	30	Q0133	3B	87 Homestead Rd
7.01	2	Q0134	3B	74 Fairmount Rd East
16	34	Q0134	3B	75 Fairmount Rd East
16	35	Q0135	3B	79 Fairmount Rd East
26	21	Q0137	3B	2 Boulder Hill Rd

19	28	Q0138	3B	4 Cold Spring Rd
19	27	Q0138	3B	8 Cold Spring Rd
29	20	Q0138	3B	5 Cold Spring Rd
18	11.04	Q0139	3B	14 Fox Hill Rd
18	11	Q0139	3B	8 Hollow Brook Rd
19	4	Q0140	3B	12 Hollow Brook Rd
19	11.01	Q0142		Cold Springs Rd
19	11.03	Q0142	3B	18 Cold Spring Rd
19	16	Q0143	3B	36 Homestead Rd
23	36	Q0144	3B	77 McCann Mill Rd
23	22	Q0144	3B	74 Vliettown Rd
24	20	Q0144	3B	76 McCann Mill Rd
19	13.06	Q0145	3B	16 Homestead Rd
19	13.03	Q0146	3B	24 Homestead Rd
43	2	Q0147	3B	41 Vliettown Rd
19	13.08	Q0148	3B	14 Homestead Rd
19	17	Q0149	3B	50 Homestead Rd
19	15	Q0150	3B	28 Homestead Rd
19	17.05	Q0151	3B	42 Homestead Rd
23	34	Q0153	3B	4 Flint Hill Rd
23	2.01	Q0153	3B	9 Flint Hill Rd
23	32.01	Q0153	3B	10 Flint Hill Rd
20	12	Q0154		28 Fairmount Rd E
*20	7	Q0154	3B	34 Fairmount Rd East
23	35	Q0157	3B	67 Mccann Mill Rd
24	19	Q0157	3B	68 Mccann Mill Rd
19	17.03	Q0158	3B	40 Cold Spring Rd
26	18.02	Q0159	3B	4 Burrell Rd
26	17	Q0159	3B	16 Boulder Hill Rd
26	17.01	Q0159	3B	12 Boulder Hill Rd
26	2.06	Q0160	3B	69 Guinea Hollow Rd
23	25.01	Q0161	3B	38 Vliettown Rd
23	28.01	Q0162	3B	107 Homestead Rd
23	26	Q0163	3B	68 Old Turnpike Rd
23	28	Q0164	3B	80 Old Turnpike Rd
23	21	Q0166	3B	78 Vliettown Rd
26	6	Q0167	3B	6 Sawmill Rd
51	2	Q0167	3B	7 Sawmill Rd
23	23	Q0168	3B	81 Homestead Rd
23	28.03	Q0168	3B	86 Old Turnpike Rd
23	3	Q0168	3B	29 Mccann Mill Rd
23	29	Q0168	3B	103 Homestead Rd
23	20	Q0168	3B	55 Mccann Mill Rd
23	2	Q0168	3B	39 Homestead Rd

23	1	Q0168	3B	21 Flint Hill Rd
23	32.02	Q0168	3B	16 Flint Hill Rd
24	18	Q0168	3B	44 Mccann Mill Rd
28	17	Q0168	3B	100 Old Turnpike Rd
26	11.04	Q0169	3B	24 Burrell Rd
26	15	Q0170	3B	12 Burrell Rd
26	15.02	Q0171	3B	8 Burrell Rd
26	16	Q0171	3B	2 Burrell Rd
26	15.01	Q0171	3B	6 Burrell Rd
27	87	Q0172	3B	103 Old Driftway Ln
28	9.06	Q0173	3B	150 Old Turnpike Rd
27	66	Q0174	3B	53 Sawmill Rd
23	28.02	Q0176	3B	109 Homestead Rd
27	103	Q0178	3B	44 Hill & Dale Rd
27	103.01	Q0179	3B	42 Hill & Dale Rd
27	103.06	Q0180	3B	3 Fieldview Ln
38	1.01	Q0181		74 Rockaway Rd
38	1	Q0181		Rockaway Rd
38	1.04	Q0181		86 Rockaway Rd
38	1.02	Q0181		17 Rockaway Rd
51	80.04	Q0181		Pruner Farm Rd
51	82	Q0181		102 Rockaway Rd
27	145.01	Q0182	3B	34 Hill & Dale Rd
27	145.06	Q0183	3B	26 Hill & Dale Rd
38	3.05	Q0183	3B	23 Hill & Dale Rd
27	145.07	Q0184	3B	32 Hill & Dale Rd
27	145.08	Q0184	3B	30 Hill & Dale Rd
27	147.01	Q0185	3B	24 Hill & Dale Rd
26	11.01	Q0187	3B	32 Burrell Rd
28	21	Q0188		56 Fox Hill Rd
27	148	Q0189	3B	109 Old Turnpike Rd
27	149	Q0191		Hill And Dale Rd
27	151	Q0192	3B	8 Hill & Dale Rd
27	155	Q0193	3B	56 Hill & Dale Rd
28	33	Q0194	3B	8 Wildwood Rd
28	4	Q0194	3B	18 Wildwood Rd
28	3	Q0194	3B	14 Wildwood Rd
28	34	Q0194	3B	10A Wildwood Rd
28	10	Q0195	3B	136 Old Turnpike Rd
28	14	Q0196	3B	58 Fox Hill Rd
28	20	Q0196	3B	60 Fox Hill Rd
29	9	Q0197	3B	3 Palatine Rd
28	28	Q0198		28 Fox Hill Rd
28	29	Q0199	3B	30 Fox Hill Rd

29	21	Q0199	3B	21 Fox Hill Rd
28	30.08	Q0200	3B	160 Old Turnpike Rd
28	30.02	Q0201	3B	24 Fox Hill Rd
28	30.04	Q0201	3B	164 Old Turnpike Rd
28	30.06	Q0201	3B	22 Fox Hill Rd
29	8.02	Q0202	3B	27 Fox Hill Rd
29	10.02	Q0203	3B	13 Palatine Rd
29	10	Q0204	3B	21 Palatine Rd
27	103.03	Q0205	3B	10 Fieldview Ln
27	148.01	Q0206	3B	125 Old Turnpike Rd
28	18	Q0207		74 Fox Hill Rd
30	6	Q0207		Homestead Rd
30	6.01	Q0208	3B	60 Homestead Rd
31	7.01	Q0210	3B	50 Philhower Rd
31	24.04	Q0211		2 Potter Ln
31	24	Q0211	3B	4 Potter Ln
28	9.01	Q0212	3B	156 Old Turnpike Rd
28	9.07	Q0212		154 County Road 517
31	30	Q0213		Longview Rd
32	36	Q0214	3B	92 Bissell Rd
32	5	Q0214	3B	90 Bissell Rd
32	6	Q0215	3B	84 Bissell Rd
33	7.13	Q0217	3B	87 Bissell Rd
23	32	Q0218	3B	77 Homestead Rd
23	32.03	Q0218	3B	79 Homestead Rd
32	9	Q0219	3B	18 Still Hollow Rd
34	3	Q0219	3B	13 Still Hollow Rd
32	11	Q0220	3B	139 Rockaway Rd
32	21.05	Q0221	3B	54 Water St
32	24	Q0222		Water St
32	22.01	Q0223	3B	9 Schoolhouse Ln
28	30.01	Q0224	3B	158 Old Turnpike Rd
32	25	Q0225	3B	48-A Water St
32	25.01	Q0225	3B	48 Water St
34	12	Q0226	3B	4 Meadow Ln
36	8	Q0226		13 Meadow Ln
32	32.02	Q0227		28 Water St
34	19.10	Q0228	3B	5 Hedge Row Crossing
34	19.06	Q0228	3B	6 Alpaugh Farm Rd
34	12.03	Q0228	3B	14 Meadow Ln
34	12.02	Q0228	3B	8 Meadow Ln
34	19.04	Q0229	3B	5 Alpaugh Farm Rd
33	10	Q0230	3B	105 Deer Hill Rd
32	22.04	Q0231	3B	11 Halsey Farm Rd

*33	12	Q0232	3B	97 Deer Hill Rd
36	5	Q0233	3B	15 Meadow Ln
33	23	Q0234		184 Cokesbury Rd
34	12.01	Q0236	3B	6 Meadow Ln
31	12	Q0238	3B	47 Water St
31	12.01	Q0239	3B	62 Philhower Rd
33	19	Q0240	3B	89 Deer Hill Rd
33	20	Q0240	3B	103 Deer Hill Rd
34	25	Q0242	3B	39 Still Hollow Rd
34	24	Q0242	3B	41 Still Hollow Rd
27	92	Q0243	3B	11 Dinner Pot Rd
35	6	Q0244	3B	49 Bissell Rd
35	10.15	Q0245	3B	31 Welsh Rd
35	10.17	Q0245	3B	33 Welsh Rd
35	10.13	Q0245	3B	29 Welsh Rd
35	10	Q0246	3B	37 Welsh Rd
35	10.16	Q0247	3B	84 Deer Hill Rd
29	8.06	Q0248		27A Fox Hill Rd
35	10.14	Q0249	3B	45 Bissell Rd
27	147.02	Q0250	3B	22 Hill & Dale Rd
35	8.06	Q0251		Welsh Rd
35	8.07	Q0251		Welsh Rd
35	10.20	Q0252		Welsh Rd
38	4.02	Q0253	3B	7 Wintermute Ln
37	3	Q0254	3B	80 Potterstown Rd
37	3.01	Q0255	3B	21 Bissell Rd
43	2.02	Q0256	3B	45 Vliettown Rd
37	3.59	Q0257	3B	3 Bissell Rd
37	3.08	Q0258	3B	19 Bissell Rd
37	3.10	Q0259	3B	70 Welsh Rd
37	3.09	Q0260	3B	23 Bissell Rd
37	6.05	Q0263	3B	36 Welsh Rd
37	6.02	Q0264	3B	24 Welsh Rd
37	6.03	Q0264	3B	24 Welsh Rd
32	22.05	Q0265	3B	12 Halsey Farm Rd
38	4.01	Q0266	3B	15 Hill & Dale Rd
14	25.02	Q0267	3B	70 Fairmount Rd West
38	2	Q0269	3B	41 Hill & Dale Rd
38	3.07	Q0270		Hill And Dale Rd
38	3	Q0270		Hill And Dale Rd
38	3.06	Q0270		Hill And Dale Rd
38	6	Q0271		27 Homestead Rd
38	5.02	Q0271		Hill And Dale Rd
38	5.01	Q0271		7 Hill And Dale Rd

38	5	Q0272	3B	7 Hill & Dale Rd
38	8.03	Q0273	3B	73 Old Turnpike Rd
38	11	Q0274	3B	18 King St
38	16.14	Q0275	3B	6 Old Farm Ln
38	14.01	Q0276	3B	22 King St
38	16.01	Q0277		Potterstown Rd
45	5	Q0278	3B	50 Felmley Rd
43	3.03	Q0279	3B	53 Vliettown Rd
42	4	Q0280		Cold Brook Rd
43	4	Q0280	3B	36 Cold Brook Rd
42	3	Q0281	3B	35 Vliettown Rd
44	24	Q0282		163 Oldwick Rd
46	18	Q0282	3B	23 Rockaway Rd
42	6	Q0283	3B	15 Cold Brook Rd
42	27	Q0284	3B	183 Lamington Rd
42	9	Q0284		183 Lamington Rd
43	3.02	Q0286	3B	16 Cold Brook Rd
44	21	Q0287	3B	167 Oldwick Rd
47	26	Q0288		Matheson Rd
44	26	Q0289	3B	19 King St
51	85.02	Q0290	3B	108 Rockaway Rd
5	2.01	Q0291	3B	31 Fairmount Rd West
48	4	Q0292	3B	55 Felmley Rd
48	4.01	Q0292	3B	57 Felmley Rd
45	2	Q0293	3B	182 Lamington Rd
48	5	Q0294	3B	39 Felmley Rd
23	23.02	Q0296		Vliettown Rd
23	24.03	Q0296		Vliettown Rd
23	23.01	Q0296		Vliettown Rd
43	3	Q0296	3B	77 Vliettown Rd
45	44	Q0297		170 Oldwick Rd
45	3.01	Q0298	3B	184 Lamington Rd
51	7	Q0300	3B	17 Sawmill Rd
51	6	Q0300	3B	15 Sawmill Rd
19	11.07	Q0301	3B	10 Alder Creek Drive
19	11.06	Q0301		Alder Creek Dr
47	58	Q0302	3B	30 New Bromley Rd
48	3	Q0303	3B	27 Felmley Rd
48	3.01	Q0304		Felmley Road
48	3.03	Q0305		31 Felmley Rd
47.02	6	Q0306	3B	15 Felmley Rd
49	14	Q0308	3B	31 New Bromley Rd
49	10	Q0308	3B	17 New Bromley Rd
49	8	Q0308	3B	19 New Bromley Rd

34	19.01	Q0309	3B	52 Bissell Rd
34	19.17	Q0309	3B	54 Bissell Rd
49	9	Q0310	3B	25 New Bromley Rd
49	11	Q0310	3B	37 New Bromley Rd
47	24	Q0311		34 Matheson Rd
47	62	Q0311		Matheson Rd
19	11.05	Q0312		15 Alder Creek Dr
43	2.01	Q0313	3B	49 Vliettown Rd
47	27	Q0314		Matheson Rd
10	6.07	Q0315	3B	17 Farmersville Rd
51	95.01	Q0316	3B	134 Rockaway Rd
51	85.03	Q0317	3B	110 Rockaway Rd
42	9.03	Q0318		Lamington Rd
42	9.02	Q0318		173 Lamington Road
47	48.01	Q0319	3B	8 New Bromley Rd
47	53	Q0319	3B	12 New Bromley Rd
28	9	Q0320	3B	146 Old Turnpike Rd
28	9.04	Q0320	3B	148 Old Turnpike Rd
28	9.02	Q0320	3B	140 Old Turnpike Rd
28	9.05	Q0321	3B	152 Old Turnpike Rd
19	13.09	Q0322		10 Homestead Rd
36	5.01	Q0323	3B	19 Meadow Ln
19	13.04	Q0324	3B	12 Homestead Rd
37	3.07	Q0325	3B	62 Potterstown Rd
37	3.05	Q0325	3B	15 Rockaway Rd
47	25	Q0326		Matheson Rd
19	11.04	Q0327	3B	13 Alder Creek Drive
19	11.08	Q0328		Alder Creek Dr
50	1	Q0329	3B	8 Black River Rd
19	12.01	Q0330	3B	44 Hollow Brook Rd
19	12.02	Q0331	3B	46 Hollow Brook Rd
50	1.01	Q0332	3B	2 Black River Rd
6.04	12	Q0333	3B	141 Fairmount Rd West
26	10.01	Q0334		28 Sawmill Rd
48	3.04	Q0336	3B	33 Felmley Road
31	23	Q0337	3B	37 Water St
11	16.07	Q0338		Water St
2	9	Q0339	3B	6 Vernoy Rd
10	6.08	Q0340	3B	13 Farmersville Rd
36	3.04	Q0341	3B	6 Bissell Rd
38	11.01	Q0342	3B	12 King St
34	19.16	Q0347	3B	2 Alpaugh Farm Rd
45	5.01	Q0350	3B	196 Lamington Rd
46.01	7	Q0372		121 Oldwick Rd

47	48	Q0372	3B	118 Oldwick Rd
12	15	Q0373		38 Guinea Hollow Rd
26	1	Q0373		63 Guinea Hollow Rd
38	7.03	Q0390	3B	77 Old Turnpike Rd
12	17	Q0391	3B	44 Guinea Hollow Rd
26	2.04	Q0391	3B	73 Guinea Hollow Rd
38	7	Q0392	3B	87 Old Turnpike Rd
27	154	Q0393		Fieldview Ln
27	96	Q0393		Dinner Pot Rd
51	108	Q0394	3B	310 Main St-Mountainville
51	113	Q0394		13 Sawmill Rd
27	81	Q0401	3B	110 Old Driftway Ln
27	64	Q0401	3B	49 Sawmill Rd
23	24	Q0402	3B	52 Vliettown Rd
23	24.01	Q0402	3B	56 Vliettown Rd
19	23	Q0403	3B	28 Cold Spring Rd
19	22	Q0404	3B	24 Cold Spring Rd
16	32	Q0405	3B	125 Fairmount Rd East
19	11.09	Q0411	3B	7 Alder Creek Drive
26	8.01	Q0414	3B	3 Stoney Ridge Ln
45	10	Q0415	3B	38 Felmley Rd
45	9	Q0415	3B	38 Felmley Rd
28	31	Q0416		4 Wildwood Rd
15	21.01	Q0444	3B	79 Farmersville Rd
6.04	37.04	Q0445	3B	93 Frog Hollow Rd
9	6.01	Q0452	3B	34 Sutton Rd
9	6.02	Q0453	3B	2 Guinea Hollow Rd
9	6.03	Q0454	3B	20 Sutton Rd
15	3.04	Q1534		4 Covered Bridge Ln
28	13	Q2813	3B	124 Old Turnpike Rd
34	19.15	Q3419	3B	6 Hedge Row Crossing
51	47	Q5147	3B	36 Ridge Rd
33	22	Q6100		Stillery Rd
18	11.01	Q6101	3B	6 Hollow Brook Rd
11	22.07	Q6102	3B	Desantis On-Cokesbury Rd
12	6.01	Q6103	3B	4 Winterwood Rd
11	35.01	Q6105		1120 Califon Cokesbury Rd
32	23	Q6106	3B	11 Schoolhouse Ln
5	2.02	Q6107	3B	33 Fairmount Rd West
38	14.02	Q6109	3B	28 King St
38	14.03	Q6109	3B	40 King St
38	14	Q6109	3B	40 Potterstown Rd
16	14	Q6110	3B	47 Hollow Brook Rd
27	95	Q6111	3B	14 Dinner Pot Rd

45	3	Q6112	3B	186 Lamington Rd
9	2	Q6114	3B	1240 Califon-Cokesbury Rd
45	46	Q6116	3B	178 Lamington Rd
45	6.02	Q6117	3B	58 Felmley Rd
42	6.01	Q6118		1 Cold Brook Rd
43	3.01	Q6118		8 Cold Brook Rd
27	100	Q6120	3B	1 Dinner Pot Rd
32	10	Q6121		127 Rockaway Rd
51	95	Q6121		Rockaway Rd
16	30	Q6122	3B	123 Fairmount Rd East
27	103.05	Q6123	3B	4 Fieldview Ln
19	13.05	Q6124		20 Homestead Rd
19	14.04	Q6125	3B	6 Homestead Rd
19	14.05	Q6125	3B	6B Homestead Rd
38	4.07	Q6126	3B	6 Wintermute Ln
27	71	Q6127	3B	151 Old Turnpike Rd
51	98	Q6128	3B	142 Rockaway Rd
37	7.02	Q6129	3B	32 Welsh Rd
27	147.03	Q6130		Hill And Dale Rd
6.04	23.04	Q6131	3B	89 Fairmount Rd West
42	8	Q6132		Lamington Rd
51	80.07	Q6133	3B	66-68 Hill & Dale
27	77	Q6134	3B	57 Sawmill Rd
34	19.05	Q6135		7 Alpaugh Farm Rd
34	12.04	Q6135	3B	10 Meadow Ln
28	30.05	Q6136		Fox Hill Rd
16	22	Q6140	3B	77 Hollow Brook Rd
23	9	Q6140	3B	70 Hollow Brook Rd
8	2.02	Q6141	3B	10 Sutton Rd
12	10	Q6142	3B	53 Philhower Rd
51	111	Q6143	3B	30 Mountain Rd
19	17.04	Q6144	3B	46 Homestead Rd
13	20.03	Q6145	3B	31 Boulder Hill Rd
27	72.01	Q6146	3B	5 Laurel Mountain Way
34	1	Q6147	3B	33 Still Hollow Rd
48	5.01	Q6148		41 Felmley Rd
12	36	Q6149	3B	37 Philhower Rd
12	1.01	Q6150		Sutton Rd
28	19	Q6151	3B	68 Fox Hill
15	10	Q6152	3B	53 Burrell Rd
26	13	Q6152	3B	34 Burrell
32	21.03	Q6153	3B	12 Schoolhouse Ln
51	80.08	Q6154	3B	78 Hill & Dale Rd
31	24.01	Q6155		1 Potter Ln

36	1.01	Q6156		9 Meadow Ln
34	28	Q6157	3B	29 Still Hollow Rd
47.02	1	Q6158		Gulick Rd
26	19	Q6159	3B	8 Boulder Hill Rd
15	23	Q6160	3B	61 Farmersville Rd
38	1.05	Q6161		Hill And Dale Rd
38	1.03	Q8300		Rockaway Rd
*63	18	QFARM	3B	Black River Rd

*Only a portion of the Q-Farm is within the Tewksbury Township boundary

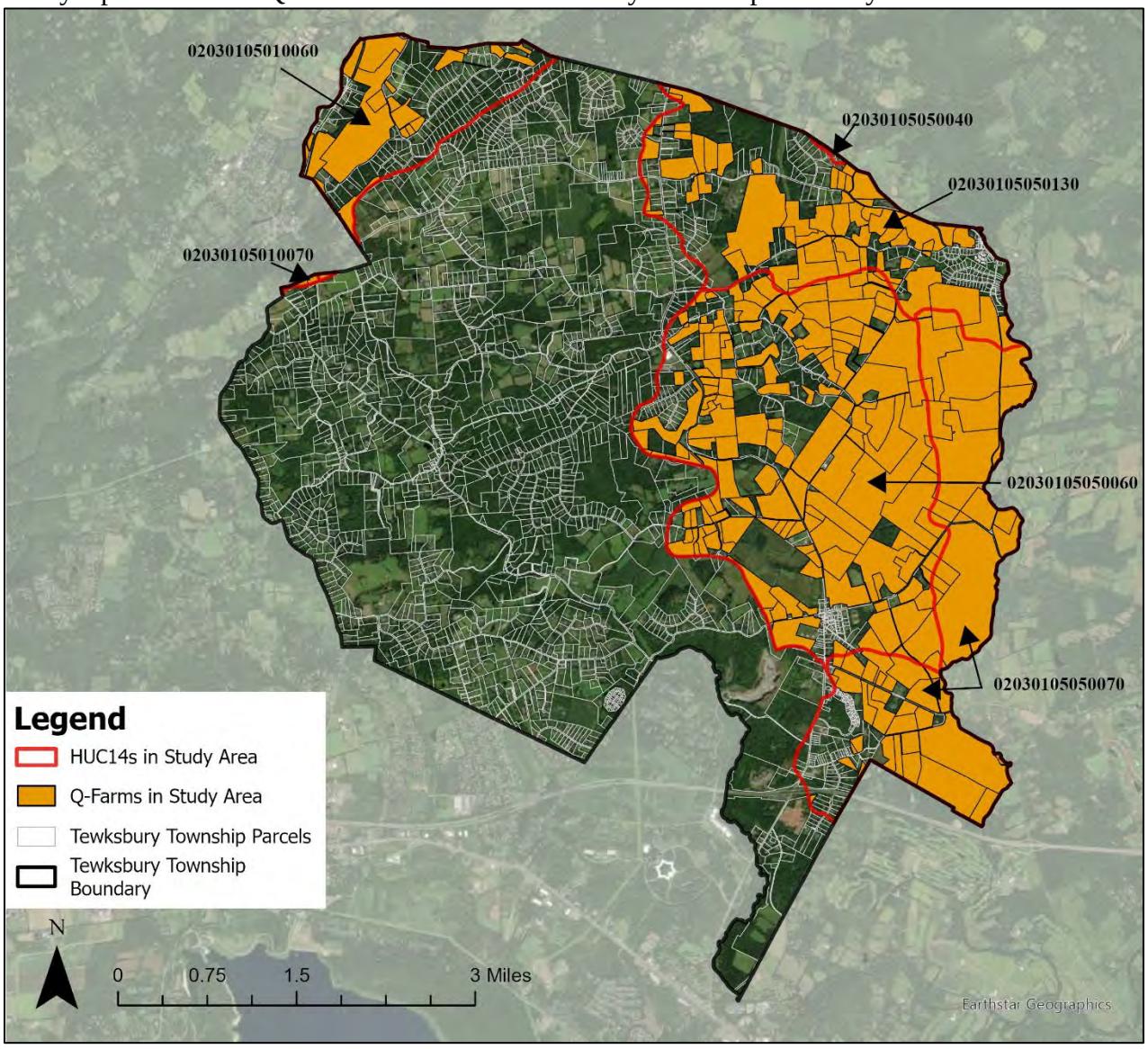


Figure 7: Q-Farm Parcels in the Study Area of Tewksbury Township

Table 6: Q-Farm Parcels in the Study Area of Tewksbury Township

Block	Lot	Q-Code	Prop Class	Location
3	4	Q0002	3B	45 Beavers Rd
3	4.01	Q0002	3B	30 Beavers Rd
3	1	Q0002	3B	65 Vernoy Rd
3	4.02	Q0002	3B	67 Beavers Rd
4	4.02	Q0002	3B	1 Barclay Rd
4	4.15	Q0002	3B	4 Barclay Rd
2	8	Q0003	3B	12 Vernoy Rd
3	33	Q0003	3B	9 Vernoy Rd
3	8	Q0003	3B	11 Vernoy Rd
4	4.01	Q0004	3B	36 Beavers Rd
4	10	Q0005	3B	2 Logan Drive
4	13	Q0007	3B	80 Frog Hollow Rd
4	10.05	Q0007	3B	10 Logan Dr
2	1	Q0009	3B	65 Vernoy Rd
5	10.04	Q0010		Fairmount Rd W
*5	12	Q0011	3B	1 Fairmount Rd West
*6.04	3.01	Q0013	3B	7 Beacon Light Rd
*6.04	7.21	Q0015	3B	243 Old Turnpike Rd
*6.04	7.04	Q0016		245 Old Turnpike Rd
*6.04	7.20	Q0017		35 Salters Farm Rd
*7	1.02	Q0021	3B	258 Old Turnpike Rd
*7	1	Q0021	3B	262 Old Turnpike Rd
7	4.04	Q0023		289 County Road 517
7	4.05	Q0024		252 Old Turnpike Road
7	6	Q0025	3B	232 Fairmount Rd East
4	4.19	Q0026	3B	38 Frog Hollow Rd
4	4.18	Q0026	3B	40 Frog Hollow Rd
4	4.17	Q0026	3B	42 Frog Hollow Rd
3	4.03	Q0027	3B	1 Indian Ln
16	11	Q0028	3B	103 Fairmount East
7.01	1	Q0029	3B	2 Van Pelt Rd
7	8	Q0030	3B	136 Fairmount Rd East
7	17	Q0031	3B	108 Fairmount Rd East
7	8.01	Q0033	3B	134 Fairmount Road East
7	40	Q0034	3B	80 Fairmount Rd East
7	21.03	Q0034	3B	78 Fairmount Rd East
7	39	Q0035	3B	82 Fairmount Rd East
7	10	Q0040	3B	132 Fairmount Rd East
6.04	37	Q0045	3B	89 Frog Hollow Rd
*5	2.04	Q0049	3B	19 Beavers Rd
7	22	Q0050		7 Van Pelt Rd

*14	20.05	Q0094	3B	112 Fairmount Rd West
*14	20.07	Q0096	3B	114 Fairmount Rd West
18	6	Q0099	3B	9 Wildwood Rd
*14	29	Q0102	3B	213 Old Turnpike Rd
16	20	Q0119	3B	71 Hollow Brook Rd
19	13.01	Q0120	3B	32 Homestead Rd
16	17	Q0121	3B	59 Hollow Brook Rd
19	13.10	Q0122	3B	34 Homestead Rd
16	7	Q0123	3B	17 Hollow Brook Rd
23	4.02	Q0124	3B	25 Homestead Rd
23	4	Q0124	3B	25 Homestead Rd
16	12.03	Q0125	3B	39 Hollow Brook Rd
16	13	Q0126	3B	43 Hollow Brook Rd
19	12	Q0126	3B	38 Hollow Brook Rd
19	13.07	Q0126	3B	32 Hollow Brook Rd
16	15	Q0127	3B	53 Hollow Brook Rd
16	25	Q0127	3B	81 Fairmount Rd East
16	15.01	Q0128	3B	49 Hollow Brook Rd
16	23	Q0130	3B	63 Fairmount Rd East
16	24	Q0131	3B	71 Fairmount Rd East
20	2	Q0132	3B	46 Fairmount Rd East
23	30	Q0133	3B	87 Homestead Rd
7.01	2	Q0134	3B	74 Fairmount Rd East
16	34	Q0134	3B	75 Fairmount Rd East
16	35	Q0135	3B	79 Fairmount Rd East
19	28	Q0138	3B	4 Cold Spring Rd
19	27	Q0138	3B	8 Cold Spring Rd
29	20	Q0138	3B	5 Cold Spring Rd
18	11.04	Q0139	3B	14 Fox Hill Rd
*18	11	Q0139	3B	8 Hollow Brook Rd
19	4	Q0140	3B	12 Hollow Brook Rd
19	11.01	Q0142		Cold Springs Rd
19	11.03	Q0142	3B	18 Cold Spring Rd
19	16	Q0143	3B	36 Homestead Rd
23	36	Q0144	3B	77 Mccann Mill Rd
23	22	Q0144	3B	74 Vliettown Rd
24	20	Q0144	3B	76 Mccann Mill Rd
19	13.06	Q0145	3B	16 Homestead Rd
19	13.03	Q0146	3B	24 Homestead Rd
43	2	Q0147	3B	41 Vliettown Rd
19	13.08	Q0148	3B	14 Homestead Rd
19	17	Q0149	3B	50 Homestead Rd
19	15	Q0150	3B	28 Homestead Rd
19	17.05	Q0151	3B	42 Homestead Rd

23	34	Q0153	3B	4 Flint Hill Rd
23	2.01	Q0153	3B	9 Flint Hill Rd
23	32.01	Q0153	3B	10 Flint Hill Rd
20	12	Q0154		28 Fairmount Rd E
20	7	Q0154	3B	34 Fairmount Rd East
23	35	Q0157	3B	67 Mccann Mill Rd
24	19	Q0157	3B	68 Mccann Mill Rd
19	17.03	Q0158	3B	40 Cold Spring Rd
23	25.01	Q0161	3B	38 Vliettown Rd
23	28.01	Q0162	3B	107 Homestead Rd
23	26	Q0163	3B	68 Old Turnpike Rd
23	28	Q0164	3B	80 Old Turnpike Rd
23	21	Q0166	3B	78 Vliettown Rd
23	23	Q0168	3B	81 Homestead Rd
23	28.03	Q0168	3B	86 Old Turnpike Rd
23	3	Q0168	3B	29 Mccann Mill Rd
23	29	Q0168	3B	103 Homestead Rd
23	20	Q0168	3B	55 Mccann Mill Rd
23	2	Q0168	3B	39 Homestead Rd
23	1	Q0168	3B	21 Flint Hill Rd
23	32.02	Q0168	3B	16 Flint Hill Rd
24	18	Q0168	3B	44 Mccann Mill Rd
28	17	Q0168	3B	100 Old Turnpike Rd
28	9.06	Q0173	3B	150 Old Turnpike Rd
23	28.02	Q0176	3B	109 Homestead Rd
*27	103	Q0178	3B	44 Hill & Dale Rd
*27	103.06	Q0180	3B	3 Fieldview Ln
*27	145.01	Q0182	3B	34 Hill & Dale Rd
27	145.06	Q0183	3B	26 Hill & Dale Rd
38	3.05	Q0183	3B	23 Hill & Dale Rd
27	145.07	Q0184	3B	32 Hill & Dale Rd
27	145.08	Q0184	3B	30 Hill & Dale Rd
27	147.01	Q0185	3B	24 Hill & Dale Rd
28	21	Q0188		56 Fox Hill Rd
27	148	Q0189	3B	109 Old Turnpike Rd
27	149	Q0191		Hill And Dale Rd
27	151	Q0192	3B	8 Hill & Dale Rd
28	33	Q0194	3B	8 Wildwood Rd
28	4	Q0194	3B	18 Wildwood Rd
28	3	Q0194	3B	14 Wildwood Rd
28	34	Q0194	3B	10A Wildwood Rd
28	10	Q0195	3B	136 Old Turnpike Rd
28	14	Q0196	3B	58 Fox Hill Rd
28	20	Q0196	3B	60 Fox Hill Rd

29	9	Q0197	3B	3 Palatine Rd
28	28	Q0198		28 Fox Hill Rd
28	29	Q0199	3B	30 Fox Hill Rd
29	21	Q0199	3B	21 Fox Hill Rd
28	30.08	Q0200	3B	160 Old Turnpike Rd
28	30.02	Q0201	3B	24 Fox Hill Rd
28	30.04	Q0201	3B	164 Old Turnpike Rd
28	30.06	Q0201	3B	22 Fox Hill Rd
29	8.02	Q0202	3B	27 Fox Hill Rd
29	10.02	Q0203	3B	13 Palatine Rd
29	10	Q0204	3B	21 Palatine Rd
*27	103.03	Q0205	3B	10 Fieldview Ln
27	148.01	Q0206	3B	125 Old Turnpike Rd
28	18	Q0207		74 Fox Hill Rd
30	6	Q0207		Homestead Rd
30	6.01	Q0208	3B	60 Homestead Rd
28	9.01	Q0212	3B	156 Old Turnpike Rd
28	9.07	Q0212		154 County Road 517
23	32	Q0218	3B	77 Homestead Rd
23	32.03	Q0218	3B	79 Homestead Rd
28	30.01	Q0224	3B	158 Old Turnpike Rd
*27	92	Q0243	3B	11 Dinner Pot Rd
29	8.06	Q0248		27A Fox Hill Rd
*27	147.02	Q0250	3B	22 Hill & Dale Rd
38	4.02	Q0253	3B	7 Wintermute Ln
43	2.02	Q0256	3B	45 Vliettown Rd
38	4.01	Q0266	3B	15 Hill & Dale Rd
*38	3.07	Q0270		Hill And Dale Rd
*38	3	Q0270		Hill And Dale Rd
38	3.06	Q0270		Hill And Dale Rd
38	6	Q0271		27 Homestead Rd
38	5.02	Q0271		Hill And Dale Rd
38	5.01	Q0271		7 Hill and Dale Rd
38	5	Q0272	3B	7 Hill & Dale Rd
38	8.03	Q0273	3B	73 Old Turnpike Rd
38	11	Q0274	3B	18 King St
38	14.01	Q0276	3B	22 King St
45	5	Q0278	3B	50 Felmley Rd
43	3.03	Q0279	3B	53 Vliettown Rd
42	4	Q0280		Cold Brook Rd
43	4	Q0280	3B	36 Cold Brook Rd
42	3	Q0281	3B	35 Vliettown Rd
*44	24	Q0282		163 Oldwick Rd
42	6	Q0283	3B	15 Cold Brook Rd

42	27	Q0284	3B	183 Lamington Rd
42	9	Q0284		183 Lamington Rd
43	3.02	Q0286	3B	16 Cold Brook Rd
*44	26	Q0289	3B	19 King St
48	4	Q0292	3B	55 Felmley Rd
48	4.01	Q0292	3B	57 Felmley Rd
45	2	Q0293	3B	182 Lamington Rd
48	5	Q0294	3B	39 Felmley Rd
23	23.02	Q0296		Vliettown Rd
23	24.03	Q0296		Vliettown Rd
23	23.01	Q0296		Vliettown Rd
43	3	Q0296	3B	77 Vliettown Rd
*45	44	Q0297		170 Oldwick Rd
45	3.01	Q0298	3B	184 Lamington Rd
19	11.07	Q0301	3B	10 Alder Creek Drive
19	11.06	Q0301		Alder Creek Dr
48	3	Q0303	3B	27 Felmley Rd
48	3.01	Q0304		Felmley Road
48	3.03	Q0305		31 Felmley Rd
47.02	6	Q0306	3B	15 Felmley Rd
19	11.05	Q0312		15 Alder Creek Dr
43	2.01	Q0313	3B	49 Vliettown Rd
42	9.03	Q0318		Lamington Rd
42	9.02	Q0318		173 Lamington Road
28	9	Q0320	3B	146 Old Turnpike Rd
28	9.04	Q0320	3B	148 Old Turnpike Rd
28	9.02	Q0320	3B	140 Old Turnpike Rd
28	9.05	Q0321	3B	152 Old Turnpike Rd
19	13.09	Q0322		10 Homestead Rd
19	13.04	Q0324	3B	12 Homestead Rd
19	11.04	Q0327	3B	13 Alder Creek Drive
19	11.08	Q0328		Alder Creek Dr
50	1	Q0329	3B	8 Black River Rd
19	12.01	Q0330	3B	44 Hollow Brook Rd
19	12.02	Q0331	3B	46 Hollow Brook Rd
50	1.01	Q0332	3B	2 Black River Rd
48	3.04	Q0336	3B	33 Felmley Road
2	9	Q0339	3B	6 Vernoy Rd
38	11.01	Q0342	3B	12 King St
45	5.01	Q0350	3B	196 Lamington Rd
*47	48	Q0372	3B	118 Oldwick Rd
38	7.03	Q0390	3B	77 Old Turnpike Rd
38	7	Q0392	3B	87 Old Turnpike Rd
*27	154	Q0393		Fieldview Ln

*27	96	Q0393		Dinner Pot Rd
23	24	Q0402	3B	52 Vliettown Rd
23	24.01	Q0402	3B	56 Vliettown Rd
19	23	Q0403	3B	28 Cold Spring Rd
19	22	Q0404	3B	24 Cold Spring Rd
16	32	Q0405	3B	125 Fairmount Rd East
19	11.09	Q0411	3B	7 Alder Creek Drive
45	10	Q0415	3B	38 Felmley Rd
45	9	Q0415	3B	38 Felmley Rd
28	31	Q0416		4 Wildwood Rd
6.04	37.04	Q0445	3B	93 Frog Hollow Rd
9	6.02	Q0453	3B	2 Guinea Hollow Rd
9	6.03	Q0454	3B	20 Sutton Rd
28	13	Q2813	3B	124 Old Turnpike Rd
*18	11.01	Q6101	3B	6 Hollow Brook Rd
*38	14.02	Q6109	3B	28 King St
*38	14	Q6109	3B	40 Potterstown Rd
16	14	Q6110	3B	47 Hollow Brook Rd
*27	95	Q6111	3B	14 Dinner Pot Rd
45	3	Q6112	3B	186 Lamington Rd
9	2	Q6114	3B	1240 Califon-Cokesbury Rd
45	46	Q6116	3B	178 Lamington Rd
45	6.02	Q6117	3B	58 Felmley Rd
42	6.01	Q6118		1 Cold Brook Rd
43	3.01	Q6118		8 Cold Brook Rd
27	100	Q6120	3B	1 Dinner Pot Rd
16	30	Q6122	3B	123 Fairmount Rd East
*27	103.05	Q6123	3B	4 Fieldview Ln
19	13.05	Q6124		20 Homestead Rd
19	14.04	Q6125	3B	6 Homestead Rd
19	14.05	Q6125	3B	6B Homestead Rd
38	4.07	Q6126	3B	6 Wintermute Ln
27	71	Q6127	3B	151 Old Turnpike Rd
*27	147.03	Q6130		Hill And Dale Rd
42	8	Q6132		Lamington Rd
*27	77	Q6134	3B	57 Sawmill Rd
28	30.05	Q6136		Fox Hill Rd
16	22	Q6140	3B	77 Hollow Brook Rd
23	9	Q6140	3B	70 Hollow Brook Rd
19	17.04	Q6144	3B	46 Homestead Rd
27	72.01	Q6146	3B	5 Laurel Mountain Way
48	5.01	Q6148		41 Felmley Rd
28	19	Q6151	3B	68 Fox Hill
47.02	1	Q6158		Gulick Rd

*38	1.05	Q6161		Hill And Dale Rd
63	18	QFARM	3B	Black River Rd

*Only a portion of the Q-Farm is within the study area

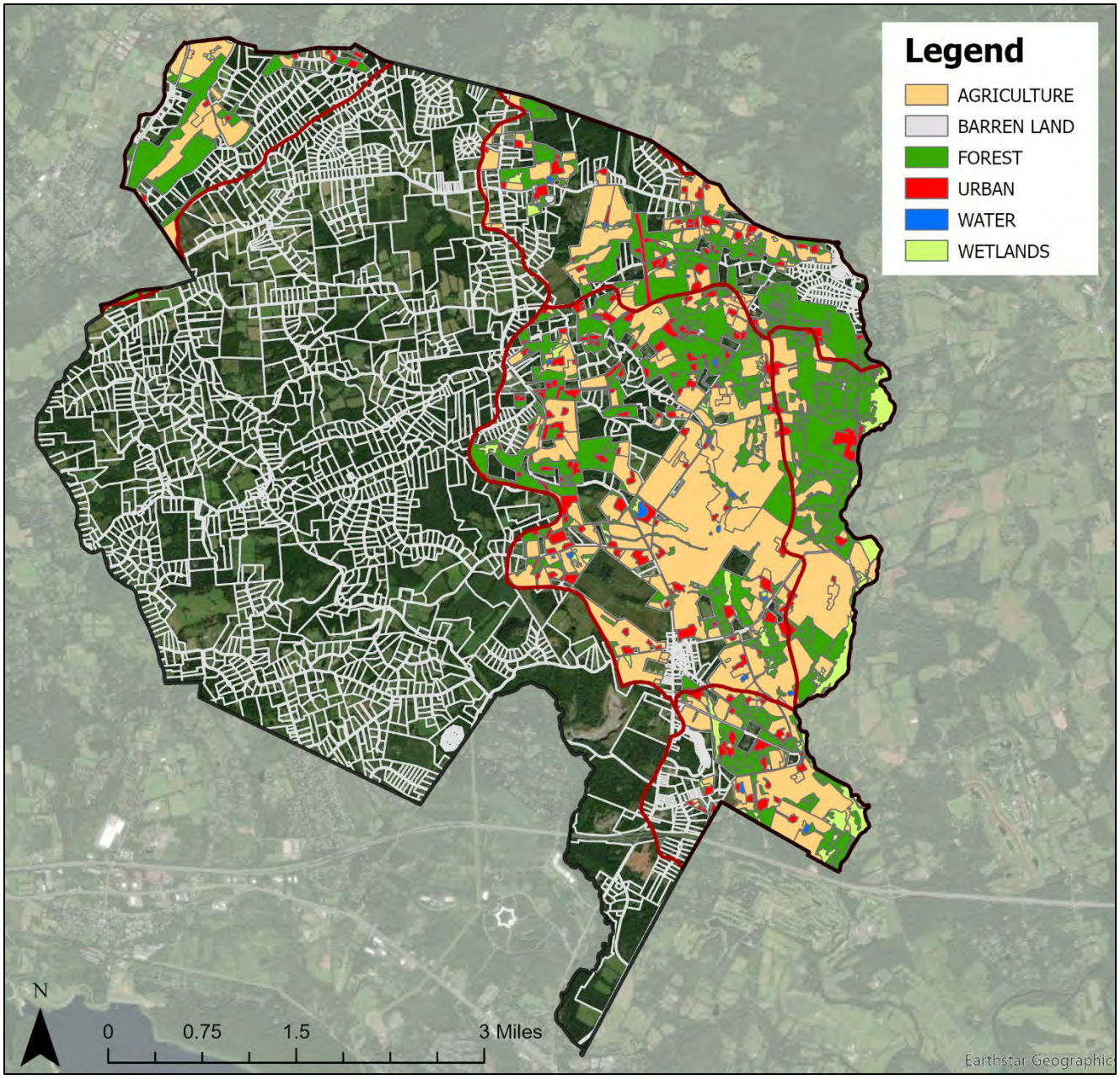


Figure 8: Land Use on Q-Farms in the Study Area of Tewksbury Township

Table 7: Land Use on Q-Farms in the Study Area of Tewksbury Township

Land Use	Area (acres)
Agriculture	2,833.1
Barren Land	5.2
Forest	2,297.5
Urban	514.8
Water	57.2
Wetlands	265.0
Total:	**5,972.8**

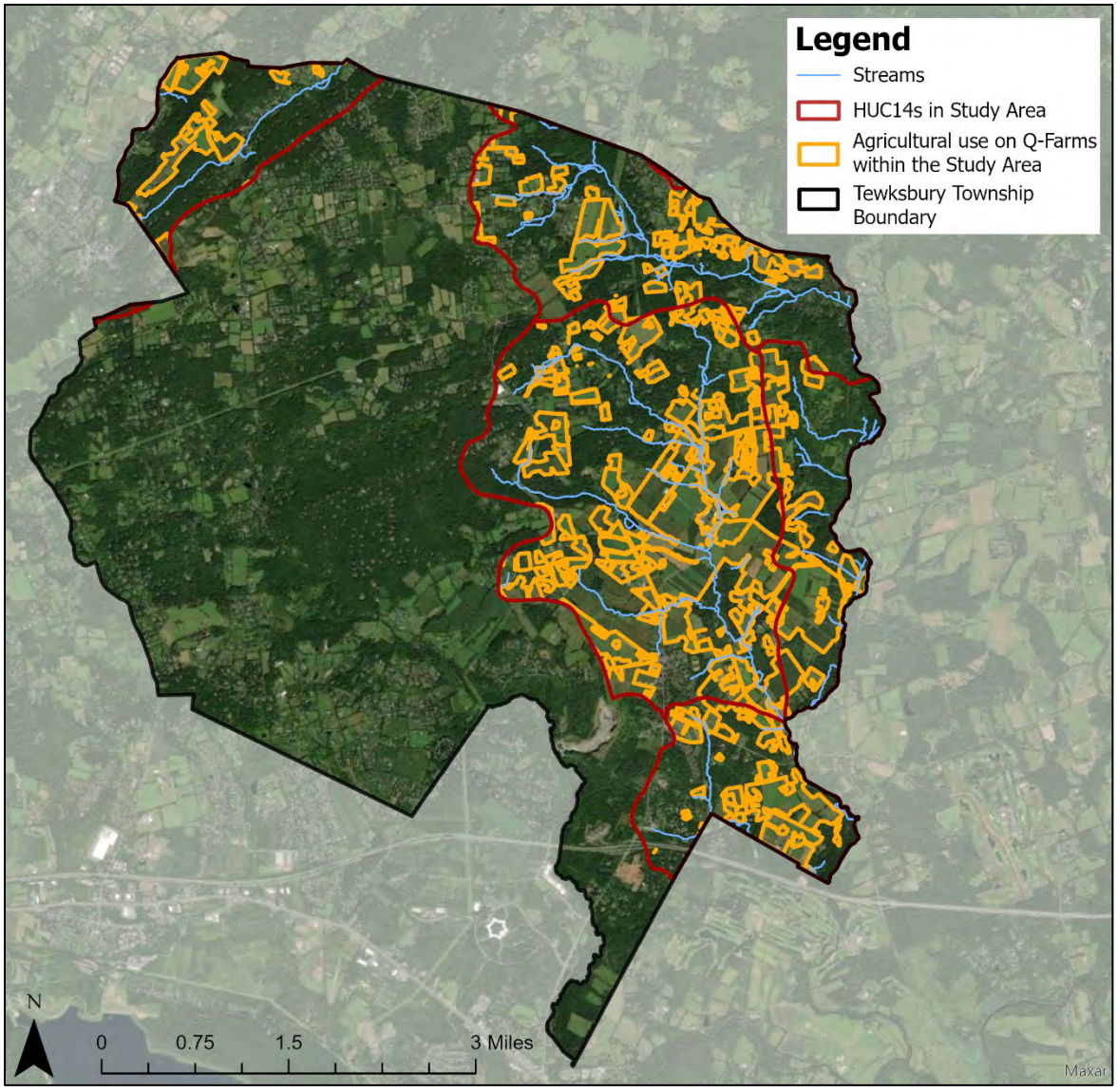


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Tewksbury Township

Table 8: Recommendations for Specific Farms in the Study Area of Tewksbury Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
23	36	Q0144	X					
23	35	Q0157			X	X		
23	21	Q0166	X			X		
23	2	Q0168	X					
23	20	Q0168	X					
42	9	Q0284				X		
48	4	Q0292	X		X	X		
48	5	Q0294				X		
43	3	Q0296	X	X				
48	3	Q0303						
42	9.03	Q0318						
50	1	Q0329	X	X				
50	1.01	Q0332	X	X				
48	3.04	Q0336			X	X		
45	9	Q0415						
42	6.01	Q6118	X					
43	3.01	Q6118	X	X				
South Branch Raritan River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
3	4.01	Q0002						X

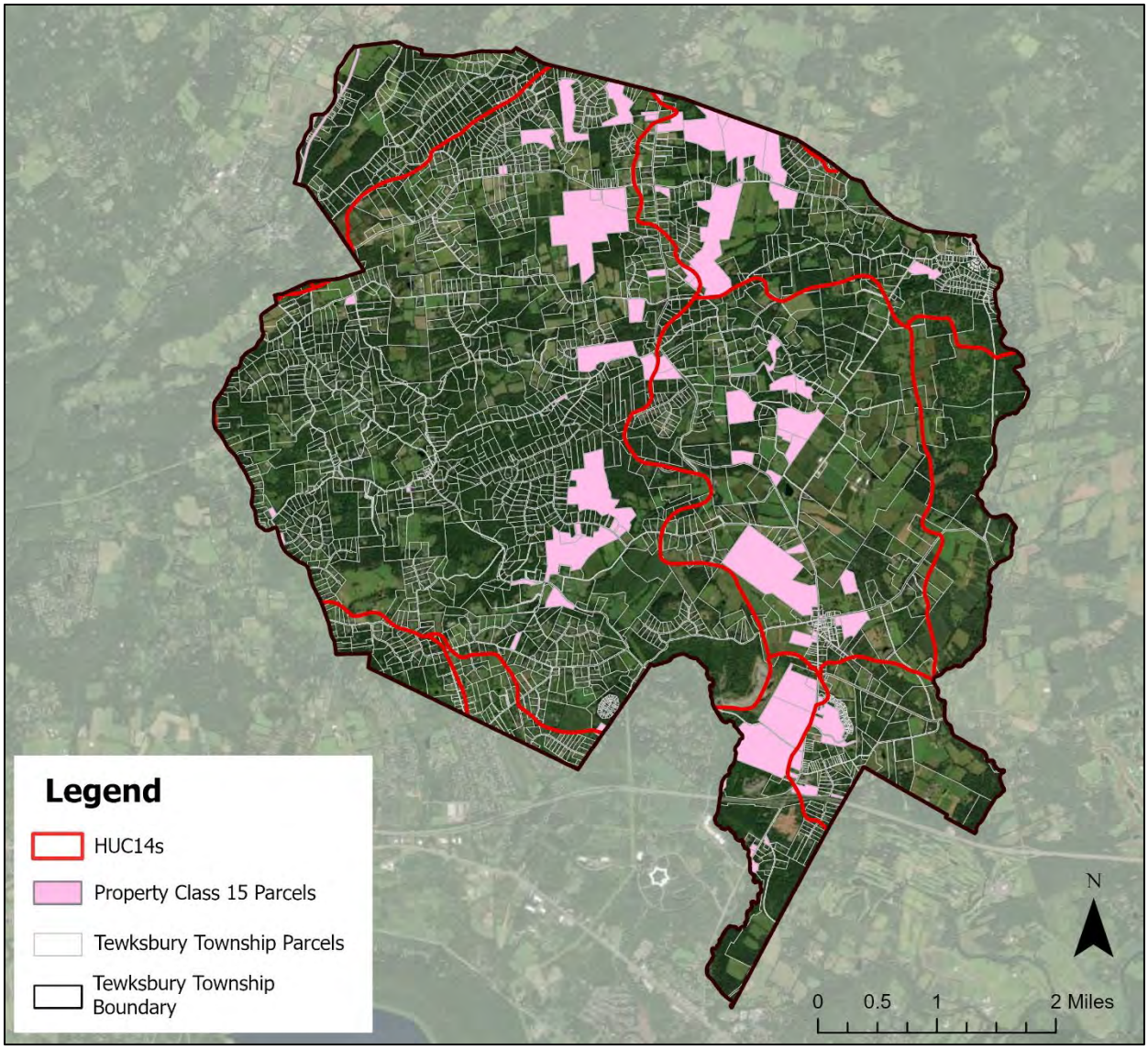


Figure 10: Property Class 15 Parcels in Tewksbury Township

Table 9: Property Class 15 Parcels in Tewksbury Township

Block	Lot	Prop Class	Location	Facility Type
27	68.01	15A	171 Old Turnpike Rd	Tewks Grade School
2	100	15C	38 Vernoy Rd	Footpath
2	5	15C	26 Vernoy Rd	Park
2	4	15C	40 Vernoy Rd	Park
3	101	15C	11 Vernoy Rd	Footpath
3	100	15C	67 Vernoy Rd	Footpath
6.04	1.01	15C	17 Beacon Light Rd	Vacant Land
6.04	23.20	15C	3 Fleming Rd	Vacant Land
6.04	1.24	15C	11 Coddington Lane	Vacant Land
7	13	15C	116 Fairmount Rd East	Vacant Land
7	2	15C	50 Pickle Rd	Vacant Land
7	4.01	15C	254 Old Turnpike Rd	Vacant Land
7	13.03	15C	96 Fairmount Rd East	Vacant Land
7	23	15C	258 Old Turnpike Rd	Vacant Land
14	21	15C	108 Fairmount Rd West	Park
14	21.01	15C	102 Fairmount Rd West	Municipal Bldg
14	21.02	15C	112 Fairmount Rd West	Playground
15	18.01	15C	105 Farmersville Rd	Vacant Land
15	9.10	15C	10 Tiger Dr	Vacant Land
15	9.05	15C	87 Farmersville Rd	Vacant Land
16	27	15C	117 Fairmount Rd East	Vacant Land
16	6	15C	113 Fairmount Rd East	Park
16	6.01	15C	5 Fox Hill Rd	Park
22	1	15C	16 Black River Rd	Green Acres
23	8.41	15C	5 Homestead Rd	Vacant Land
23	26.02	15C	34 Church St	Sewage Disposal
27	115.02	15C	3 Parsonage Lot Rd	Farm
27	115.03	15C	7 Parsonage Lot Rd	Farm
27	115	15C	5,13,37 Parsonage Lot Rd	Farm
27	68.02	15C	169 Old Turnpike Rd	Garage
29	18	15C	11 Cold Spring Rd	Forest
31	24.03	15C	33 Potter Ln	Vacant Land
32	19	15C	60 Water St	Municipal Bldg
32	20	15C	62 Water St	Road
34	8	15C	105 Rockaway Rd	Vacant Land
37	3.22	15C	76 Potterstown Rd	Sewage Disposal
38	8	15C	65 Old Turnpike Rd	Park
42	2	15C	29 Vliettown Rd	Sewer Disposal
44	12	15C	29 Old Turnpike Rd	Playground
44	22	15C	159 Oldwick Rd	UCP/Coah
44	7	15C	45 Old Turnpike Rd	Parking Lot
44	23	15C	149 Oldwick Rd	Sanctuary
45.01	1	15C	9-02 Old Turnpike Rd	Vacant Land
45.02	49	15C	1216 Farley Rd	Vacant Land
46	20	15C	15 Rockaway Rd	Sanctuary
46	17.01	15C	125-A Oldwick Rd	Vacant Land

46	17.02	15C	Oldwick	Vacant Land
46.01	12	15C	101 Oldwick Rd	Park
46.01	11	15C	103 Oldwick Rd	Park
47	14	15C	12-A Felmley Rd	Highway
47	61	15C	Matheson Rd	Highway
47	60	15C	Interstate 78	Highway
47.01	47.01	15C	124 Oldwick Rd	Vacant Land
47.02	12.01	15C	Interstate 78	Highway
49	5.02	15C	100 Oldwick Rd	Water Way
49	1	15C	1 New Bromley Rd	Vacant Land
51	11	15C	25 Sawmill Rd	Park
51	19	15C	35 Sawmill Rd	Vacant Land
*63	17	15C	Black River Rd	Vacant Land
6.04	5.01	15D	253 Old Turnpike Rd	Church
6.04	6	15D	249 Old Turnpike Rd	Parsonage
6.04	6.01	15D	247 Old Turnpike Rd	Community Center
6.04	4.01	15D	255 Old Turnpike Rd	Church
16	1	15D	228 Old Turnpike Rd	Church
16	2.02	15D	135 Fairmount East	Parsonage
23	41	15D	56 Old Turnpike Rd	Church
28	16	15D	110 Old Turnpike Rd	Home Handicap Childr
32	1	15D	230 Cokesbury Rd	Church
40	2	15D	5 James St	Storage Bldg.
42	1	15D	18 Miller Ave	Community Center
44	10	15D	35 Old Turnpike Rd	Parsonage
6.02	24.06	15F	73 Fairmount Rd West	Disabled Veteran
6.02	24.05	15F	71 Fairmount Rd West	Disabled Veteran
11	23	15F	5 Water St	Disabled Veteran
12	1.06	15F	37 Sutton Rd	Green Acres
14	17.03	15F	195 Old Turnpike Rd	Disabled Veteran
15	13	15F	50 Sawmill Rd	Green Acres
16	26	15F	93 Fairmount Rd East	Green Acres
28	13.01	15F	118 Old Turnpike Rd	Green Acres
28	27	15F	42 Fox Hill Rd	Green Acres
29	8.021	15F	27 Fox Hill Rd	Green Acres
29	10.04	15F	17 Palatine Rd	Green Acres
30	4.01	15F	51 Fox Hill Rd	Green Acres
30	5	15F	61 Fox Hill Rd	Green Acres
30	3	15F	45 Fox Hill Rd	Green Acres
34	13.04	15F	38 Bissell Rd	Disabled Veteran
34	11	15F	99 Rockaway Rd	Vacant Land
36	1	15F	9 Meadow Ln	Vacant Land
37.02	5	15F	5 Hunters Circle	Disabled Veteran
38	7.01	15F	83 Old Turnpike Rd	Barn
44	11	15F	31 Old Turnpike Rd	Community Center
44	22.01	15F	163 Oldwick Rd	Firehouse
50.01	1	15F	80 Vliettown Rd	Green Acres
51	80	15F	78 Hill & Dale	Conservation/Rec
51	80.06	15F	24A Parsonage Lot Rd	Conservation/Rec

51	80.05	15F	24 Parsonage Lot Rd	Conservation/Rec

*Only a portion of the parcel is within the Tewksbury Township boundary

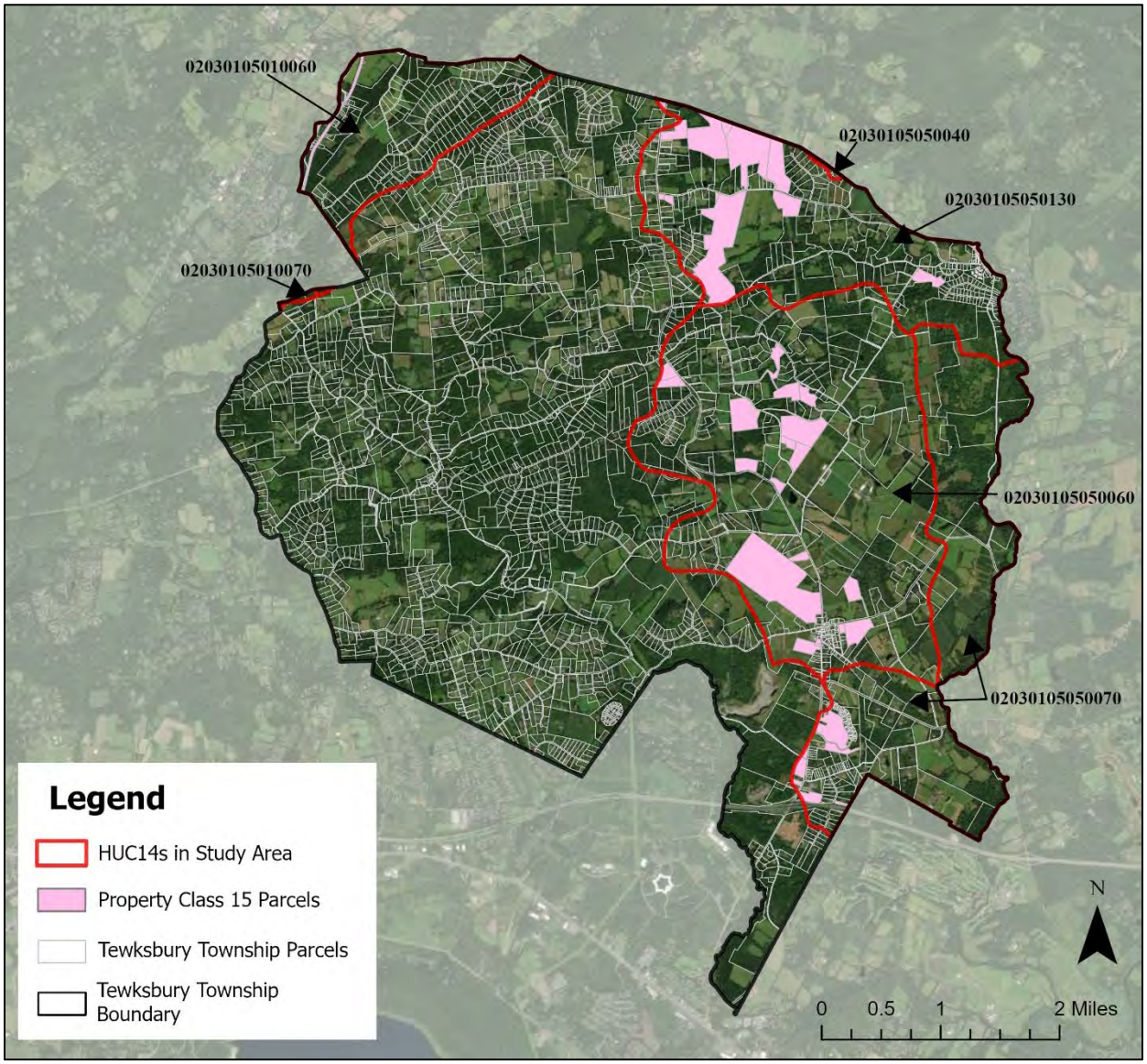


Figure 11: Property Class 15 parcels in the Study Area of Tewksbury Township

Table 10: Property Class 15 Parcels in the Study Area of Tewksbury Township

Block	Lot	Prop Class	Location	Facility Type
***27[1]**	**68.01**	**15A**	**171 Old Turnpike Rd**	**Tewks Grade School**
2	4	15C	40 Vernoy Rd	Park
2	5	15C	26 Vernoy Rd	Park
2	100	15C	38 Vernoy Rd	Footpath
3	100	15C	67 Vernoy Rd	Footpath
3	101	15C	11 Vernoy Rd	Footpath
7	2	15C	50 Pickle Rd	Vacant Land
7[1]	4.01	15C	254 Old Turnpike Rd	Vacant Land
7	13	15C	116 Fairmount Rd East	Vacant Land
7	13.03	15C	96 Fairmount Rd East	Vacant Land
7	23	15C	258 Old Turnpike Rd	Vacant Land
***16[1]**	**6**	**15C**	**113 Fairmount Rd East**	**Park**
16[1]	6.01	15C	5 Fox Hill Rd	Park
16	27	15C	117 Fairmount Rd East	Vacant Land
22	1	15C	16 Black River Rd	Green Acres
23	8.41	15C	5 Homestead Rd	Vacant Land
23	26.02	15C	34 Church St	Sewage Disposal
***27[1]**	**68.02**	**15C**	**169 Old Turnpike Rd**	**Garage**
29	18	15C	11 Cold Spring Rd	Forest
38	8	15C	65 Old Turnpike Rd	Park
42	2	15C	29 Vliettown Rd	Sewer Disposal
44	7	15C	45 Old Turnpike Rd	Parking Lot
***44**	**12**	**15C**	**29 Old Turnpike Rd**	**Playground**
***44[1]**	**22**	**15C**	**159 Oldwick Rd**	**Ucp/Coah**
44[1]	23	15C	149 Oldwick Rd	Sanctuary
45.01[1]	1	15C	9-02 Old Turnpike Rd	Vacant Land
45.02	49	15C	1216 Farley Rd	Vacant Land
46[1]	20	15C	15 Rockaway Rd	Sanctuary
47	14	15C	12-A Felmley Rd	Highway
47	60	15C	Interstate 78	Highway
47	61	15C	Matheson Rd	Highway
47.01[1]	47.01	15C	124 Oldwick Rd	Vacant Land
47.02	12.01	15C	Interstate 78	Highway
63	17	15C	Black River Rd	Vacant Land
6.04	4.01	15D	255 Old Turnpike Rd	Church
***6.04[1]**	**5.01**	**15D**	**253 Old Turnpike Rd**	**Church**
16	1	15D	228 Old Turnpike Rd	Church
16	2.02	15D	135 Fairmount East	Parsonage
23	41	15D	56 Old Turnpike Rd	Church
28	16	15D	110 Old Turnpike Rd	Home Handicap Childr
40	2	15D	5 James St	Storage Bldg.
42	1	15D	18 Miller Ave	Community Center
44	10	15D	35 Old Turnpike Rd	Parsonage
16	26	15F	93 Fairmount Rd East	Green Acres
28	13.01	15F	118 Old Turnpike Rd	Green Acres
28	27	15F	42 Fox Hill Rd	Green Acres

29	8.021	15F	27 Fox Hill Rd	Green Acres
29	10.04	15F	17 Palatine Rd	Green Acres
30	3	15F	45 Fox Hill Rd	Green Acres
30	4.01	15F	51 Fox Hill Rd	Green Acres
30	5	15F	61 Fox Hill Rd	Green Acres
38	7.01	15F	83 Old Turnpike Rd	Barn
***44**	**11**	**15F**	**31 Old Turnpike Rd**	**Commuity Center**
50.01	1	15F	80 Vliettown Rd	Green Acres

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

[1]Only a portion of the parcel is within the study area

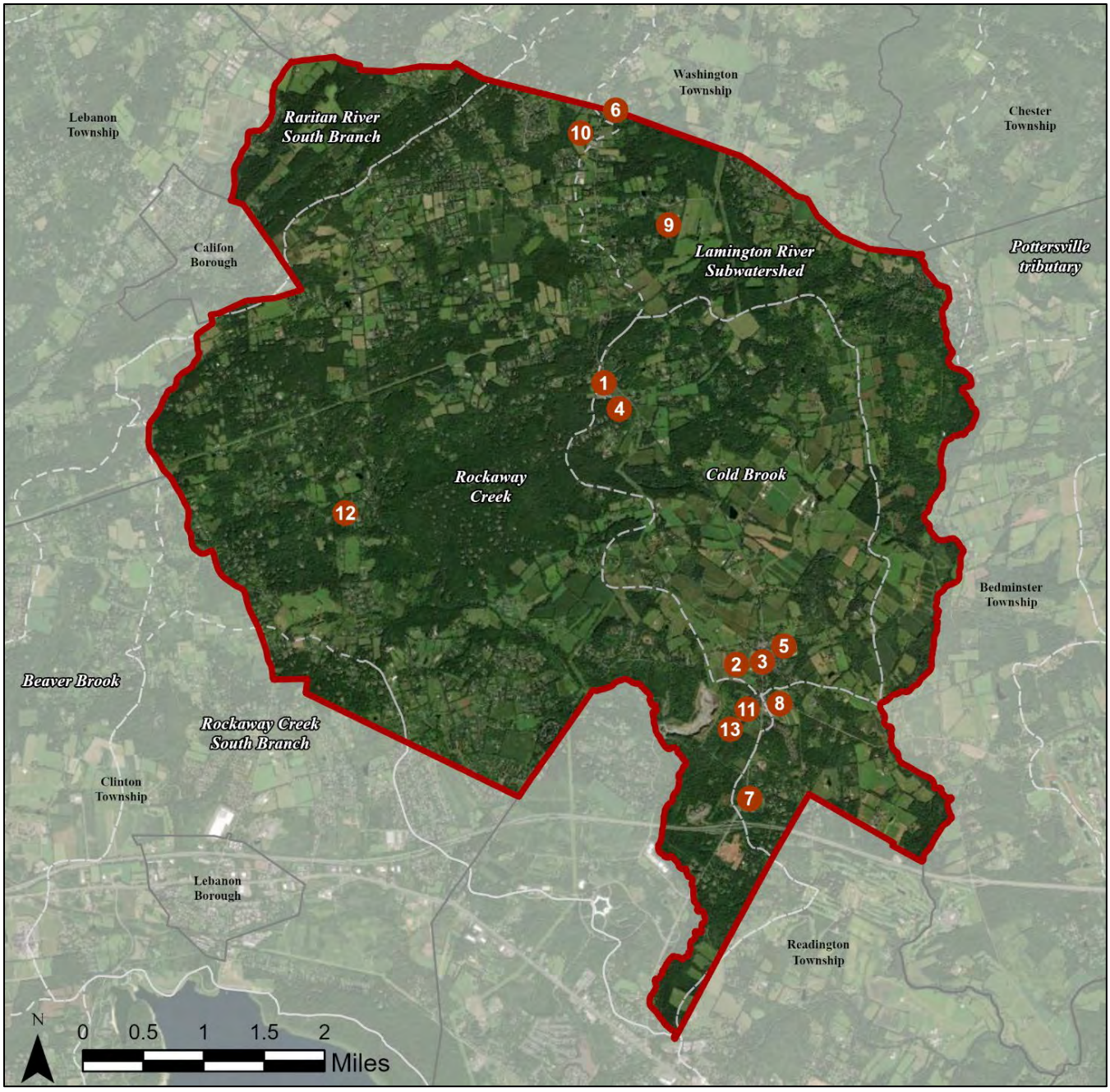


Figure 12: Sites with Green Infrastructure Opportunities in Tewksbury Township

OLD TURNPIKE MIDDLE SCHOOL

RAP ID: 1

Subwatershed: Cold Brook

Site Area: 997,124 sq. ft.

Address: 171 Old Turnpike Road
Tewksbury, NJ 07830

Block and Lot: Block 27, Lot 68.01

Two rain gardens can be installed adjacent to the entrance of the building and in the turfgrass south of the building to capture, treat, and infiltrate rooftop runoff. A section of parking spaces can be converted to pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
21	212,600	10.2	107.4	976.1	0.166	5.83

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	0.143	24	18,304	0.81	1,375	$6,875
Pervious pavement	0.449	75	9,073	0.40	3,080	$77,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Old Turnpike Middle School

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

0 50' 100'

OLDWICK PARK

RAP ID: 2

Subwatershed: Cold Brook

Site Area: 528,992 sq. ft.

Address: 31 Old Turnpike Road
Whitehouse Station, NJ 07830

Block and Lot: Block 44, Lot 12

A cistern can be installed on the southern side of the building near a downspout to capture stormwater from the roof. The water can then be used for watering gardens, washing vehicles, or for other non-potable uses. Four downspout planter boxes can be constructed along the building to allow roof runoff to be reused. 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"
11	59,764	2.9	30.2	274.4	0.047	1.64

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Planter boxes	n/a	3	n/a	n/a	4	$4,000
Rainwater harvesting	0.033	6	995	0.12	995 (gal)	$1,990

GREEN INFRASTRUCTURE RECOMMENDATIONS

Oldwick Park

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

0 20' 40'

TEWKSBURY TOWNSHIP LIBRARY

RAP ID: 3

Subwatershed: Cold Brook

Site Area: 27,235 sq. ft.

Address: 31 Old Turnpike Road
Whitehouse Station, NJ
08889

Block and Lot: Block 44, Lot 11

Two rain gardens can be used to capture, treat, and infiltrate rooftop runoff. A downspout planter box can be constructed along the building to allow roof runoff to be captured and reused. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
49	13,271	0.6	6.7	60.9	0.010	0.36

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.020	3	1,459	0.06	195	$975
Planter box	n/a	1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tewksbury Township Library

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

0 10' 20'

TEWKSBURY TOWNSHIP MUNICIPAL BUILDINGS

RAP ID: 4

Subwatershed: Cold Brook

HUC14 ID: 02030105050060

Site Area: 417,784 sq. ft.

Address: 167 County Road 517
Califon, NJ 07830

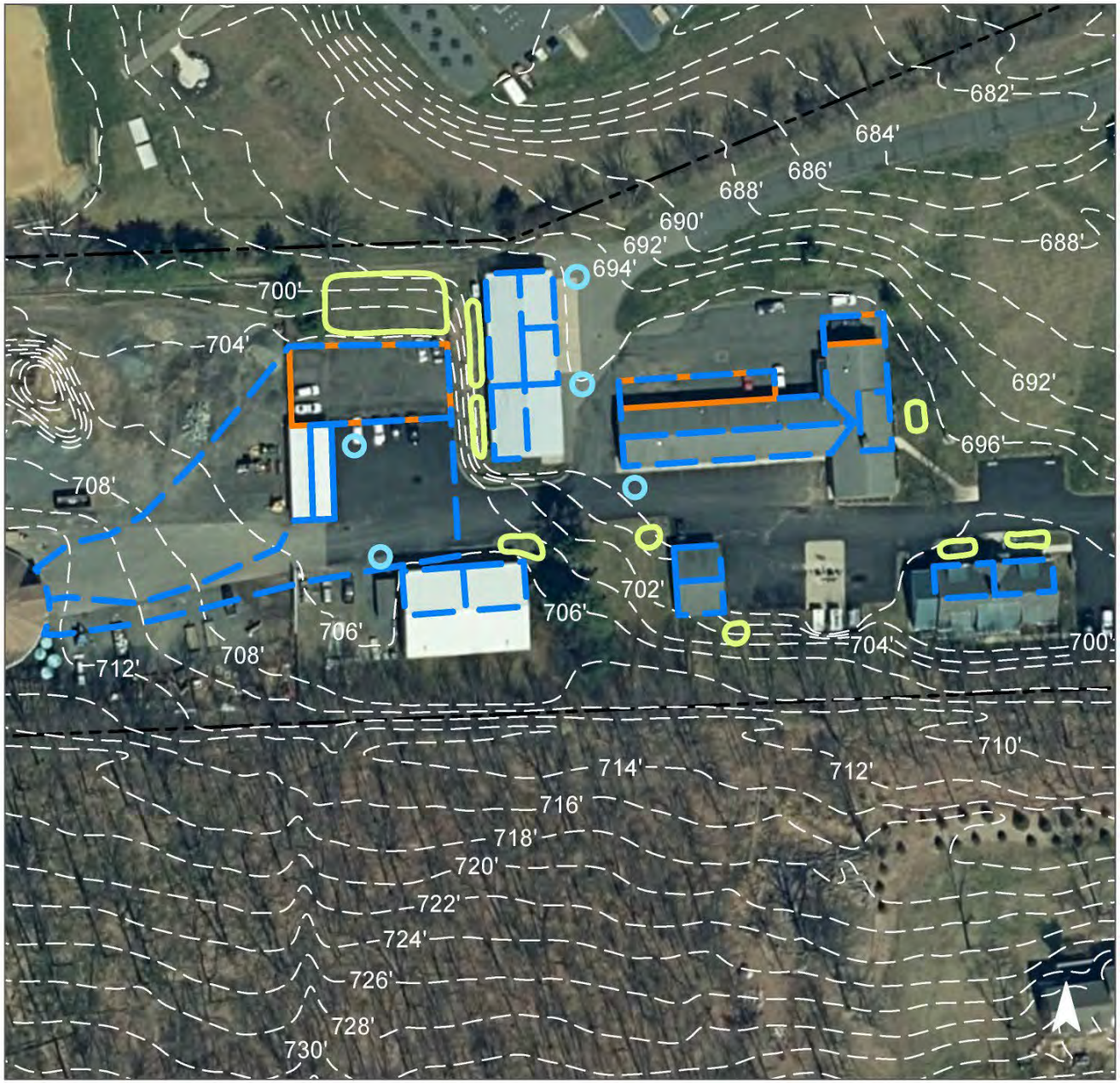
Block and Lot: Block 27, Lot 68.02

Rain gardens can be installed in multiple locations around the property to capture, treat, and infiltrate stormwater runoff from the rooftops. Most of these will require downspout disconnection and redirection. A rain garden can be installed to the northwest of the property to capture, treat, and infiltrate runoff from the asphalt. A trench drain will be needed. Cisterns can be installed near multiple buildings to divert and detain runoff from the rooftops via downspouts for non-potable future use, such as washing vehicles or watering the landscaping vegetation. The police vehicle parking lot and sections of existing parking spots can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt and the rooftops. This will require downspout disconnections. 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 49.4"
48	201,148	9.7	101.6	923.5	0.157	6.19

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	19,455	0.569	86	39,010	1.47	4,865	$48,650
Pervious pavement	24,455	0.715	106	49,030	1.84	7,795	$194,875
Rainwater harvesting	6,390	0.187	29	5,200	0.20	5,200 (gal)	$15,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tewksbury Township Municipal Buildings

- bioretention system
- pervious pavement
- rainwater harvesting
- captured drainage area
- property line
- 2017 - 2018 USGS Lidar: NW New Jersey 6 County

0 50' 100'

ZION LUTHERAN CHURCH

RAP ID: 5

Subwatershed: Cold Brook

Site Area: 104,636 sq. ft.

Address: 18 Miller Avenue
Oldwick, NJ 08858

Block and Lot: Block 42, Lot 1

Two rain gardens can be installed in the turfgrass areas adjacent to the building to capture, treat, and infiltrate stormwater runoff from the roof. Another rain garden can be installed in a parking lot island to capture, treat, and infiltrate 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"
44	46,252	2.2	23.4	212.4	0.036	1.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.103	17	4,421	0.19	995	$4,975

GREEN INFRASTRUCTURE RECOMMENDATIONS

Zion Lutheran Church

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

0 20' 40'

FAIRMOUNT UNITED METHODIST CHURCH

RAP ID: 6

Subwatershed: Lamington River

Site Area: 56,952 sq. ft.

Address: 253 Old Turnpike Road
Califon, NJ 07830

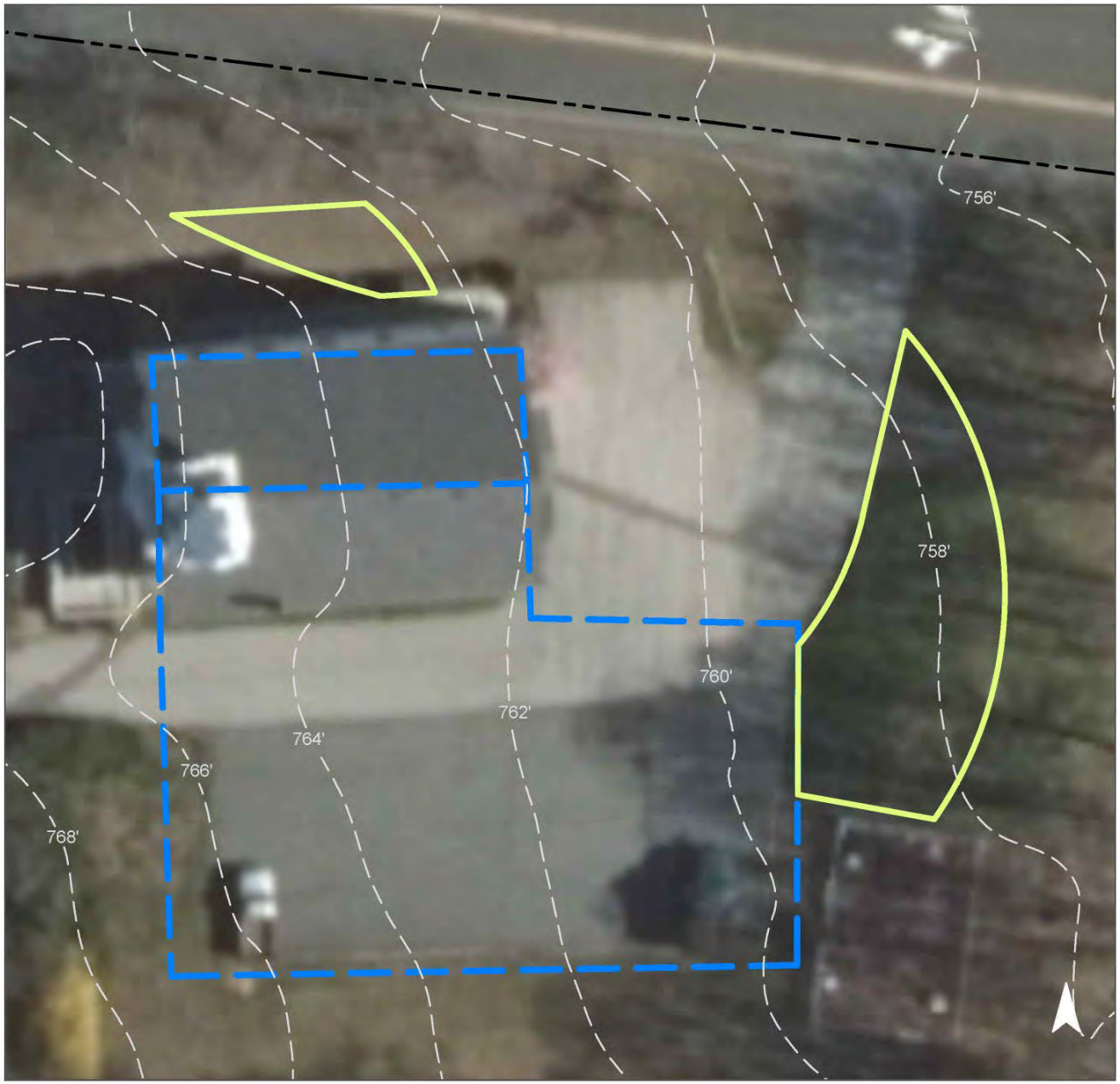
Block and Lot: Block 16, Lot 1,2.012

Rain gardens can be installed on the north side of the building and on the turfgrass area east of the parking lot to capture, treat, and infiltrate stormwater runoff from the roof. 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"
54	30,764	1.5	15.5	141.2	0.024	0.84

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	0.322	54	24,385	1.07	3,090	$15,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Fairmount United Methodist Church

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

0 15' 30'

OLDWICK ANIMAL HOSPITAL

RAP ID: 7

Subwatershed: Lamington River

Site Area: 44,718 sq. ft.

Address: 130 Oldwick Road
Whitehouse Station, NJ
08889

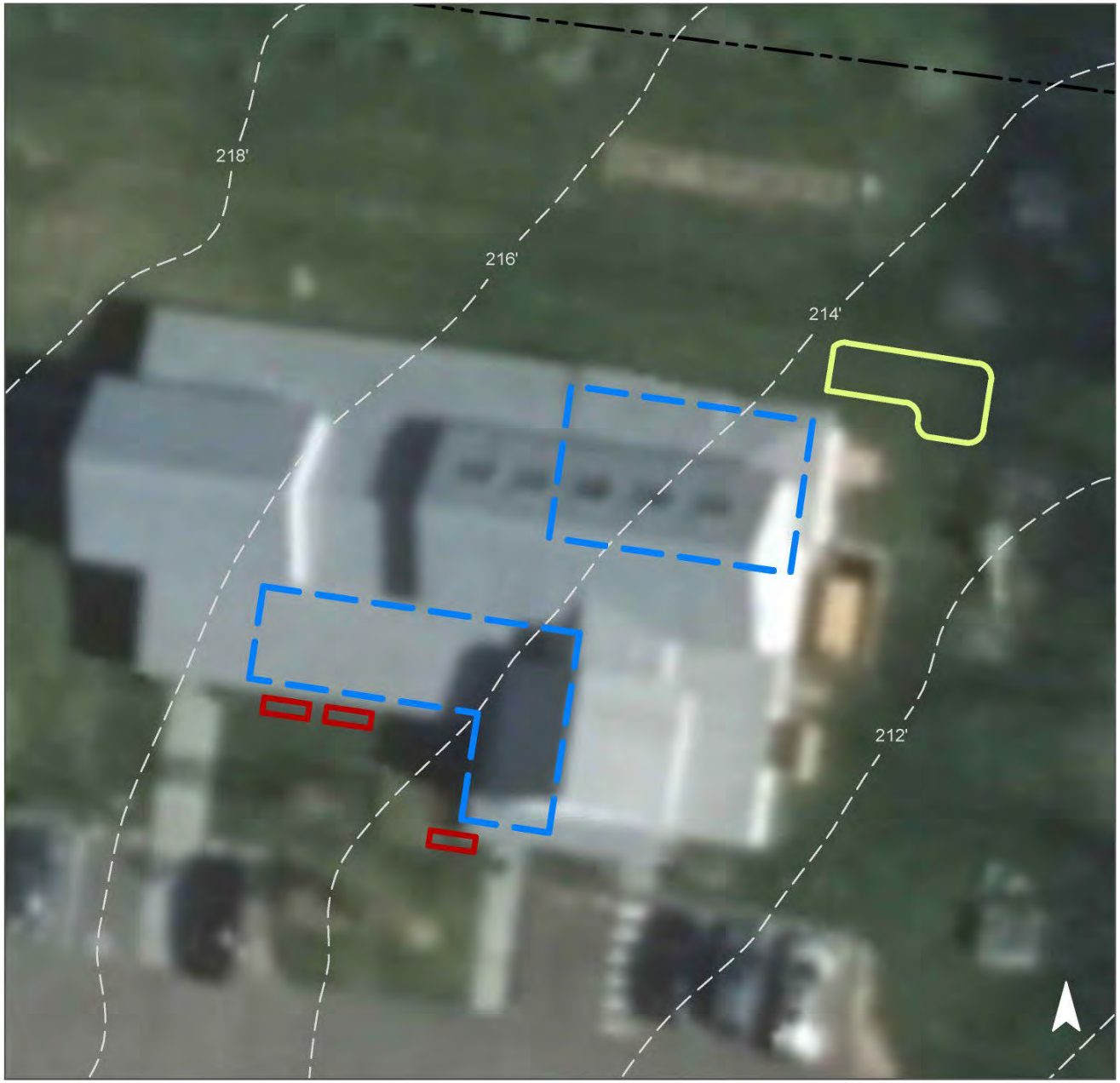
Block and Lot: Block 45, Lot 28

A rain garden can be installed in the turfgrass area to capture, treat, and infiltrate stormwater runoff from the roof. Downspout planter boxes can be constructed along the building to allow roof runoff to be captured and reused. 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"
61	27,479	1.3	13.9	126.2	0.021	0.75

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.017	3	741	0.03	165	$825
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oldwick Animal Hospital

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

0 10' 20'

OLDWICK POST OFFICE

RAP ID: 8

Subwatershed: Lamington River

Site Area: 21,980 sq. ft.

Address: 174 Lamington Road
Oldwick, NJ 08858

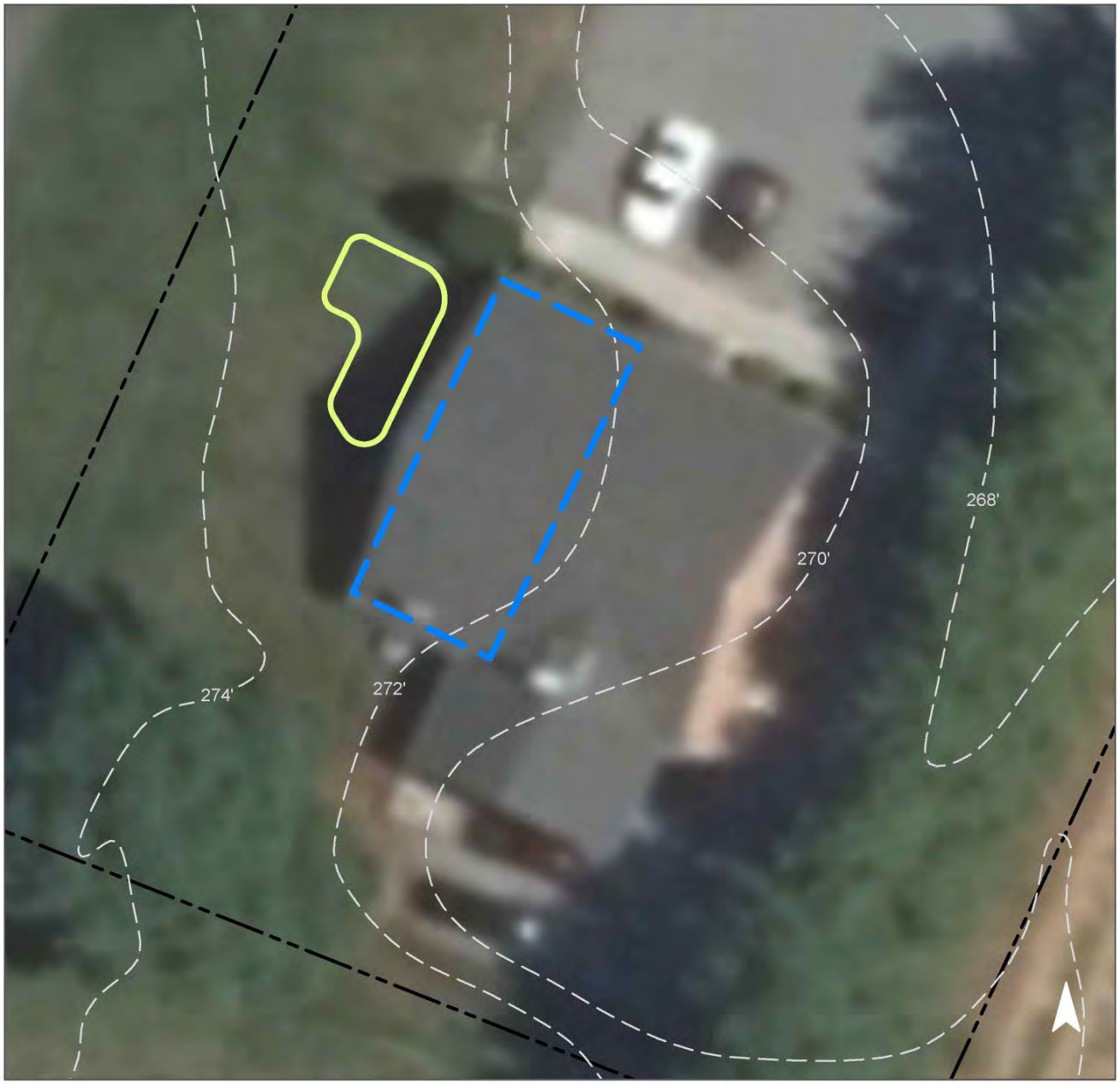
Block and Lot: Block 45, Lot 1.01

A rain garden can be installed on the west side of the building to capture, treat, and infiltrate stormwater runoff from the roof. 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	9,842	0.5	5.0	45.2	0.008	0.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.024	4	1,825	0.07	225	$1,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oldwick Post Office

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

0 10' 20'

TEWKSBURY ELEMENTARY SCHOOL

RAP ID: 9

Subwatershed: Lamington River

Site Area: 5,952,026 sq. ft.

Address: 109 Fairmount Road East
Whitehouse Station, NJ
08889

Block and Lot: Block 16, Lot 6

A rain garden can be installed in the turfgrass area on the west side of the building and on the turfgrass area in the parking lot to capture, treat, and infiltrate stormwater runoff from the roof. Parking spaces north of the building can be replaced with pervious pavement to capture and infiltrate 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"
6	333,441	16.1	168.4	1,531.0	0.260	9.15

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	0.133	22	16,164	0.71	1,275	$6,375
Pervious pavement	0.371	62	24,662	1.08	2,540	$63,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tewksbury Elementary School

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

0 75' 150'

HAYTOWN NURSERY SCHOOL

RAP ID: 10

Subwatershed: Rockaway Creek

HUC14 ID: 02030105050080

Site Area: 131,401 sq. ft.

Address: 18 Miller Avenue
Oldwick, NJ 08858

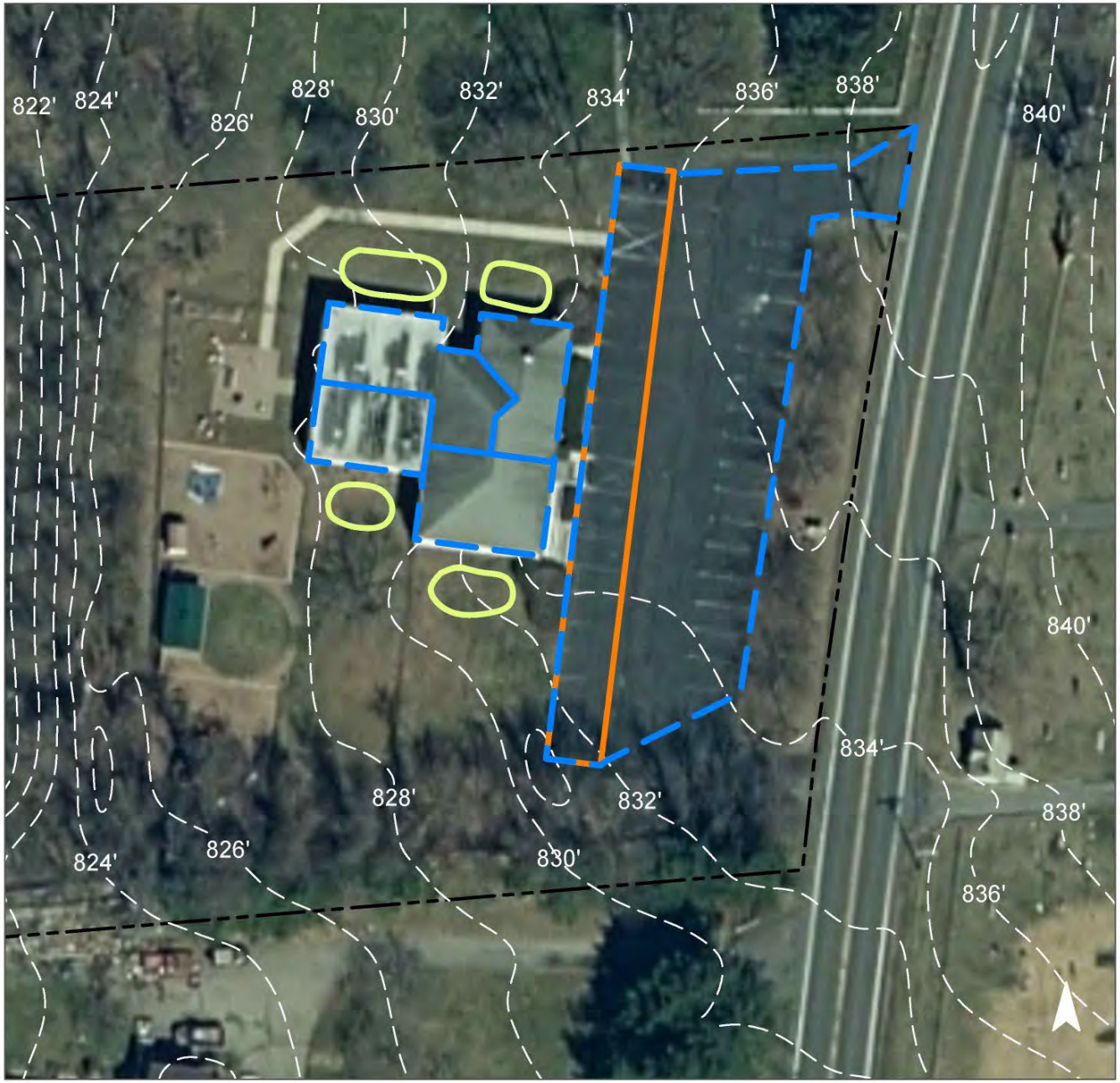
Block and Lot: Block 6.04, Lot 6.01

Rain gardens can be installed in multiple grass areas around the building to capture, treat, and infiltrate stormwater runoff from the rooftop. Downspout disconnection and redirection will be required. The existing parking spaces in the west of the lot can be converted to pervious pavement to capture and infiltrate runoff from the 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 49.4"
24	31,929	1.5	16.1	146.6	0.025	0.98

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	5,010	0.147	23	10,050	0.38	1,250	$12,500
Pervious pavement	12,400	0.363	53	24,860	0.93	3,530	$88,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Haytown Nursery School

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2017 - 2018 USGS Lidar: NW New Jersey 6 County

0 25' 50'

OLDWICK FIRE COMPANY SOCIAL HALL

RAP ID: 11

Subwatershed: Rockaway Creek

Site Area: 200,735 sq. ft.

Address: 163 Oldwick Road
Oldwick, NJ 08858

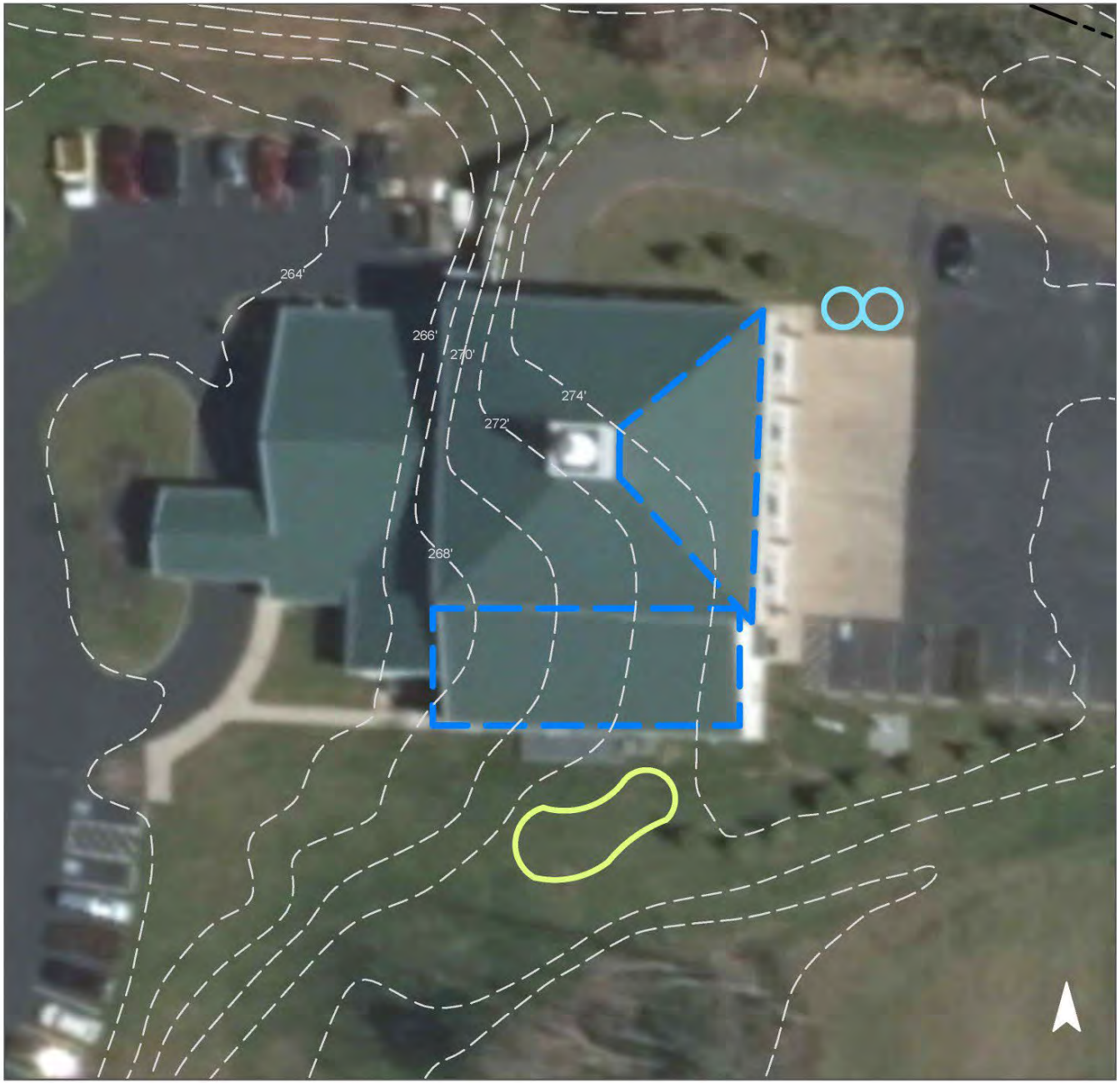
Block and Lot: Block 44, Lot 22.01

A rain garden can installed on the south side of the building to capture, treat, and infiltrate stormwater runoff from the roof. Two cisterns can be installed on the north side of the building to capture stormwater from the roof. The water can then be used for watering gardens, washing vehicles, or for other non-potable uses. 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"
31	61,279	3.0	30.9	281.4	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 system	0.065	11	4,869	0.18	625	$3,125
Rainwater harvesting	0.044	7	1,325	0.15	1,325 (gal)	$2,650

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oldwick Fire Company Social Hall

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

0 15' 30'

TEWKSBURY HISTORICAL SOCIETY

RAP ID: 12

Subwatershed: Rockaway Creek

Site Area: 35,923 sq. ft.

Address: 60 Water Street
Lebanon, NJ 08833

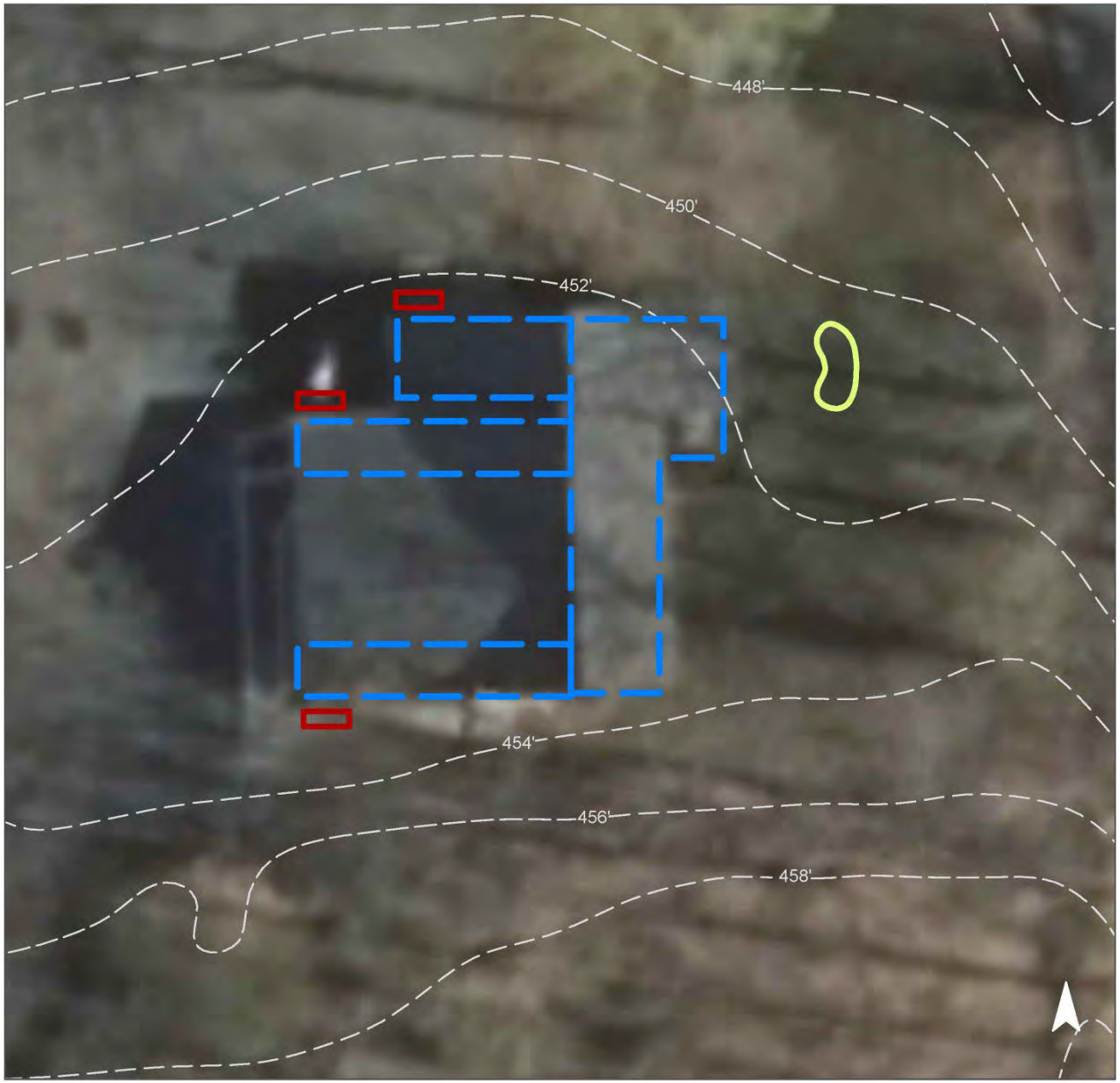
Block and Lot: Block 32, Lot 19

A rain garden can be installed in the turfgrass area on the east side of the building to capture, treat, and infiltrate stormwater runoff from the roof. Downspout planter boxes can be installed to allow roof runoff to be captured and reused. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
15	5,372	0.3	2.7	24.7	0.004	0.15

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	367	0.02	185	$925
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tewksbury Historical Society

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

0 10' 20'

THE MEADOWS AT OLDWICK

RAP ID: 13

Subwatershed: Rockaway Creek

Site Area: 2,218,965 sq. ft.

Address: 800 Fisher Road
Whitehouse Station, NJ 08889

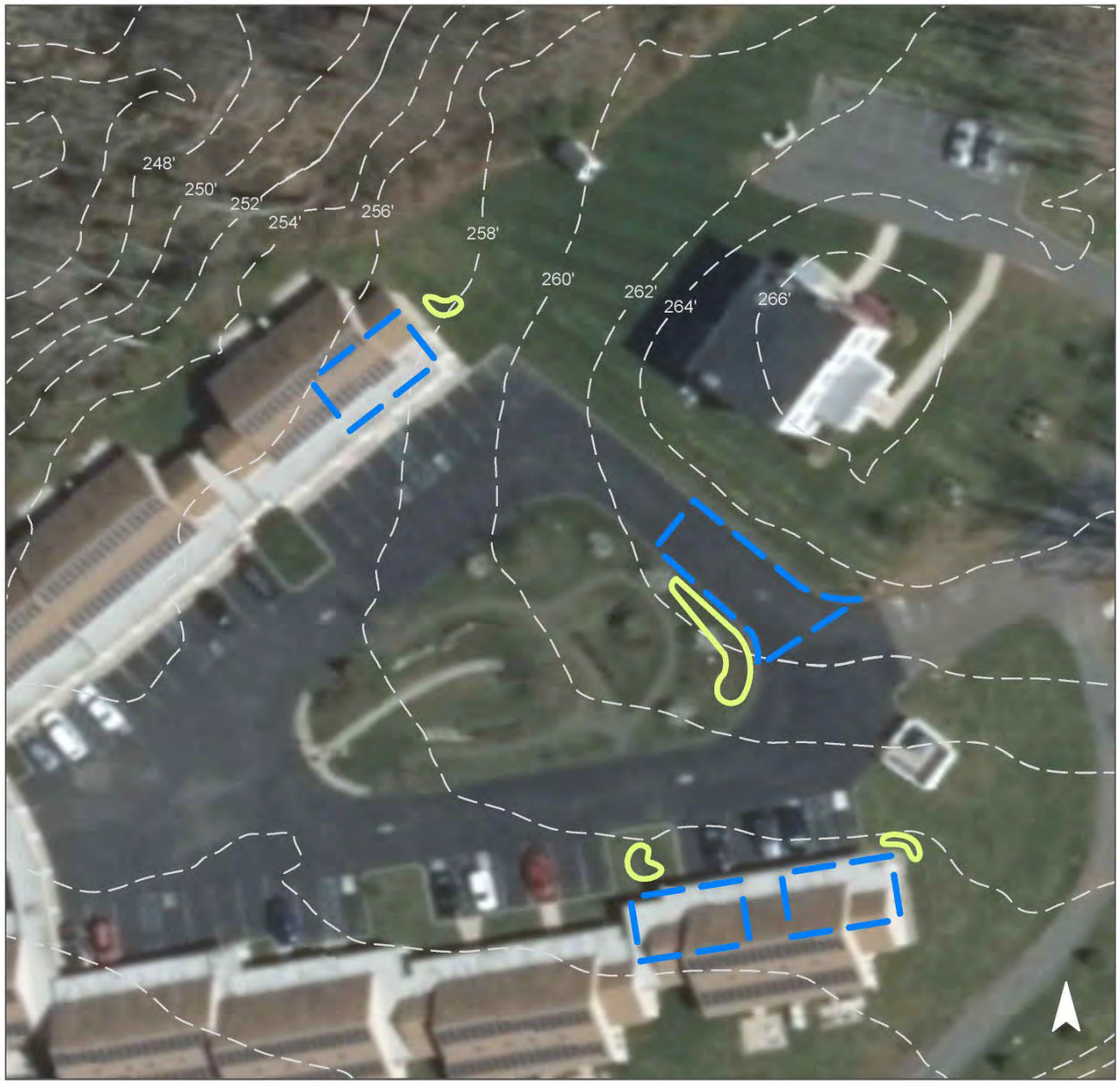
Block and Lot: Block 44, Lot 22

Multiple rain gardens can be installed in the turfgrass area adjacent to the buildings and in the center parking lot island to capture, treat, and infiltrate stormwater runoff from the roof. 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"
10	219,372	10.6	110.8	1,007.2	0.171	6.02

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	0.089	15	5,991	0.26	865	$4,325

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Meadows At Oldwick

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

0 25' 50'

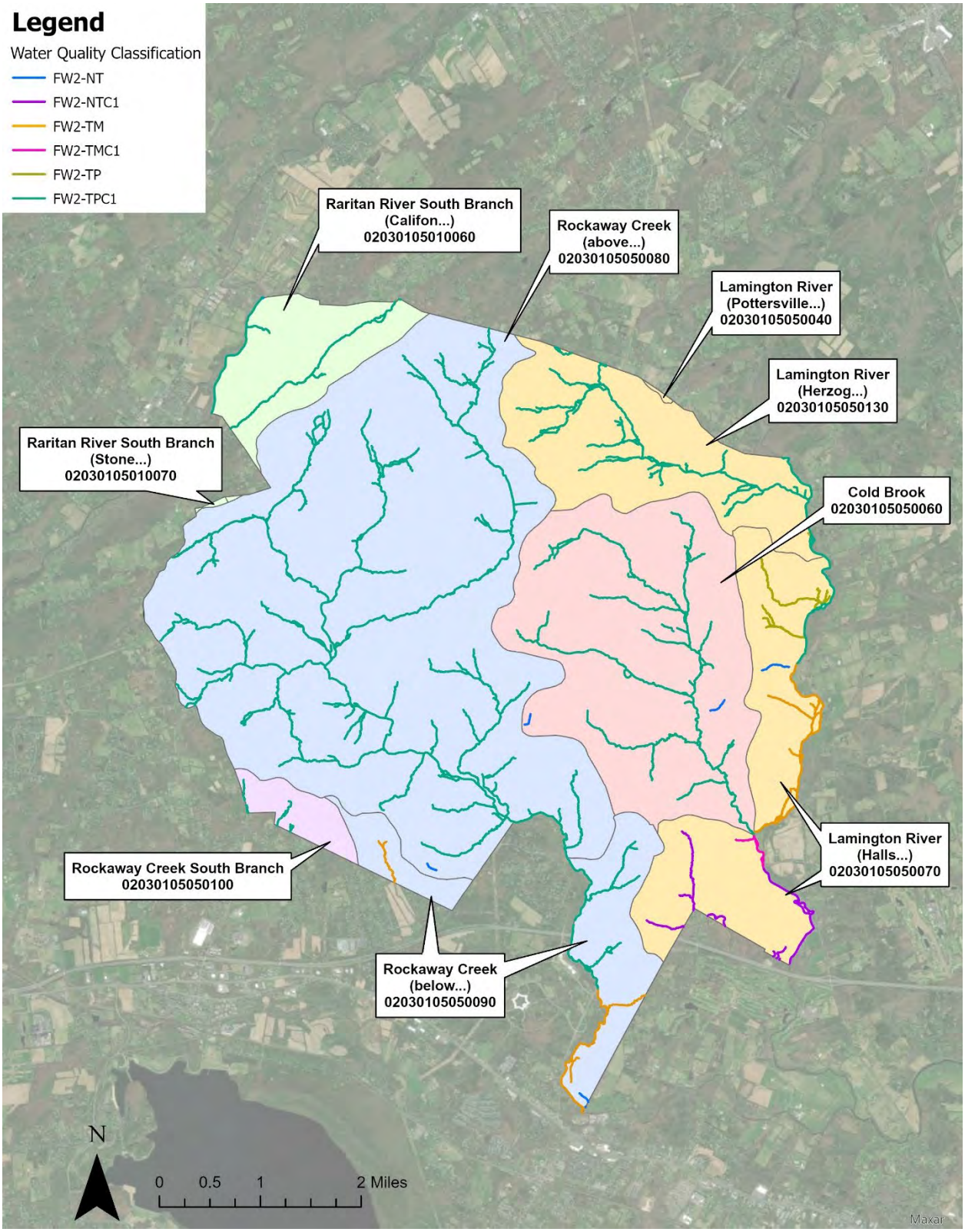


Figure 13: Water quality classification of surface waters throughout Tewksbury Township

Table 11. Water Quality Classification of Surface Waters in Tewksbury Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	0.9	0.9%
Freshwater 2, non-trout, Category One	FW2-NTC1	3.8	3.7%
Freshwater 2, trout production, Category One	FW2-TPC1	86.2	84.7%
Freshwater 2, trout maintenance	FW2-TM	7.5	7.4%
Freshwater 2, trout production	FW2-TP	2.6	2.6%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	0.7	0.7%

Washington Township

Introduction

Located in Morris County in New Jersey, Washington Township covers about 44.9 square miles. With a population of 18,197 (2020 United States Census), Washington Township consists of 30.6% of urban land uses by area. Of that urban land use, approximately 60.1% is comprised of rural residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, mixed urban, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 52.5% of Washington Township

Washington Township contains portions of thirteen subwatersheds (Table 1). There are approximately 126.1 miles of rivers and streams within the municipality; these include tributaries to Beatty's Brook, Drakes Brook and its tributaries, Electric Brook and its tributaries, Frog Hollow Brook, tributaries to Hollow Brook, Lamington River and its tributaries, Mine Brook and its tributaries, Musconetcong River and its tributaries, North Branch Rockaway Creek and its tributaries, Rhinehart Brook and its tributaries, Schooley's Mountain Brook and its tributaries, South Branch Raritan River and its tributaries, Spruce Run and its tributaries, Stephensburg Brook and its tributaries, Stony Brook and its tributaries, Tanners Brook and its tributaries, Teetertown Brook and its tributaries, Trout Brook and its tributaries, Turtleback Brook and its tributaries, and several uncoded tributaries. Washington Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 1 (Upper Delaware) and 8 (North and South Branch Raritan)

Table 1: Subwatersheds of Washington Township

Subwatershed	HUC14
Drakes Brook (below Eyland Avenue)	02030105010020
Raritan River South Branch (74d 44m 15s to Route 46)	02030105010040
Raritan River South Branch (Long Valley bridge to 74d 44m 15s)	02030105010050
Raritan River South Branch (Califon bridge to Long Valley)	02030105010060
Spruce Run (above Glen Gardner)	02030105020010
Lamington River (Furnace Road to Hillside Road)	02030105050030

Lamington River (Potterville gage to Furnace Road)	02030105050040
Rockaway Creek (above McCrea Mills)	02030105050080
Lamington River (Herzog Brook to Pottersville gage)	02030105050130
Mine Brook (Morris County)	02040105150090
Musconetcong River (Trout Brook to Saxton Falls)	02040105150100
Musconetcong River (Hances Brook through Trout Brook)	02040105160010
Musconetcong River (Changewater to Hances Brook)	02040105160020

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Washington Township. 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 Washington Township'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 Washington Township in relation to the study area. Figure 2 shows the portions of the thirteen HUC14s in Washinton Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Washinton Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Washinton Township and is presented in Table 2. Figure 4 shows the impervious cover in Washinton Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Washington Township 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 without vegetative shoreline buffers were identified in Washington Township within the study area.

The Q-Farms in Washington Township 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 Washington Township 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 4,723.4 acres of agricultural land use in Washington Township, of which, 3,729.3 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 341 Q-Farms and portions of four Q-Farms in the study area portion of Washington Township, totaling 7,994.7 acres. Within the 341 Q-Farms and portions of four Q-Farms, there are approximately 3,161.6 acres of agricultural land use. Aerial photography (see Figure 9) 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, recommendations for the agricultural lands in the study area in Washington Township are presented in Table 8.

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. Seven HUC14s are in the study area (02030105010020, 02030105010040, 02030105010050, 02030105010060, 02030105050030, 02030105050040, 02030105050130). Within these seven HUC14s, there are 297.7 acres of building and 487.7 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 Washington Township, approximately 37.2 acres of rooftop runoff would be managed with 7.44 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Washington Township, approximately 48.8 acres of roadway would be managed or about fourteen 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 Washington Township are shown in Figure 10 and presented in Table 9. 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 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. Fifteen of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 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 six classifications that apply to the streams in Washington Township. Figure 13 depicts the water quality classification of surface waters throughout Washington Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality

Areas Prone to Flooding

An administrator from Washington Township has identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. Spruce Lane has been observed to experience large volumes of runoff that come from Naughright Road. East and West Mill Road have been reported to experience flooding from the intersection of Schooley's Mountain Road, heading west towards Middle Valley Road. The intersection of Naughright Road and Bartley Road and the intersection of Bartley Road and Four Bridges Road also often have reports of flooding after heavy rainfall. Figure 14 shows the locations of the aforementioned areas of concern.

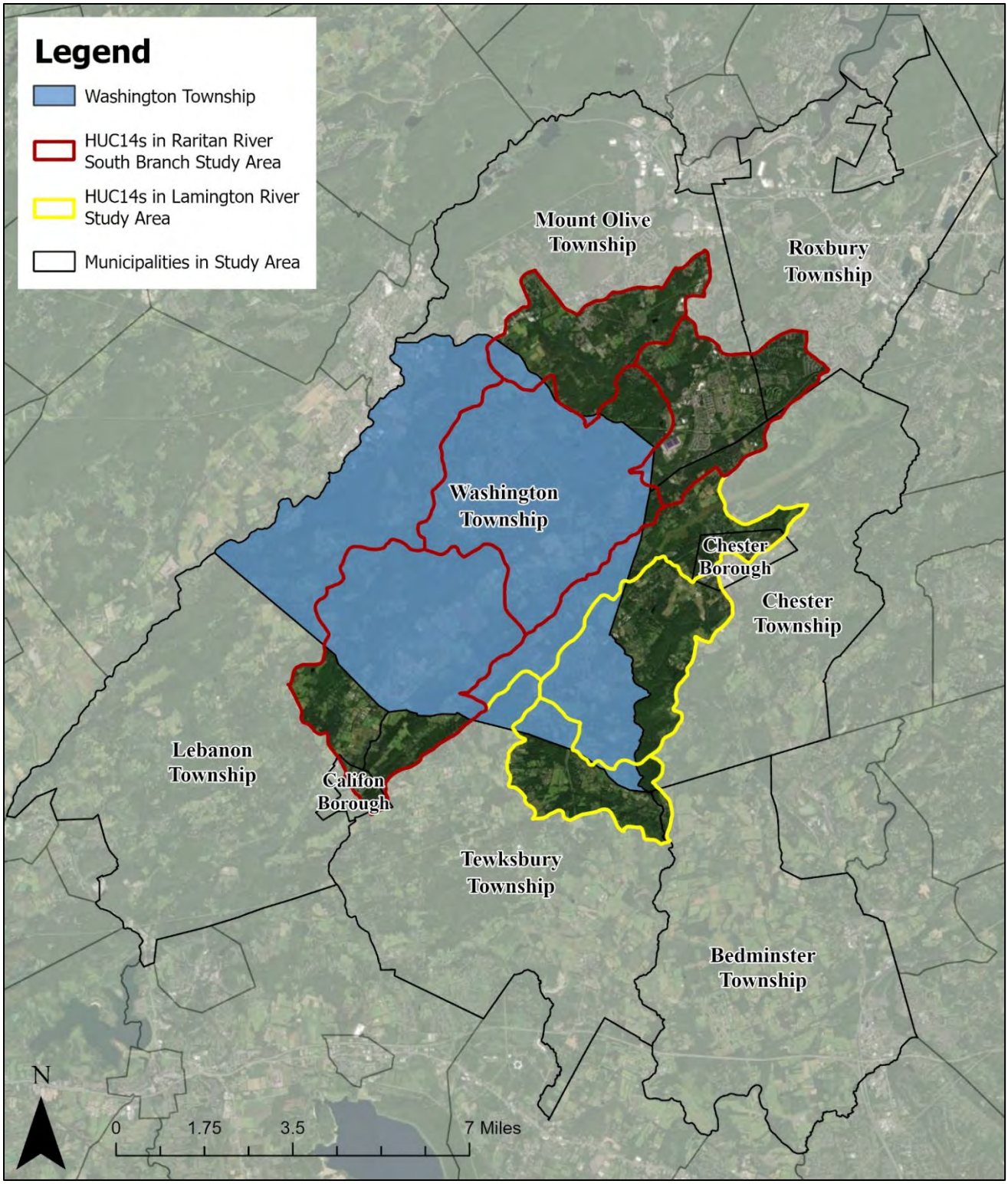


Figure 1: Municipalities in the Study Area

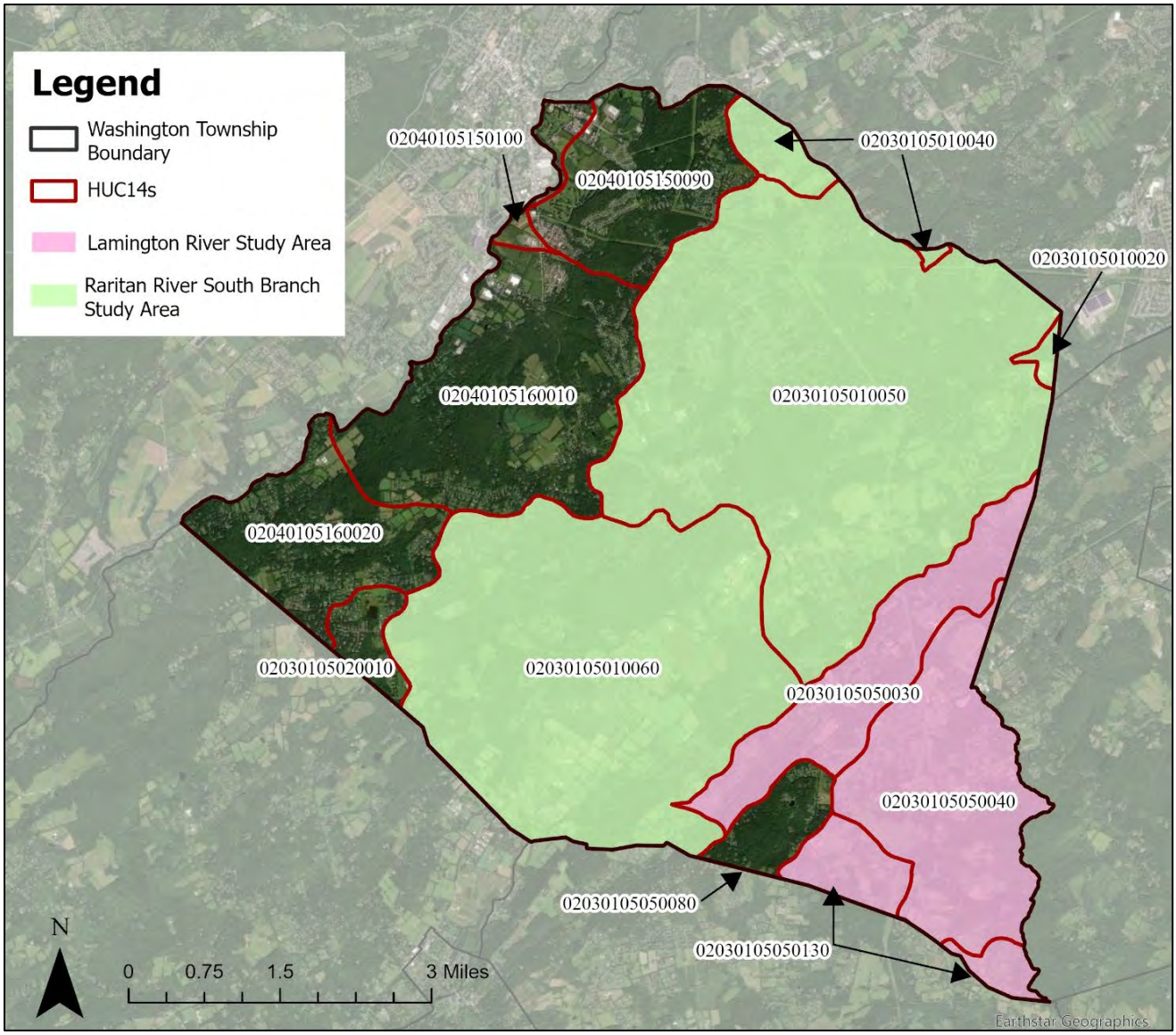


Figure 2: Portions of thirteen HUC14s are in Washington Township

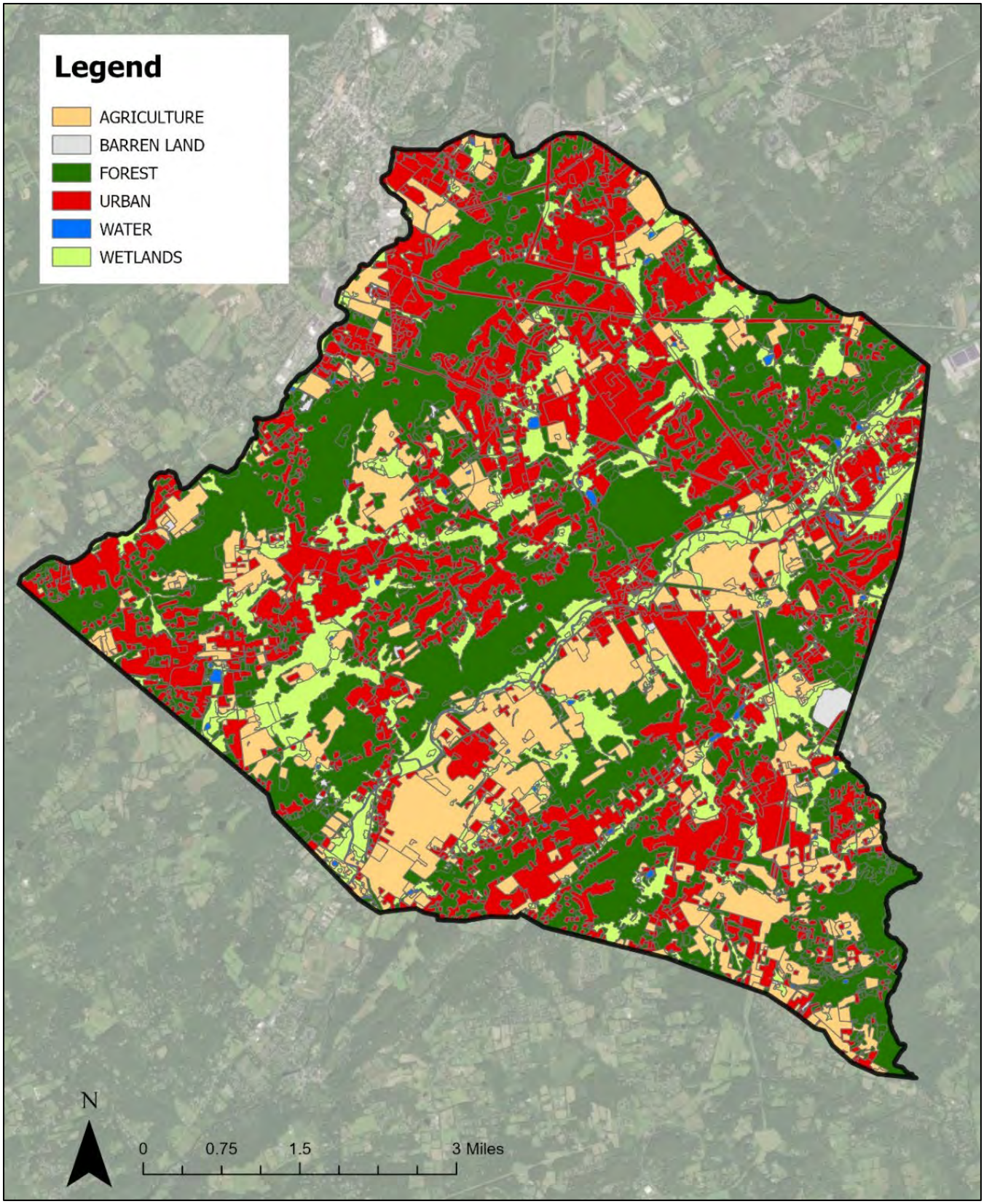


Figure 3: Land Use in Washington Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Washington Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010020				
Agriculture	2.2	2.9	22.2	666.5
Barren Land	0.0	0.0	0.0	0.0
Forest	16.3	1.6	49.0	653.4
Urban	34.8	48.8	522.4	4,876.1
Water	3.3	0.3	9.8	131.0
Wetlands	25.1	2.5	75.2	1,002.7
TOTAL =	**81.7**	**56.1**	**678.7**	**7,329.7**
02030105010040				
Agriculture	111.4	144.8	1,113.6	33,409.5
Barren Land	0.0	0.0	0.0	0.0
Forest	87.8	8.8	263.4	3,511.6
Urban	147.4	206.3	2,210.5	20,631.2
Water	2.1	0.2	6.3	84.7
Wetlands	29.6	3.0	88.9	1,184.8
TOTAL =	**378.3**	**363.0**	**3,682.7**	**58,821.7**
02030105010050				
Agriculture	971.2	1,262.6	9,712.2	291,365.2
Barren Land	10.4	5.2	51.9	622.7
Forest	3,026.3	302.6	9,079.0	121,052.9
Urban	3,088.7	4,324.1	46,330.0	432,413.0
Water	85.8	8.6	257.3	3,431.2
Wetlands	1,576.1	157.6	4,728.2	63,042.3
TOTAL =	**8,758.4**	**6,060.7**	**70,158.5**	**911,927.2**
02030105010060				
Agriculture	1,633.6	2,123.7	16,335.9	490,075.8
Barren Land	15.1	7.5	75.3	903.8
Forest	2,379.6	238.0	7,138.9	95,185.0
Urban	1,421.1	1,989.5	21,316.1	198,950.0
Water	58.9	5.9	176.6	2,355.0
Wetlands	1,142.4	114.2	3,427.2	45,696.3
TOTAL =	**6,650.6**	**4,478.8**	**48,470.0**	**833,166.0**
02030105020010				
Agriculture	42.0	54.6	419.6	12,589.2
Barren Land	0.0	0.0	0.0	0.0
Forest	89.2	8.9	267.5	3,566.6
Urban	150.4	210.6	2,256.6	21,061.9
Water	10.4	1.0	31.3	418.0
Wetlands	60.5	6.1	181.6	2,421.7

TOTAL =	**352.6**	**281.2**	**3,156.7**	**40,057.4**
02030105050030				
Agriculture	168.5	219.0	1,684.9	50,545.9
Barren Land	3.3	1.6	16.3	195.2
Forest	641.9	64.2	1,925.8	25,678.0
Urban	596.4	834.9	8,945.6	83,492.0
Water	13.4	1.3	40.1	534.2
Wetlands	248.3	24.8	744.9	9,932.3
TOTAL =	**1,671.7**	**1,145.9**	**13,357.5**	**170,377.6**
02030105050040				
Agriculture	616.6	801.6	6,166.4	184,991.3
Barren Land	66.6	33.3	332.8	3,993.4
Forest	1,056.5	105.7	3,169.6	42,260.7
Urban	625.1	875.1	9,376.1	87,510.3
Water	16.1	1.6	48.2	642.6
Wetlands	202.7	20.3	608.0	8,106.3
TOTAL =	**2,583.5**	**1,837.5**	**19,701.0**	**327,504.7**
02030105050080				
Agriculture	25.5	33.2	255.0	7,651.2
Barren Land	1.6	0.8	7.9	94.5
Forest	253.4	25.3	760.2	10,136.1
Urban	145.1	203.1	2,176.0	20,309.0
Water	2.7	0.3	8.2	108.7
Wetlands	73.2	7.3	219.7	2,929.3
TOTAL =	**501.5**	**270.0**	**3,426.9**	**41,228.9**
02030105050130				
Agriculture	225.8	293.5	2,257.6	67,727.8
Barren Land	0.0	0.0	0.0	0.0
Forest	271.2	27.1	813.6	10,848.5
Urban	150.2	210.2	2,252.5	21,023.6
Water	2.7	0.3	8.2	109.4
Wetlands	23.5	2.4	70.5	940.7
TOTAL =	**673.4**	**533.5**	**5,402.5**	**100,649.9**
02040105150090				
Agriculture	142.3	185.0	1,423.2	42,696.5
Barren Land	1.3	0.6	6.3	75.5
Forest	751.3	75.1	2,254.0	30,052.7
Urban	782.5	1,095.5	11,737.1	109,546.1
Water	4.6	0.5	13.7	183.2
Wetlands	92.2	9.2	276.6	3,688.2
TOTAL =	**1,774.2**	**1,365.9**	**15,710.9**	**186,242.3**
02040105150100				
Agriculture	59.1	76.8	590.5	17,716.4

Barren Land	3.4	1.7	16.8	201.4
Forest	14.8	1.5	44.3	590.4
Urban	137.6	192.7	2,064.5	19,268.8
Water	7.9	0.8	23.6	314.4
Wetlands	17.1	1.7	51.3	684.5
TOTAL =	**239.8**	**275.1**	**2,791.0**	**38,776.0**
02040105160010				
Agriculture	521.4	677.9	5,214.3	156,430.0
Barren Land	11.4	5.7	57.2	685.9
Forest	1,644.3	164.4	4,932.8	65,770.6
Urban	874.8	1,224.7	13,121.8	122,470.3
Water	23.1	2.3	69.4	925.7
Wetlands	300.8	30.1	902.3	12,030.4
TOTAL =	**3,375.8**	**2,105.1**	**24,297.8**	**358,313.0**
02040105160020				
Agriculture	203.9	265.0	2,038.6	61,158.6
Barren Land	3.6	1.8	18.1	217.7
Forest	671.5	67.2	2,014.5	26,860.5
Urban	640.7	897.0	9,610.5	89,697.7
Water	9.9	1.0	29.8	396.9
Wetlands	155.3	15.5	466.0	6,213.0
TOTAL =	**1,684.9**	**1,247.5**	**14,177.5**	**184,544.4**
All HUCs				
Agriculture	4,723.4	6,140.4	47,234.1	1,417,024.0
Barren Land	116.5	58.3	582.5	6,990.2
Forest	10,904.2	1,090.4	32,712.5	436,167.1
Urban	8,794.6	12,312.5	131,919.6	1,231,249.9
Water	240.9	24.1	722.6	9,634.9
Wetlands	3,946.8	394.7	11,840.4	157,872.4
TOTAL =	**28,726.4**	**20,020.4**	**225,011.9**	**3,258,938.5**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Washington Township 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 Washington Township. Based upon the NJDEP impervious surface data, Washington Township has impervious cover totaling 7.8%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Washington Township 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, Washington Township's impervious cover percentage would suggest that its waterways are primarily sensitive and most likely preventing degradation of the state's surface water quality standards.

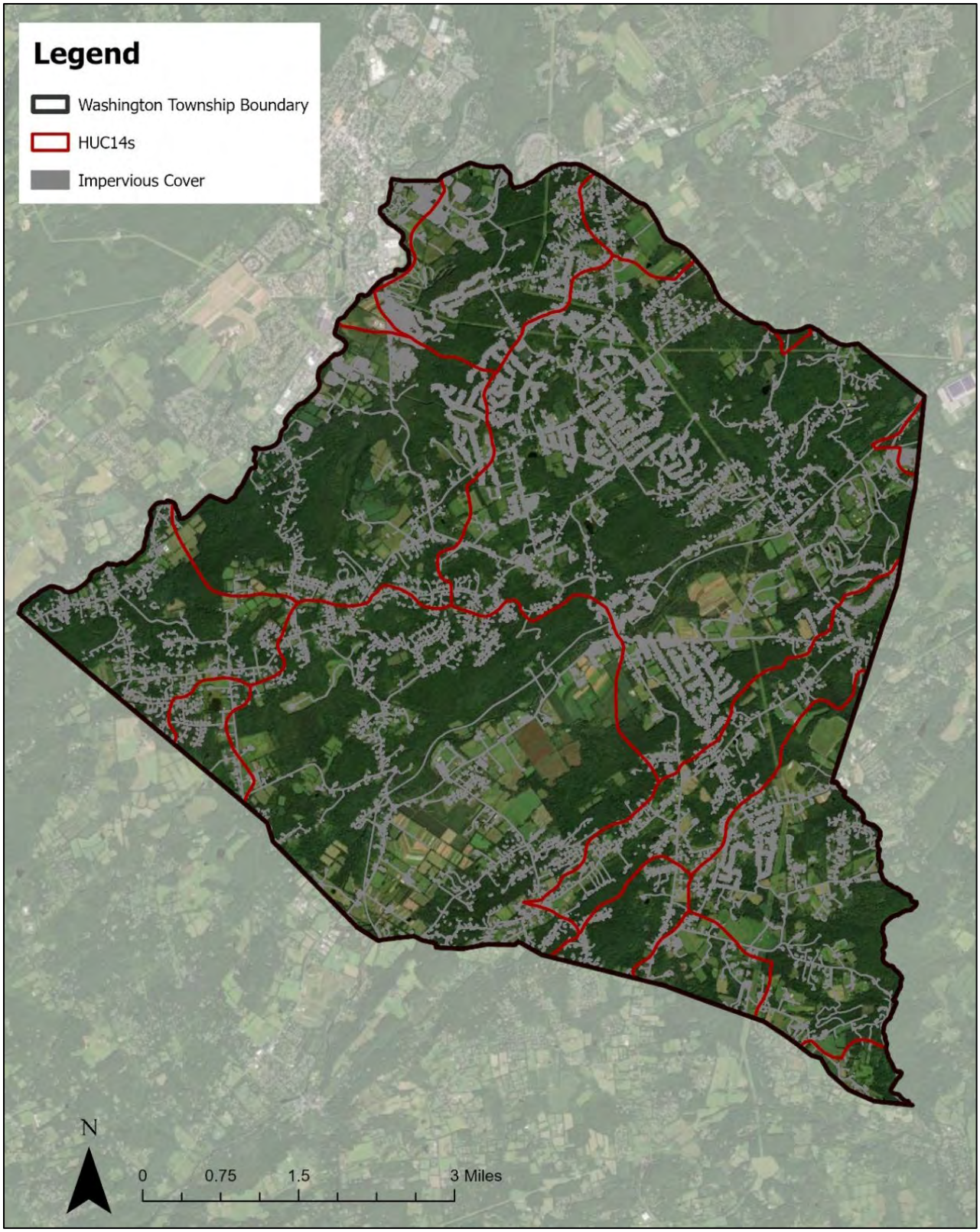


Figure 4: Impervious Cover in Washington Township

Table 3: Impervious Cover Analysis by HUC14 for Washington Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010020		
Building	3.62	
Other	9.68	
Road	1.11	
TOTAL =	**14.4**	**17.6%**
02030105010040		
Building	7.02	
Other	14.89	
Road	10.84	
TOTAL =	**32.7**	**8.7%**
02030105010050		
Building	154.76	
Other	369.41	
Road	272.81	
TOTAL =	**797.0**	**9.1%**
02030105010060		
Building	68.83	
Other	193.54	
Road	97.36	
TOTAL =	**359.7**	**5.4%**
02030105020010		
Building	6.83	
Other	12.48	
Road	9.82	
TOTAL =	**29.1**	**8.3%**
02030105050030		
Building	26.72	
Other	78.95	
Road	38.90	
TOTAL =	**144.6**	**8.6%**
02030105050040		
Building	30.47	
Other	88.75	
Road	52.45	
TOTAL =	**171.7**	**6.6%**
02030105050080		
Building	6.84	
Other	18.55	
Road	8.06	
TOTAL =	**33.5**	**6.7%**
02030105050130		
Building	6.24	
Other	22.89	
Road	14.28	
TOTAL =	**43.4**	**6.4%**

02040105150090		
Building	50.18	
Other	103.35	
Road	67.60	
TOTAL =	**221.1**	**12.5%**
02040105150100		
Building	7.07	
Other	25.19	
Road	13.25	
TOTAL =	**45.5**	**19.0%**
02040105160010		
Building	54.22	
Other	108.61	
Road	73.43	
TOTAL =	**236.3**	**7.0%**
02040105160020		
Building	24.30	
Other	55.71	
Road	37.23	
TOTAL =	**117.2**	**7.0%**
All HUCs		
Building	447.09	
Other	1,102.00	
Road	697.13	
TOTAL =	**2,246.2**	**7.8%**

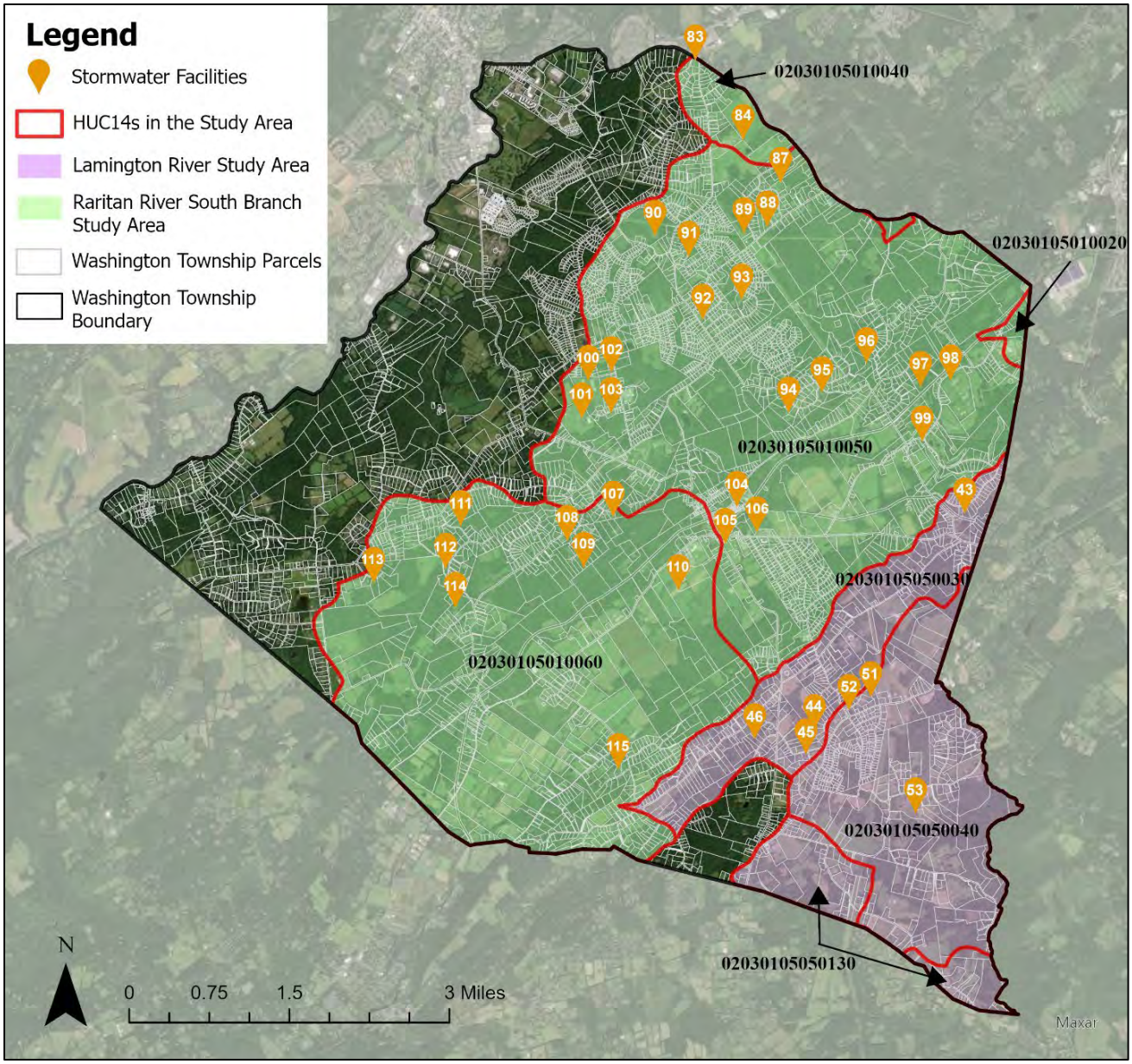


Figure 5: Stormwater Facilities in the Study Area of Washington Township

Table 4: Location of Stormwater Facilities in the Study Area of Washington Township

Lamington River Study Area		
ID	**Address**	**Type**
43	12 Ridgeline Dr	N
44	5 Jordan Ct	N
45	3 Ryan Ct	D
46	10 Wolfe Run Ct	RB
51	9 Liberty Hills Ct	N
52	3 Liberty Hills Ct	D
53	Hacklebarney Rd	N
Raritan River South Branch Study Area		
ID	**Address**	**Type**
83	41 Yorkshire Dr	D
84	Naughright Rd	N
87	9 Bristol Ter	D
88	Bentley Way	N
89	5 Thomas Farm Ln	N
90	Spring Ln	I
91	10 Belrose Ct	N
92	Amherst Dr	N
93	26 Wellington Dr	D
94	20 Ranney Rd	N
95	38 Ranney Rd	N
96	16 Squire Hill Rd	N
97	14 Stony Brook Rd	N
98	209 Bartley Rd	D
99	Bartley/Chancellor	N
100	79 Rock Rd	D
101	79 Rock Rd	N
102	Briarwood Rd	N
103	Blackberry Pl	N
104	Fairview Ave/Welsh Farm	RB
105	Fairview Ave/Welsh Farm	RB
106	62 East Mill Rd	N
107	34 Harvest Ln	N
108	4 Rice Ln	N
109	10 Allyson Ct	N
110	W Mill Rd	D
111	1 Lenore Ct	N
112	7 Indian Run Rd	N
113	9 Stonebriar Dr	N
114	3 High Meadow Ln	N

115	3 Shenandoah Ct	N

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

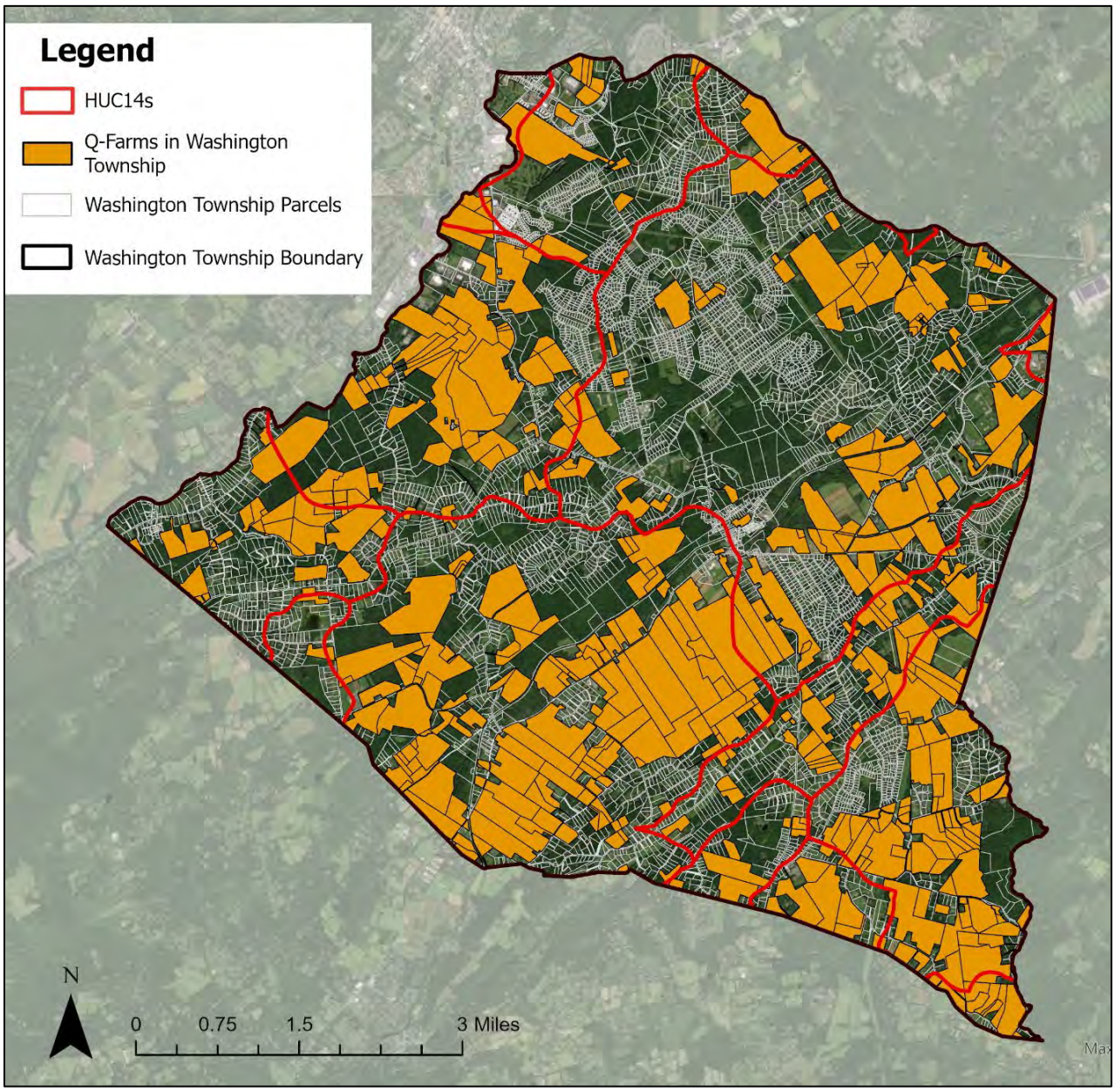


Figure 6: Q-Farm Parcels in Washington Township

Table 5: Q-Farm Parcels in Washington Township

Block	Lot	Q-Code	Prop Class	Location
*54	19	Q0030	3B	384 Penwell Road
*20	2	Q0132	3B	46 Fairmount Rd East
*20	7	Q0154	3B	355 Black River Rd
54	23.01	Q0156	3B	205 Old Turnpike Road
3	15	QFARM	3B	East Ave
3.10	3	QFARM	3B	Route 46
8	9.01	QFARM	3B	Route 46
8	6.04	QFARM	3B	Drakestown Rd
8	6.03	QFARM	3B	Drakestown Rd
8	6.02	QFARM	3B	51 Drakestown Rd
8	9.02	QFARM	3B	Route 46
9	25.02	QFARM	3B	Reservoir Rd
9	26	QFARM	3B	Reservoir Rd
9	14.01	QFARM	3B	Drakestown Rd
9	14	QFARM	3B	169 Drakestown Rd
11	28	QFARM	3B	Spring Ln
12	37.03	QFARM	3B	Naughright Rd
12	4	QFARM	3B	Drakestown Rd
12	5.01	QFARM	3B	299 Drakestown Rd
12.01	53	QFARM	3B	Naughright Rd
12.01	59	QFARM	3B	220 Flocktown Rd
12.01	52	QFARM	3B	Naughright Rd
12.01	60.03	QFARM	3B	97 Heritage Ct
12.05	3	QFARM	3B	Bristol Ter
13	10.01	QFARM		498 Keltz Ln
13	11	QFARM		498 Keltz Ln
13	60	QFARM	3B	Flocktown Rd
13	63.01	QFARM	3B	Flocktown Rd
13	7	QFARM	3B	Fairview Ave
13	10	QFARM		Keltz Ln
13	1	QFARM	3B	Flocktown Rd
13	12	QFARM	3B	46 Jones Ln
13	12.01	QFARM	3B	Jones Ln
13	8	QFARM	3B	255 Keltz Ln
13	64	QFARM	3B	Flocktown Rd
14	9.02	QFARM	3B	8 Laketown Rd
14	9	QFARM	3B	10 Laketown Rd
14	9	QFARM	3B	10 Laketown Rd
14	11	QFARM	3B	Fairview Ave
14	4	QFARM	3B	Laketown Rd
14	6	QFARM	3B	14 Laketown Rd

14	8	QFARM	3B	14 Laketown Rd
14	7	QFARM	3B	14 Laketown Rd
14	5	QFARM	3B	Fairview Ave
14	2.01	QFARM	3B	145 N Four Bridges Rd
15	20.24	QFARM	3B	26 Naughright Rd
15	13.01	QFARM	3B	2 Elizabeth Ln
15	25	QFARM	3B	14 Laketown Rd
15	4	QFARM	3B	59 N Four Bridges Rd
15	5	QFARM	3B	59 N Four Bridges Rd
16	14	QFARM	3B	250 Bartley Rd
16	21	QFARM	3B	98 N Four Bridges Rd
16	2	QFARM	3B	503 Drakestown Rd
16	20.03	QFARM	3B	98 N Four Bridges Rd
16	4	QFARM	3B	515 Drakestown Rd
16	22	QFARM	3B	98 N Four Bridges Rd
17	6	QFARM	3B	679 Bartley Rd
17	7	QFARM	3B	Bartley Rd
*17	31.01	QFARM	3B	20 Schoolhouse Ln
18	29	QFARM	3B	169 Bartley Rd
18	27.05	QFARM	3B	169 Bartley Rd
18	8.12	QFARM	3B	169 Bartley Rd
18	5	QFARM	3B	S Four Bridges Rd
18.01	19	QFARM	3B	Coleman’s Rd
19	5	QFARM	3B	451 Schooleys Mtn Rd
19	7	QFARM	3B	430 Schooleys Mtn Rd
19	4	QFARM	3B	481 Schooleys Mountain Rd
19	3	QFARM	3B	481 Schooleys Mountain Rd
20	46	QFARM	3B	Schooleys Mtn Rd
20	50	QFARM	3B	Flocktown Rd
20	72	QFARM	3B	264 Heath Vlg
20	80	QFARM	3B	Whitehouse Rd
20	79	QFARM	3B	Knob Hill Rd
20	22	QFARM	3B	Flocktown Rd
20	46.01	QFARM	3B	Flocktown Rd
20	46.02	QFARM	3B	Flocktown Rd
20	80.01	QFARM	3B	1A Knob Hill Rd
20.09	19	QFARM	3B	Flocktown Rd
20.10	44	QFARM	3B	Flocktown Rd
21	2	QFARM	3B	Schooleys Mtn Rd
22	20	QFARM	3B	232 Schooleys Mtn Rd
22	28	QFARM	3B	Schooleys Mtn Rd
22	27	QFARM	3B	43 Flocktown Rd
22	28.02	QFARM	3B	43 Flocktown Rd
22	2.05	QFARM	3B	91 Rock Rd

22	27.01	QFARM	3B	Flocktown Rd
22	28.01	QFARM	3B	51 Flocktown Rd
25	66.01	QFARM	3B	214 Fairview Ave
25	53.09	QFARM		Schooleys Mountain Rd
27	9	QFARM	3B	Fairview Ave
28	17.03	QFARM	3B	94 E Mill Rd
28	16.01	QFARM	3B	98 E Mill Rd
28	17.02	QFARM	3B	74 E Mill Rd
28	18	QFARM	3B	74 E Mill Rd
28	14	QFARM	3B	98 E Mill Rd
28	11	QFARM	3B	Bartley Rd
28	63	QFARM	3B	195 Fairview Ave
28	4.01	QFARM	3B	Naughright Rd
28	4	QFARM	3B	Naughright Rd
28	15	QFARM	3B	Bartley Rd
28	16.02	QFARM	3B	Bartley Rd
28	16	QFARM	3B	98 E Mill Rd
28	63.01	QFARM	3B	195 Fairview Ave
29	10.13	QFARM	3B	14 Beaver Brook Dr
29	19	QFARM	3B	E Mill Rd
29	20	QFARM	3B	98 E Mill Rd
29	13	QFARM	3B	E Mill Rd
29	18	QFARM	3B	Bartley Rd
29	2	QFARM	3B	Coleman’s Rd
29	18.01	QFARM	3B	E Mill Rd
30	40	QFARM	3B	Pleasant Grove Rd
30	34.01	QFARM	3B	Pleasant Grove Rd
30	34	QFARM	3B	Pleasant Grove Rd
30	52.01	QFARM	3B	Kings Hwy
30	35	QFARM	3B	Slikers Rd
30	38	QFARM	3B	Slikers Rd
30	23	QFARM	3B	Schooleys Mtn Rd
30	65.02	QFARM	3B	Kings Hwy
30	65.01	QFARM	3B	Kings Hwy
30	22	QFARM	3B	Schooleys Mtn Rd
30	71	QFARM	3B	5 Esna Dr
30	71.01	QFARM	3B	5 Esna Dr
30	71.03	QFARM	3B	5 Esna Dr
30	21	QFARM	3B	Esna Dr
30	34.03	QFARM	3B	Pleasant Grove Rd
30	61	QFARM	15F	Kings Hwy
30	60	QFARM	15F	Kings Hwy
30	71.04	QFARM	3B	7 Esna Dr
30	22.02	QFARM	3B	349 Schooleys Mtn Rd

30	66	QFARM	3B	Kings Hwy
30	22.03	QFARM	3B	349 Schooleys Mtn Rd
30.01	3	QFARM	3B	Pleasant Grove Rd
30.02	47.12	QFARM	3B	15 Cobblestone Ln Fl
31	14.08	QFARM	3B	62 Wehrli Rd
31	13.21	QFARM	3B	201 Schooleys Mtn Rd
31	13.23	QFARM	3B	Schooleys Mtn Rd
31	13	QFARM	3B	Schooleys Mtn Rd
32	5	QFARM	3B	180 W Springtown Rd
32.02	3	QFARM	3B	128 Zellers Rd
32.02	1	QFARM	3B	Zellers Rd
32.02	2	QFARM	3B	128 Zellers Rd
33	82.04	QFARM	3B	2 Zellers Rd
33	82.02	QFARM	3B	38 Middle Valley Rd
33	71.02	QFARM		W Mill Rd
33	83.12	QFARM	3B	48 Zellers Rd
33	83.13	QFARM	3B	Zellers Rd
33	66	QFARM	3B	186 W Mill Rd
33	61	QFARM	3B	144 W Mill Rd
33	71.03	QFARM	3B	274 W Mill Rd
33	71.05	QFARM	2	276 W Mill Rd
33	86	QFARM	3B	180 W Springtown Rd
33	51	QFARM	3B	W Mill Rd
33	59.02	QFARM	3B	21 James Trl
33	6.06	QFARM		Schooleys Mountain Rd
33	6.07	QFARM	3B	111 Schooleys Mtn Rd
33	1	QFARM	3B	Schooleys Mtn Rd
33	70	QFARM	3B	248 W Mill Rd
33	71	QFARM	3B	W Mill Rd
33	70.04	QFARM	3B	248 W Mill Rd
33	70.02	QFARM	3B	248 W Mill Rd
33	102	QFARM	3B	160 W Mill Rd
33	60	QFARM	3B	160 W Mill Rd
33	103	QFARM	3B	160 W Mill Rd
33	59.01	QFARM	3B	21 James Trl
33	59	QFARM	3B	21 James Trl
33	65	QFARM	3B	162 W Mill Rd
33	67	QFARM	3B	214 W Mill Rd
33	68	QFARM	3B	248 W Mill Rd
33	69	QFARM	3B	234 W Mill Rd
33	69.02	QFARM	3B	248 W Mill Rd
33	84	QFARM	3B	180 W Springtown Rd
34	35.04	QFARM	3B	100 Beacon Hill Rd
34	27	QFARM	3B	21 Sierra Dr

34	25.11	QFARM	3B	94 W Valley Brook Rd
34	23	QFARM	3B	76 W Valley Brook Rd
34	23.01	QFARM	3B	W Valley Brook Rd
34	23.02	QFARM	3B	W Valley Brook Rd
34	35	QFARM	3B	100 Beacon Hill Rd
34	8	QFARM	3B	18 W Valley Brook Rd
34	37.15	QFARM	3B	Winchester Dr
34	11.04	QFARM	3B	40 W Valley Brook Rd
34	13.01	QFARM	3B	24 Highland Ave
34	38	QFARM	3B	255 W Mill Rd
34	40	QFARM	3B	W Mill Rd
34	44	QFARM	3B	W Mill Rd
34	42	QFARM	3B	177 W Mill Rd
34	13.02	QFARM	3B	W Valley Brook Rd
34	28	QFARM	3B	W Mill Rd
34	15	QFARM	3B	W Valley Brook Rd
34	29	QFARM	3B	W Mill Rd
34	36	QFARM	3B	100 Beacon Hill Rd
34	37	QFARM	3B	Beacon Hill Rd
34	13.03	QFARM	3B	W Valley Brook Rd
34	13	QFARM	3B	99 W Mill Rd Bldg 22
34	11.01	QFARM	3B	W Valley Brook Rd
34	45	QFARM	3B	W Mill Rd
34	46.02	QFARM	3B	177 W Mill Rd
34	39	QFARM	3B	248 W Mill Rd
34	41	QFARM	3B	177 W Mill Rd
34	43	QFARM	3B	99 W Mill Rd
34	46.01	QFARM	3B	99 W Mill Rd
34	50	QFARM	3B	25 W Mill Rd
34	1.01	QFARM	3B	Fairmount Rd
34	46	QFARM	3B	99 W Mill Rd Bldg 22
34	50.01	QFARM	3B	W Mill Rd
34.01	3	QFARM	3B	152 Beacon Hill Rd
35	4	QFARM	3B	E Valley Brook Rd
35	8	QFARM	3B	Fairmount Rd
35	6	QFARM	3B	Fairmount Rd
36	25	QFARM	3B	66B Old Farmers Rd
36	24	QFARM	3B	86 E Valley Brook Rd
36	8	QFARM	3B	152 E Valley Brook Rd
36	12	QFARM	3B	138 E Valley Brook Rd
36	41	QFARM	3B	98 E Mill Rd
36	46	QFARM		E Mill Rd
36	21	QFARM	3B	E Valley Brook Rd
36	20	QFARM	3B	E Valley Brook Rd

36	19	QFARM	3B	E Valley Brook Rd
36	17	QFARM	3B	E Valley Brook Rd
36	44	QFARM	3B	E Mill Rd
36	43	QFARM	3B	115 E Mill Rd
36	4	QFARM	3B	168 E Valley Brook Rd
36	3	QFARM	3B	E Valley Brook Rd
36	53.03	QFARM	3B	193A E Mill Rd
37	26.03	QFARM	3B	193 Parker Rd
37	26.04	QFARM	3B	193 Parker Rd
37	34.17	QFARM	3B	14 Liberty Hills Ct
37	26	QFARM	3B	193 Parker Rd
37	30	QFARM	3B	245 Parker Rd
37	25	QFARM	3B	E Valley Brook Rd
37	17	QFARM	3B	E Valley Brook Rd
37	22	QFARM	3B	E Valley Brook Rd
37	16.02	QFARM	3B	Parker Rd
37	27	QFARM	3B	245 Parker Rd
37	28	QFARM	3B	E Valley Brook Rd
37	38	QFARM	3B	55 E Valley Brook Rd
37	29	QFARM	3B	116 Parker Rd
37	15.01	QFARM	3B	Parker Rd
37	23.02	QFARM	3B	E Valley Brook Rd
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37	4	QFARM	3B	E Valley Brook Rd
38	10	QFARM	3B	E Fox Hill Rd
38	11	QFARM	3B	E Fox Hill Rd
38	3.13	QFARM	3B	157 Parker Rd
38	2	QFARM	3B	83 Old Farmers Rd
38	10.01	QFARM	3B	E Fox Hill Rd
38	15.04	QFARM	3B	Fairmount Rd
38	9	QFARM	3B	50 E Fox Hill Rd
38	9.01	QFARM	3B	E Fox Hill Rd
39	5	QFARM	3B	10 W Fox Hill Rd
39	9	QFARM	3B	18 W Valley Brook Rd
40	6.01	QFARM	3B	316 Fairmount Rd
40	26	QFARM	3B	Fairmount Rd
40	25.01	QFARM	3B	316 Fairmount Rd
40	26.03	QFARM	3B	310 Fairmount Rd
41.01	29	QFARM	3B	13 Apgar Rd
42	13	QFARM		226 Old Farmers Rd
42	11.01	QFARM	3B	72 Hacklebarney Rd
42	3	QFARM	3B	210 Parker Rd
42	5	QFARM	3B	Parker Rd
42	14.03	QFARM	3B	50 Hacklebarney Rd

42	14.01	QFARM	3B	212 Old Farmers Rd
42	14.04	QFARM	3B	52 Hacklebarney Rd
42	12.11	QFARM	3B	9 Krista Ct
42	2.01	QFARM	3B	Parker Rd
42	11.02	QFARM	3B	74 Hacklebarney Rd
42	11.03	QFARM	3B	Hacklebarney Rd
42.03	1	QFARM	3B	116 Hacklebarney Rd
*42.03	23	QFARM	3B	128 Hacklebarney Rd
43	48.22	QFARM	3B	232 Pleasant Grove Rd
43	56	QFARM	3B	60 Stephensburg Rd
43	57	QFARM	3B	Stephensburg Rd
43	72	QFARM	3B	Fishers Mine Rd
43	68	QFARM	3B	Fishers Mine Rd
43	62.05	QFARM	3B	Stephensburg Rd
43	73	QFARM		Fisher Mine Rd
43	67	QFARM	3B	Fishers Mine Rd
43	47.09	QFARM	3B	55 Kings Hwy
43	75	QFARM	3B	Fishers Mine Rd
43	74.01	QFARM	3B	Fishers Mine Rd
43	101	QFARM	3B	15 Old Turnpike Rd
43	66	QFARM		Old Turnpike Rd
43	33.01	QFARM		Kings Hwy
43	33	QFARM	3B	Kings Hwy
43	84	QFARM	3B	86 River Rd
43	32	QFARM	3B	Kings Hwy
43	29	QFARM	3B	181 Kings Hwy
43	62.03	QFARM	3B	88 Stephensburg Rd
43	59	QFARM	3B	80 Stephensburg Rd
43	55.01	QFARM	3B	Stephensburg Rd
43	61	QFARM	3B	80 Stephensburg Rd
43	58	QFARM	3B	80 Stephensburg Rd
43	62	QFARM	3B	Stephensburg Rd
43	74	QFARM	3B	50 Fishers Mine Rd
43	30	QFARM	3B	167 Kings Hwy
43	48.29	QFARM		Kings Hwy
43	54	QFARM	3B	16 Fishers Mine Rd
46	6.01	QFARM	3B	Pleasant Grove Rd
46	3	QFARM	3B	50 N Mt Lebanon Rd
46	15	QFARM	3B	Old Turnpike Rd
46	1.04	QFARM	3B	4 Shannon Mtn Ln Fl
46	6	QFARM	3B	370 Pleasant Grove Rd
46	8	QFARM	3B	Pleasant Grove Rd
46	58	QFARM	3B	205 Old Turnpike Rd
46	7	QFARM	3B	Pleasant Grove Rd

46	2	QFARM	3B	50 N Mt Lebanon Rd
46	2.01	QFARM	3B	50 N Mt Lebanon Rd
47	25	QFARM	3B	N Mt Lebanon Rd
47	11	QFARM		Stephensburg Rd
50	23	QFARM	3B	67 Califon Road
50.02	17	QFARM	3B	Pleasant Grove Rd
51	22	QFARM	3B	210 Middle Valley Rd
51	6.16	QFARM	3B	15 High Meadow Ln
51	2	QFARM	3B	130 Zellers Rd
51	11	QFARM	3B	106 Middle Valley Rd
51	16	QFARM	3B	182 Middle Valley Rd
51	14	QFARM	3B	Middle Valley Rd
51	23.01	QFARM	3B	58 Califon Rd
51	23	QFARM	3B	58 Califon Rd
51	20	QFARM	3B	155 Middle Valley Rd
51	19	QFARM	3B	121 Middle Valley Rd
51	17	QFARM	3B	121 Middle Valley Rd
51	15	QFARM	3B	121 Middle Valley Rd
52	3	QFARM	3B	121 Middle Valley Rd
52	6	QFARM	3B	Middle Valley Rd
52	1	QFARM	3B	121 Middle Valley Rd
54	29	QFARM	3B	462 W Mill Rd
54	26	QFARM	3B	458 W Mill Rd
54	24	QFARM	3B	499 W Mill Rd
54	63	QFARM	3B	398 W Mill Rd
54	20	QFARM	3B	398 W Mill Rd
54	39	QFARM	3B	Sky Top Rd
54	30	QFARM	3B	Mallard Cove Rd
54	37	QFARM	3B	Sky Top Rd
54	40	QFARM	3B	Sky Top Rd
54	41	QFARM	3B	Sky Top Rd
54	52	QFARM	3B	16 Mallard Cove Rd
54	50	QFARM	3B	Middle Valley Rd
54	11.04	QFARM	3B	6 Mallard Cove Rd
54	31	QFARM	3B	30 Skytop Rd
54	30.01	QFARM	3B	Mallard Cove Rd
54	38	QFARM	3B	Sky Top Rd
54	42	QFARM	3B	Middle Valley Rd
55	14	QFARM	3B	447 W Mill Rd
55	15	QFARM	3B	352 W Valley Brook Rd
55	11	QFARM	3B	427 W Mill Rd
55	7	QFARM	3B	54 Turtleback Rd
55	9.09	QFARM	3B	86 Turtleback Rd
55	10	QFARM	3B	446 W Mill Rd

55	6.01	QFARM	3B	42 Turtleback Rd
55	9	QFARM	3B	72 Turtleback Rd
55	5.01	QFARM	3B	30 Turtleback Rd
55	4.12	QFARM	3B	Beacon Hill Rd
55	4.13	QFARM	3B	Beacon Hill Rd
55	4.15	QFARM	3B	Beacon Hill Rd
55	30	QFARM	3B	W Mill Rd
55	3	QFARM	3B	9 Elaine Ct
55	17	QFARM	3B	370 Vernoy Rd
55	15.01	QFARM	3B	447 W Mill Rd
55	10.03	QFARM	3B	Turtleback Rd
55	14.01	QFARM	3B	447 W Mill Rd
55	10.01	QFARM	3B	Turtleback Rd
55	6	QFARM	3B	Turtleback Rd
55	5.03	QFARM	3B	30 Turtleback Rd
55	8	QFARM	3B	Turtleback Rd
55	5.04	QFARM	3B	Turtleback Rd
55	20	QFARM	3B	W Mill Rd
55	4.07	QFARM	3B	Beacon Hill Rd
55	28	QFARM	3B	W Mill Rd
56	20	QFARM	3B	Turtleback Rd
56	6.01	QFARM	3B	W Valley Brook Rd
56	6	QFARM	3B	W Valley Brook Rd
56	26.06	QFARM	3B	55 Turtleback Rd
56	4.02	QFARM	3B	212 W Valley Brook Rd
56	4.03	QFARM	3B	212 W Valley Brook Rd
56	26	QFARM	3B	59 Turtleback Rd
56	26.05	QFARM	3B	49 Turtleback Rd
58	12	QFARM	3B	16 Coddington Ln
58	20	QFARM	3B	14 Tall Timber Dr
58	17	QFARM	3B	93 Frog Hollow Rd
59	47.10	QFARM	3B	12 Abedim Way
59	56	QFARM	3B	94 W Valley Brook Rd
59	60.07	QFARM	3B	93 W Valley Brook Rd
59	60	QFARM	3B	W Valley Brook Rd
59	40	QFARM	3B	Beacon Hill Rd
59	33	QFARM	3B	Fairmount Rd
59	13	QFARM	3B	Fairmount Rd
60	24	QFARM	3B	143 Pickle Rd
60	22.02	QFARM	3B	Pickle Rd
60	20.02	QFARM	3B	79 Pickle Rd
60	20	QFARM	3B	49 Pickle Rd
60	19	QFARM	3B	33 Pickle Rd
60	21.04	QFARM	3B	Pickle Rd

60	15.02	QFARM	3B	28 Black River Rd
60	2	QFARM	3B	390 Fairmount Rd
60	1	QFARM	3B	Parker Rd
60	15	QFARM	3B	Black River Rd
61	4.01	QFARM	3B	Hacklebarney Rd
61	6	QFARM	3B	Apgar Rd
61	21	QFARM	3B	Apgar Rd
61	20	QFARM	3B	Apgar Rd
61	5.01	QFARM	3B	Black River Rd
61	5.02	QFARM	3B	Black River Rd
61	5.03	QFARM	3B	Black River Rd
61	1	QFARM	3B	227 Old Farmers Rd
61	4	QFARM	3B	Hacklebarney Rd
61	1.04	QFARM	3B	13 Apgar Rd
61	1.03	QFARM	3B	13 Apgar Rd
61	19	QFARM	3B	13 Apgar Rd
62	15	QFARM	3B	Black River Rd
62	14	QFARM	3B	Black River Rd
62	12	QFARM	3B	180 Black River Rd
62	4	QFARM	3B	112 Black River Rd
62	1.10	QFARM	3B	10 Doolittle Ln
62	1.13	QFARM	3B	Doolittle Ln
62	1.16	QFARM		Doolittle Ln
62	1	QFARM	3B	Hacklebarney Rd
62	1.11	QFARM	3B	Doolittle Ln
62	1.12	QFARM	3B	6 Hacklebarney Rd
62	1.14	QFARM	3B	3 Doolittle Ln
62	1.15	QFARM	3B	89 Hacklebarney Rd
62	1.18	QFARM	3B	99 Hacklebarney Rd
62	18	QFARM	3B	270 Black River Rd
62	4.04	QFARM	3B	114 Black River Rd
62	3	QFARM	3B	19 Hacklebarney Rd
62	1.02	QFARM	3B	43 Hacklebarney Rd
62	1.17	QFARM	3B	Hacklebarney Rd
62	6	QFARM	3B	151 Hacklebarney Rd
63	22	QFARM	3B	Pickle Rd
63	14	QFARM	3B	Black River Rd
63	20.01	QFARM	3B	190 Pickle Rd
63	20	QFARM	3B	Pickle Rd
63	21	QFARM	3B	Pickle Rd
63	11	QFARM	3B	239 Black River Rd
63	8.01	QFARM	3B	185 Black River Rd
63	20.02	QFARM	3B	Pickle Rd
63	19.02	QFARM	3B	Pickle Rd

*63	18	QFARM	3B	Black River Rd
63	19	QFARM	3B	Pickle Rd
63	13	QFARM	3B	Black River Rd
63	12	QFARM	3B	Black River Rd
63	8.08	QFARM	3B	185 Black River Rd
63	8.07	QFARM	3B	185 Black River Rd
63	8.04	QFARM	3B	173 Black River Rd
63	8.02	QFARM	3B	Black River Rd
63	5.01	QFARM	3B	147 Black River Rd
63	5	QFARM	3B	131 Black River Rd
63	25.01	QFARM	3B	Pickle Rd
63	3	QFARM	3B	Pickle Rd
64	1	QFARM	3B	169 Pickle Rd

*Only a portion of Q-Farm is within the Washington Township boundary

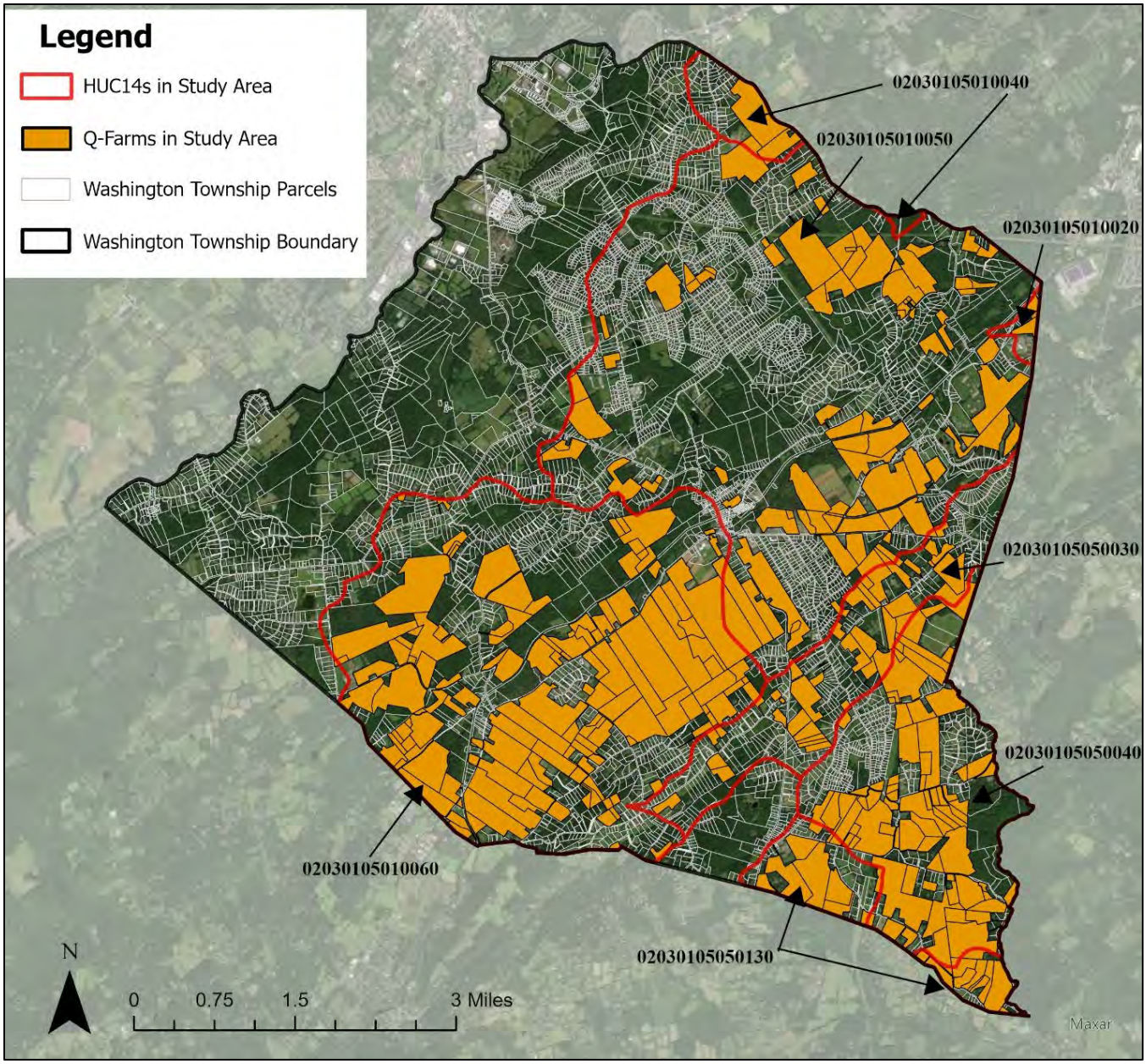


Figure 7: Q-Farm Parcels in the Study Area of Washington Township

Table 6: Q-Farm Parcels in the Study Area of Washington Township

Block	Lot	Q-Code	Prop Class	Location
20	2	Q0132	3B	46 Fairmount Rd East
20	7	Q0154	3B	355 Black River Rd
12	37.03	QFARM	3B	Naughright Rd
12	4	QFARM	3B	Drakestown Rd
12	5.01	QFARM	3B	299 Drakestown Rd
12.01	53	QFARM	3B	Naughright Rd
12.01	59	QFARM	3B	220 Flocktown Rd
12.01	52	QFARM	3B	Naughright Rd
12.01	60.03	QFARM	3B	97 Heritage Ct
12.05	3	QFARM	3B	Bristol Ter
13	10.01	QFARM		498 Keltz Ln
13	11	QFARM		498 Keltz Ln
13	60	QFARM	3B	Flocktown Rd
13	63.01	QFARM	3B	Flocktown Rd
13	7	QFARM	3B	Fairview Ave
13	10	QFARM		Keltz Ln
13	1	QFARM	3B	Flocktown Rd
13	12	QFARM	3B	46 Jones Ln
13	12.01	QFARM	3B	Jones Ln
13	8	QFARM	3B	255 Keltz Ln
13	64	QFARM	3B	Flocktown Rd
14	9.02	QFARM	3B	8 Laketown Rd
14	9	QFARM	3B	10 Laketown Rd
14	11	QFARM	3B	Fairview Ave
14	4	QFARM	3B	Laketown Rd
14	6	QFARM	3B	14 Laketown Rd
14	8	QFARM	3B	14 Laketown Rd
14	7	QFARM	3B	14 Laketown Rd
14	5	QFARM	3B	Fairview Ave
14	2.01	QFARM	3B	145 N Four Bridges Rd
15	20.24	QFARM	3B	26 Naughright Rd
15	13.01	QFARM	3B	2 Elizabeth Ln
15	25	QFARM	3B	14 Laketown Rd
15	4	QFARM	3B	59 N Four Bridges Rd
15	5	QFARM	3B	59 N Four Bridges Rd
16	14	QFARM	3B	250 Bartley Rd
16	21	QFARM	3B	98 N Four Bridges Rd
16	2	QFARM	3B	503 Drakestown Rd
16	20.03	QFARM	3B	98 N Four Bridges Rd
16	4	QFARM	3B	515 Drakestown Rd
16	22	QFARM	3B	98 N Four Bridges Rd

17	6	QFARM	3B	679 Bartley Rd
17	7	QFARM	3B	Bartley Rd
17	31.01	QFARM	3B	20 Schoolhouse Ln
18	29	QFARM	3B	169 Bartley Rd
18	27.05	QFARM	3B	169 Bartley Rd
18	8.12	QFARM	3B	169 Bartley Rd
18	5	QFARM	3B	S Four Bridges Rd
18.01	19	QFARM	3B	Coleman's Rd
20.09	19	QFARM	3B	Flocktown Rd
20.10	44	QFARM	3B	Flocktown Rd
22[1]	28	QFARM	3B	Schooleys Mtn Rd
22[1]	28.02	QFARM	3B	43 Flocktown Rd
22	2.05	QFARM	3B	91 Rock Rd
25	66.01	QFARM	3B	214 Fairview Ave
25	53.09	QFARM		Schooleys Mountain Rd
27	9	QFARM	3B	Fairview Ave
28	17.03	QFARM	3B	94 E Mill Rd
28	16.01	QFARM	3B	98 E Mill Rd
28	17.02	QFARM	3B	74 E Mill Rd
28	18	QFARM	3B	74 E Mill Rd
28	14	QFARM	3B	98 E Mill Rd
28	11	QFARM	3B	Bartley Rd
28	63	QFARM	3B	195 Fairview Ave
28	4.01	QFARM	3B	Naughright Rd
28	4	QFARM	3B	Naughright Rd
28	15	QFARM	3B	Bartley Rd
28	16.02	QFARM	3B	Bartley Rd
28	16	QFARM	3B	98 E Mill Rd
28	63.01	QFARM	3B	195 Fairview Ave
29	10.13	QFARM	3B	14 Beaver Brook Dr
29	19	QFARM	3B	E Mill Rd
29	20	QFARM	3B	98 E Mill Rd
29	13	QFARM	3B	E Mill Rd
29	18	QFARM	3B	Bartley Rd
29	2	QFARM	3B	Coleman's Rd
29	18.01	QFARM	3B	E Mill Rd
*30.02	47.12	QFARM	3B	15 Cobblestone Ln Fl
31	13.21	QFARM	3B	201 Schooleys Mtn Rd
31	13	QFARM	3B	Schooleys Mtn Rd
32	5	QFARM	3B	180 W Springtown Rd
32.02	3	QFARM	3B	128 Zellers Rd
32.02	1	QFARM	3B	Zellers Rd
32.02	2	QFARM	3B	128 Zellers Rd
33	82.04	QFARM	3B	2 Zellers Rd

33	82.02	QFARM	3B	38 Middle Valley Rd
33	71.02	QFARM		W Mill Rd
33	83.12	QFARM	3B	48 Zellers Rd
33	83.13	QFARM	3B	Zellers Rd
33	66	QFARM	3B	186 W Mill Rd
33	61	QFARM	3B	144 W Mill Rd
33	71.03	QFARM	3B	274 W Mill Rd
33	71.05	QFARM	2	276 W Mill Rd
33	86	QFARM	3B	180 W Springtown Rd
33	51	QFARM	3B	W Mill Rd
33	59.02	QFARM	3B	21 James Trl
33	59	QFARM	3B	21 James Trl
33	65	QFARM	3B	162 W Mill Rd
33	67	QFARM	3B	214 W Mill Rd
33	68	QFARM	3B	248 W Mill Rd
33	69	QFARM	3B	234 W Mill Rd
33	69.02	QFARM	3B	248 W Mill Rd
33	84	QFARM	3B	180 W Springtown Rd
34	35.04	QFARM	3B	100 Beacon Hill Rd
34	27	QFARM	3B	21 Sierra Dr
34	25.11	QFARM	3B	94 W Valley Brook Rd
34	23	QFARM	3B	76 W Valley Brook Rd
34	23.01	QFARM	3B	W Valley Brook Rd
34	23.02	QFARM	3B	W Valley Brook Rd
34	35	QFARM	3B	100 Beacon Hill Rd
34	8	QFARM	3B	18 W Valley Brook Rd
34	37.15	QFARM	3B	Winchester Dr
34	11.04	QFARM	3B	40 W Valley Brook Rd
34	13.01	QFARM	3B	24 Highland Ave
34	38	QFARM	3B	255 W Mill Rd
34	40	QFARM	3B	W Mill Rd
34	44	QFARM	3B	W Mill Rd
34	42	QFARM	3B	177 W Mill Rd
34	13.02	QFARM	3B	W Valley Brook Rd
34	28	QFARM	3B	W Mill Rd
34	15	QFARM	3B	W Valley Brook Rd
34	29	QFARM	3B	W Mill Rd
34	36	QFARM	3B	100 Beacon Hill Rd
34	37	QFARM	3B	Beacon Hill Rd
34	13.03	QFARM	3B	W Valley Brook Rd
34	13	QFARM	3B	99 W Mill Rd Bldg 22
34	11.01	QFARM	3B	W Valley Brook Rd
34	45	QFARM	3B	W Mill Rd
34	46.02	QFARM	3B	177 W Mill Rd

34	39	QFARM	3B	248 W Mill Rd
34	41	QFARM	3B	177 W Mill Rd
34	43	QFARM	3B	99 W Mill Rd
34	46.01	QFARM	3B	99 W Mill Rd
34	50	QFARM	3B	25 W Mill Rd
34	1.01	QFARM	3B	Fairmount Rd
34	46	QFARM	3B	99 W Mill Rd Bldg 22
34	50.01	QFARM	3B	W Mill Rd
34.01	3	QFARM	3B	152 Beacon Hill Rd
35	4	QFARM	3B	E Valley Brook Rd
35	8	QFARM	3B	Fairmount Rd
35	6	QFARM	3B	Fairmount Rd
36	25	QFARM	3B	66B Old Farmers Rd
36	24	QFARM	3B	86 E Valley Brook Rd
36	8	QFARM	3B	152 E Valley Brook Rd
36	12	QFARM	3B	138 E Valley Brook Rd
36	41	QFARM	3B	98 E Mill Rd
36	46	QFARM		E Mill Rd
36	21	QFARM	3B	E Valley Brook Rd
36	20	QFARM	3B	E Valley Brook Rd
36	19	QFARM	3B	E Valley Brook Rd
36	17	QFARM	3B	E Valley Brook Rd
36	44	QFARM	3B	E Mill Rd
36	43	QFARM	3B	115 E Mill Rd
36	4	QFARM	3B	168 E Valley Brook Rd
36	3	QFARM	3B	E Valley Brook Rd
36	53.03	QFARM	3B	193A E Mill Rd
37	26.03	QFARM	3B	193 Parker Rd
37	26.04	QFARM	3B	193 Parker Rd
37	34.17	QFARM	3B	14 Liberty Hills Ct
37	26	QFARM	3B	193 Parker Rd
37	30	QFARM	3B	245 Parker Rd
37	25	QFARM	3B	E Valley Brook Rd
37	17	QFARM	3B	E Valley Brook Rd
37	22	QFARM	3B	E Valley Brook Rd
37	16.02	QFARM	3B	Parker Rd
37	27	QFARM	3B	245 Parker Rd
37	28	QFARM	3B	E Valley Brook Rd
37	38	QFARM	3B	55 E Valley Brook Rd
37	29	QFARM	3B	116 Parker Rd
37	15.01	QFARM	3B	Parker Rd
37	23.02	QFARM	3B	E Valley Brook Rd
37	9	QFARM	3B	E Valley Brook Rd
37	4	QFARM	3B	E Valley Brook Rd

38	10	QFARM	3B	E Fox Hill Rd
38	11	QFARM	3B	E Fox Hill Rd
38	3.13	QFARM	3B	157 Parker Rd
38	2	QFARM	3B	83 Old Farmers Rd
38	10.01	QFARM	3B	E Fox Hill Rd
38	15.04	QFARM	3B	Fairmount Rd
38	9	QFARM	3B	50 E Fox Hill Rd
38	9.01	QFARM	3B	E Fox Hill Rd
39	5	QFARM	3B	10 W Fox Hill Rd
39	9	QFARM	3B	18 W Valley Brook Rd
*40	6.01	QFARM	3B	316 Fairmount Rd
*40	26.03	QFARM	3B	310 Fairmount Rd
41.01	29	QFARM	3B	13 Apgar Rd
42	13	QFARM		226 Old Farmers Rd
42	11.01	QFARM	3B	72 Hacklebarney Rd
42	3	QFARM	3B	210 Parker Rd
42	5	QFARM	3B	Parker Rd
42	14.03	QFARM	3B	50 Hacklebarney Rd
42	14.01	QFARM	3B	212 Old Farmers Rd
42	14.04	QFARM	3B	52 Hacklebarney Rd
42	12.11	QFARM	3B	9 Krista Ct
42	2.01	QFARM	3B	Parker Rd
42	11.02	QFARM	3B	74 Hacklebarney Rd
42	11.03	QFARM	3B	Hacklebarney Rd
42.03	1	QFARM	3B	116 Hacklebarney Rd
42.03	23	QFARM	3B	128 Hacklebarney Rd
*50	23	QFARM	3B	67 Califon Road
51	22	QFARM	3B	210 Middle Valley Rd
51	6.16	QFARM	3B	15 High Meadow Ln
51	2	QFARM	3B	130 Zellers Rd
51	11	QFARM	3B	106 Middle Valley Rd
51	16	QFARM	3B	182 Middle Valley Rd
51	14	QFARM	3B	Middle Valley Rd
51	23.01	QFARM	3B	58 Califon Rd
51	23	QFARM	3B	58 Califon Rd
51	20	QFARM	3B	155 Middle Valley Rd
51	19	QFARM	3B	121 Middle Valley Rd
51	17	QFARM	3B	121 Middle Valley Rd
51	15	QFARM	3B	121 Middle Valley Rd
52	3	QFARM	3B	121 Middle Valley Rd
52	6	QFARM	3B	Middle Valley Rd
52	1	QFARM	3B	121 Middle Valley Rd
54	29	QFARM	3B	462 W Mill Rd
54	26	QFARM	3B	458 W Mill Rd

54	24	QFARM	3B	499 W Mill Rd
54	63	QFARM	3B	398 W Mill Rd
54	20	QFARM	3B	398 W Mill Rd
54	39	QFARM	3B	Sky Top Rd
54	30	QFARM	3B	Mallard Cove Rd
54	37	QFARM	3B	Sky Top Rd
54	40	QFARM	3B	Sky Top Rd
54	41	QFARM	3B	Sky Top Rd
54	52	QFARM	3B	16 Mallard Cove Rd
54	50	QFARM	3B	Middle Valley Rd
54	11.04	QFARM	3B	6 Mallard Cove Rd
54	31	QFARM	3B	30 Skytop Rd
54	30.01	QFARM	3B	Mallard Cove Rd
54	38	QFARM	3B	Sky Top Rd
54	42	QFARM	3B	Middle Valley Rd
55	14	QFARM	3B	447 W Mill Rd
55	15	QFARM	3B	352 W Valley Brook Rd
55	11	QFARM	3B	427 W Mill Rd
55	7	QFARM	3B	54 Turtleback Rd
55	9.09	QFARM	3B	86 Turtleback Rd
55	10	QFARM	3B	446 W Mill Rd
55	6.01	QFARM	3B	42 Turtleback Rd
55	9	QFARM	3B	72 Turtleback Rd
55	5.01	QFARM	3B	30 Turtleback Rd
55	4.12	QFARM	3B	Beacon Hill Rd
55	4.13	QFARM	3B	Beacon Hill Rd
55	4.15	QFARM	3B	Beacon Hill Rd
55	30	QFARM	3B	W Mill Rd
55	3	QFARM	3B	9 Elaine Ct
55	17	QFARM	3B	370 Vernoy Rd
55	15.01	QFARM	3B	447 W Mill Rd
55	10.03	QFARM	3B	Turtleback Rd
55	14.01	QFARM	3B	447 W Mill Rd
55	10.01	QFARM	3B	Turtleback Rd
55	6	QFARM	3B	Turtleback Rd
55	5.03	QFARM	3B	30 Turtleback Rd
55	8	QFARM	3B	Turtleback Rd
55	5.04	QFARM	3B	Turtleback Rd
55	20	QFARM	3B	W Mill Rd
55	4.07	QFARM	3B	Beacon Hill Rd
55	28	QFARM	3B	W Mill Rd
56	20	QFARM	3B	Turtleback Rd
56	6.01	QFARM	3B	W Valley Brook Rd
56	6	QFARM	3B	W Valley Brook Rd

56	26.06	QFARM	3B	55 Turtleback Rd
56	4.02	QFARM	3B	212 W Valley Brook Rd
56	4.03	QFARM	3B	212 W Valley Brook Rd
56	26	QFARM	3B	59 Turtleback Rd
56	26.05	QFARM	3B	49 Turtleback Rd
58	20	QFARM	3B	14 Tall Timber Dr
58	17	QFARM	3B	93 Frog Hollow Rd
59	56	QFARM	3B	94 W Valley Brook Rd
59	60.07	QFARM	3B	93 W Valley Brook Rd
55	4.15	QFARM	3B	Beacon Hill Rd
55	30	QFARM	3B	W Mill Rd
55	3	QFARM	3B	9 Elaine Ct
55	17	QFARM	3B	370 Vernoy Rd
55	15.01	QFARM	3B	447 W Mill Rd
55	10.03	QFARM	3B	Turtleback Rd
55	14.01	QFARM	3B	447 W Mill Rd
55	10.01	QFARM	3B	Turtleback Rd
59	47.10	QFARM	3B	12 Abedim Way
59	56	QFARM	3B	94 W Valley Brook Rd
59	60.07	QFARM	3B	93 W Valley Brook Rd
59	60	QFARM	3B	W Valley Brook Rd
60	24	QFARM	3B	143 Pickle Rd
60	22.02	QFARM	3B	Pickle Rd
60	20.02	QFARM	3B	79 Pickle Rd
60	20	QFARM	3B	49 Pickle Rd
60	19	QFARM	3B	33 Pickle Rd
60	21.04	QFARM	3B	Pickle Rd
60	15.02	QFARM	3B	28 Black River Rd
60	2	QFARM	3B	390 Fairmount Rd
60	1	QFARM	3B	Parker Rd
60	15	QFARM	3B	Black River Rd
61	4.01	QFARM	3B	Hacklebarney Rd
61	6	QFARM	3B	Apgar Rd
61	21	QFARM	3B	Apgar Rd
61	20	QFARM	3B	Apgar Rd
61	5.01	QFARM	3B	Black River Rd
61	5.02	QFARM	3B	Black River Rd
61	5.03	QFARM	3B	Black River Rd
61	1	QFARM	3B	227 Old Farmers Rd
61	4	QFARM	3B	Hacklebarney Rd
61	1.04	QFARM	3B	13 Apgar Rd
61	1.03	QFARM	3B	13 Apgar Rd
61	19	QFARM	3B	13 Apgar Rd
62	15	QFARM	3B	Black River Rd

62	14	QFARM	3B	Black River Rd
62	12	QFARM	3B	180 Black River Rd
62	4	QFARM	3B	112 Black River Rd
62	1.10	QFARM	3B	10 Doolittle Ln
62	1.13	QFARM	3B	Doolittle Ln
62	1.16	QFARM		Doolittle Ln
62	1	QFARM	3B	Hacklebarney Rd
62	1.11	QFARM	3B	Doolittle Ln
62	1.12	QFARM	3B	6 Hacklebarney Rd
62	1.14	QFARM	3B	3 Doolittle Ln
62	1.15	QFARM	3B	89 Hacklebarney Rd
62	1.18	QFARM	3B	99 Hacklebarney Rd
62	18	QFARM	3B	270 Black River Rd
62	4.04	QFARM	3B	114 Black River Rd
62	3	QFARM	3B	19 Hacklebarney Rd
62	1.02	QFARM	3B	43 Hacklebarney Rd
62	1.17	QFARM	3B	Hacklebarney Rd
62	6	QFARM	3B	151 Hacklebarney Rd
63	22	QFARM	3B	Pickle Rd
63	14	QFARM	3B	Black River Rd
63	20.01	QFARM	3B	190 Pickle Rd
63	20	QFARM	3B	Pickle Rd
63	21	QFARM	3B	Pickle Rd
63	11	QFARM	3B	239 Black River Rd
63	8.01	QFARM	3B	185 Black River Rd
63	20.02	QFARM	3B	Pickle Rd
63	19.02	QFARM	3B	Pickle Rd
63	18	QFARM	3B	Black River Rd
63	19	QFARM	3B	Pickle Rd
63	13	QFARM	3B	Black River Rd
63	12	QFARM	3B	Black River Rd
63	8.08	QFARM	3B	185 Black River Rd
63	8.07	QFARM	3B	185 Black River Rd
63	8.04	QFARM	3B	173 Black River Rd
63	8.02	QFARM	3B	Black River Rd
63	5.01	QFARM	3B	147 Black River Rd
63	5	QFARM	3B	131 Black River Rd
63	25.01	QFARM	3B	Pickle Rd
63	3	QFARM	3B	Pickle Rd
64	1	QFARM	3B	169 Pickle Rd

*Only a portion of the Q-Farm is within the study area

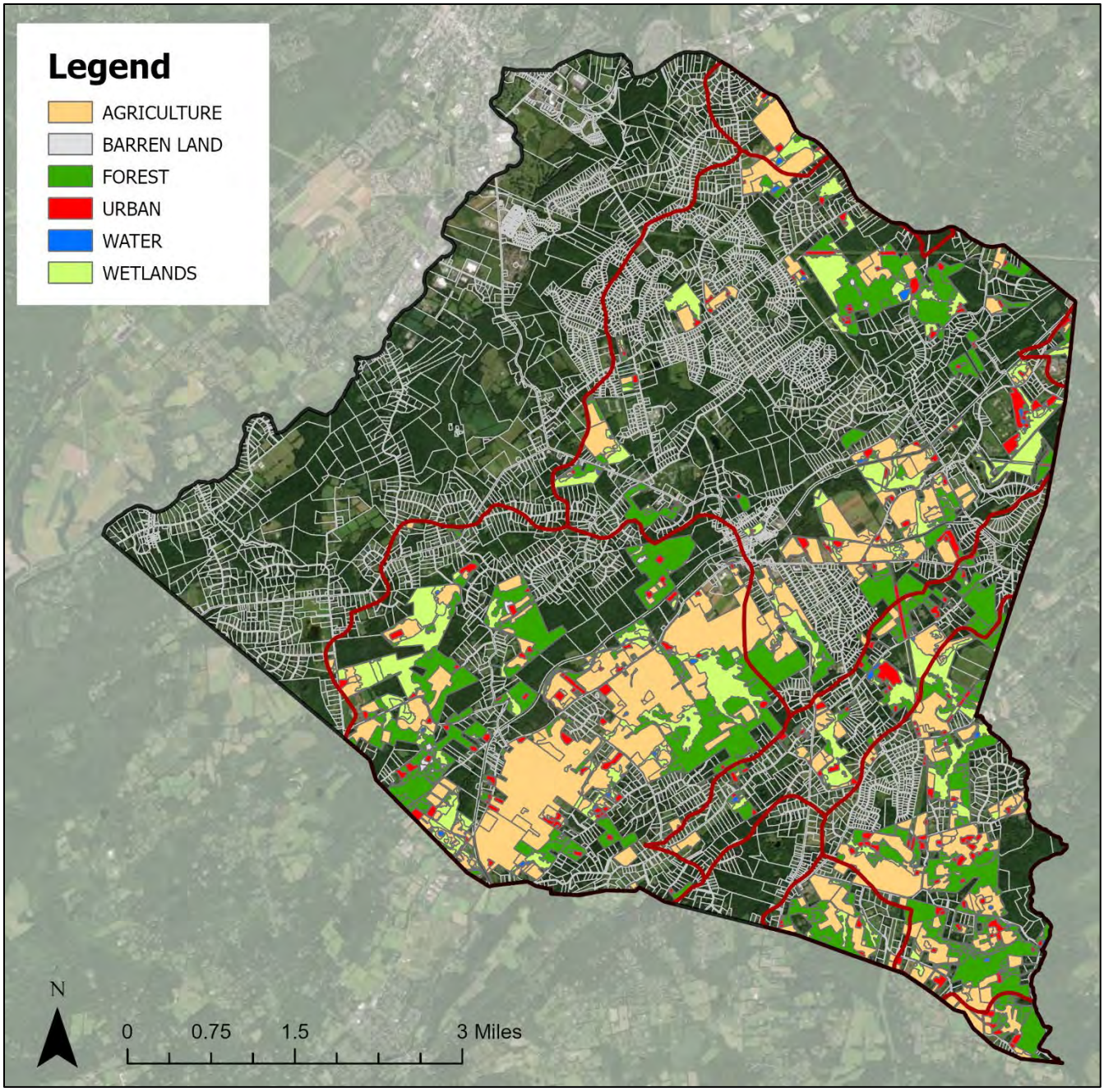


Figure 8: Land Use on Q-Farms Parcels in the Study Area of Washington Township

Table 7: Land Use on Q-Farms in the Study Area of Washington Township

Land Use	Area (acres)
Agriculture	3,181.6
Barren Land	21.7
Forest	2,862.6
Urban	533.1
Water	70.8
Wetlands	1,433.9
Total:	**8,103.7**

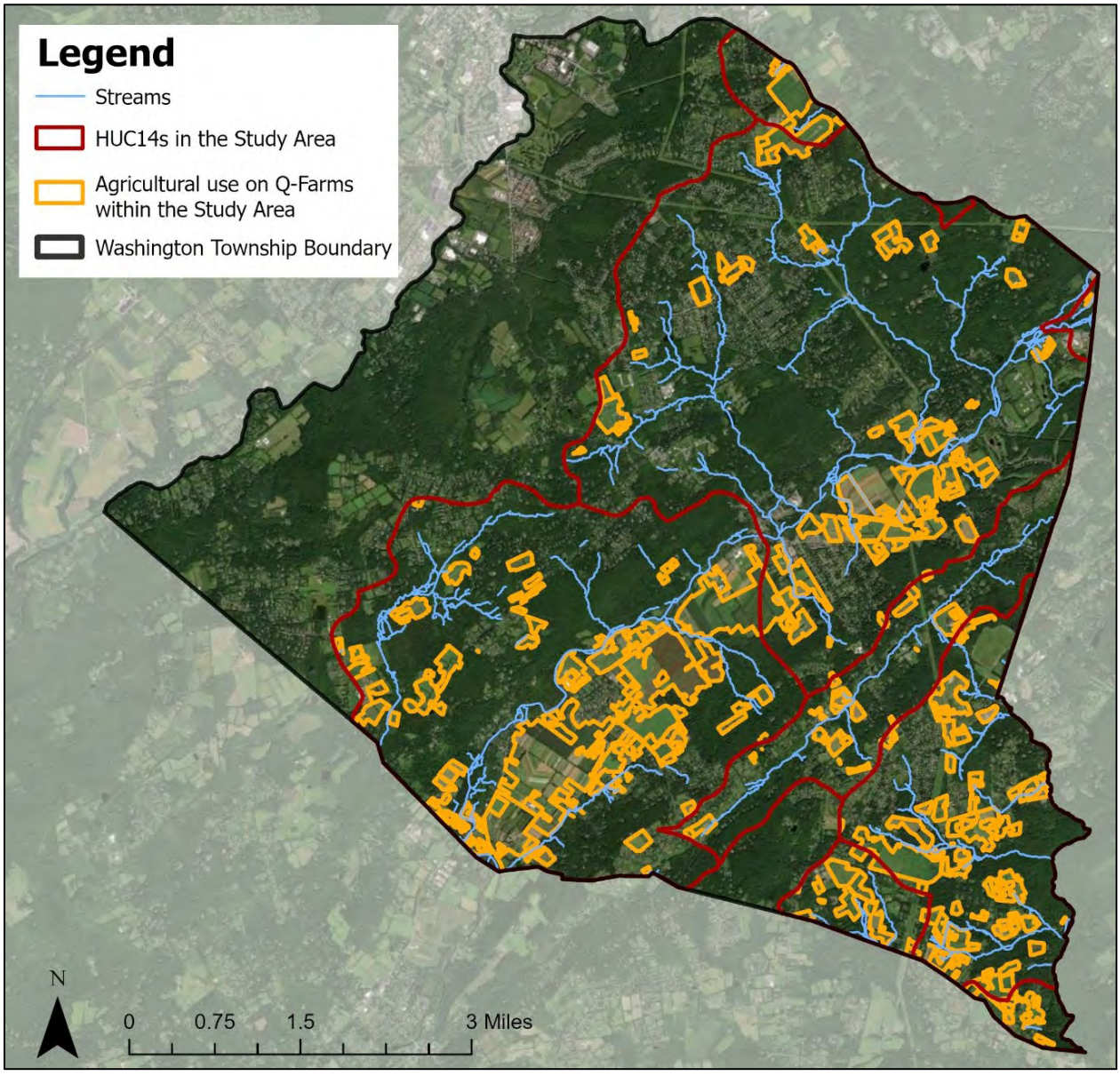


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Washington Township

Table 8: Recommendations for Specific Farms in the Study Area of Washington Township

Lamington River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
62	12	QFARM	X	X		X		
63	3	QFARM						
63	8.01	QFARM	X		X	X		
63	14	QFARM	X					
63	25.01	QFARM	X					
South Branch Raritan River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
12	4	QFARM	X					
12	37.03	QFARM		X				X
16	14	QFARM				X		X
28	4.01	QFARM						X
28	14	QFARM	X		X	X		
28	16	QFARM	X					
28	16.01	QFARM						X
28	18	QFARM	X					
33	61	QFARM						X
33	66	QFARM		X	X	X		X
33	67	QFARM						X
33	69	QFARM						X
33	69.02	QFARM		X				X
33	70.02	QFARM	X			X		X
33	71.02	QFARM			X	X		X
34	1.01	QFARM						X
34	13	QFARM	X					
34	42	QFARM	X		X	X		
34	43	QFARM	X					
34	46	QFARM	X		X	X		X
35	6	QFARM			X	X		X
54	26	QFARM			X	X		X
54	29	QFARM						X
54	30	QFARM	X					

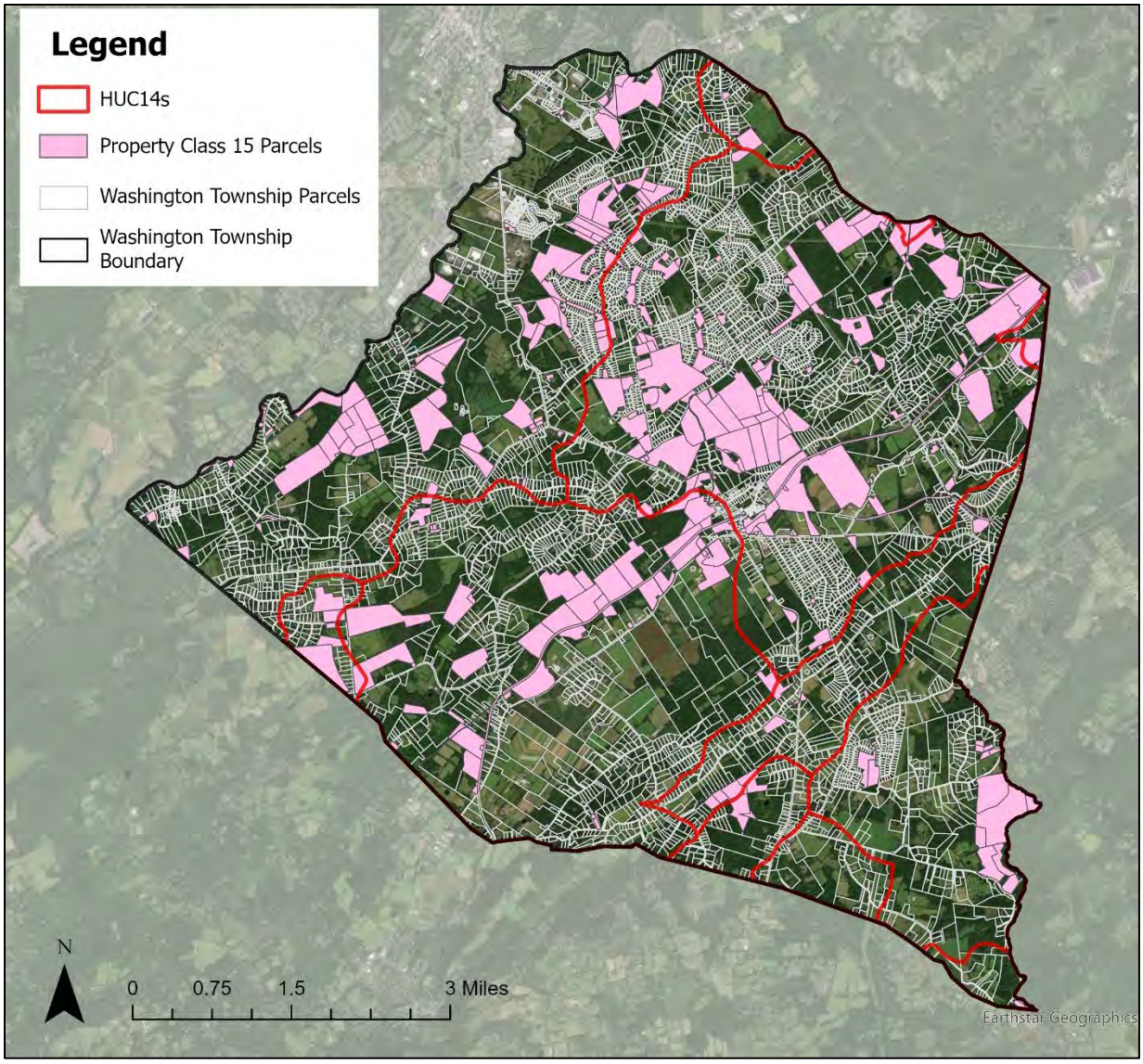


Figure 10: Property Class 15 Parcels in Washington Township

Table 9: Property Class 15 Parcels in Washington Township

Block	Lot	Prop Class	Location	Facility Type
12	37	15A	Naughright Rd	Schools
17	9	15A	10 S Four Bridges Rd	Vacant Land
17	8	15A	10 S Four Bridges Rd	Schools
20.11	23	15A	Flocktown Rd	School
20.11	22	15A	Flocktown Rd	Vacant Land
20.11	21	15A	Quail Run	Vacant Land
20.11	24	15A	Flocktown Rd	Vacant Land
34	48	15A	53 W Mill Rd	Administrative Bldg
34	49	15A	35 W Mill Rd	Schools
35	3.01	15A	51 Old Farmers Rd	Schools
20	70	15B	420 Schooleys Mtn Rd	Nursery School
51	22.02	15B	40 Califon Rd	Farm
2	15	15C	2 East Ave	Vacant Land
3	8.45	15C	Heron Dr	Vacant Land
3	10	15C	Route 46	Vacant Land
3	10.02	15C	91 Reservoir Rd	Vacant Land
3.10	21	15C	Heron Dr	Vacant Land
5	1	15C	Route 46	Vacant Land
6	1	15C	Route 46	Vacant Land
7	2	15C	Route 46	Vacant Land
7	3	15C	Route 46	Vacant Land
7	4	15C	Route 46	Vacant Land
7	5	15C	Route 46	Vacant Land
8	1	15C	Drakestown Rd	Pumping Station
9	34	15C	70 Reservoir Rd	Vacant Land
9	1	15C	Reservoir Rd	Vacant Land
9	2	15C	Route 46	Vacant Land
9	6.02	15C	Drakestown Rd	Vacant Land
11	16	15C	Spring Ln	Vacant Land
11	20	15C	Spring Ln	Vacant Land
11	21	15C	Spring Ln	Vacant Land
11	22	15C	Marjorie Dr	Vacant Land
11	23	15C	Marjorie Dr	Vacant Land
11	27.07	15C	Mission/Spring Rd	Vacant Land
12	35	15C	424 Naughright Rd	Water Twr Booster St
12.02	1	15C	17 Cindy Ln	Vacant Land
13	42	15C	74 Naughright Rd	Vacant Land
13	37	15C	Fairview Ave	Vacant Land
13	26	15C	Jones Ln	Vacant Land
13	12.03	15C	9 Sylvan Cir	Sewage Disposal
13	57	15C	Naughright Rd	Vacant Land
13	63	15C	Flocktown Rd	Vacant Land
13	65.02	15C	Flocktown Rd	Vacant Land
13	4	15C	Drakestown Rd	Vacant Land
13	19	15C	Fairview Ave	Vacant Land
13	6	15C	416 Fairview Ave	Vacant Land

13	5.01	15C	Drakestown Rd	Vacant Land
13	5.03	15C	Drakestown Rd	Vacant Land
13	5.02	15C	Drakestown Rd	Vacant Land
13	9	15C	Drakestown Rd	Vacant Land
13	5	15C	Drakestown Rd	Vacant Land
13.04	8	15C	Devon Rd	Vacant Land
13.08	15	15C	564 Bolton Dr	Well
13.12	4	15C	Amherst Dr	Vacant Land
13.16	19	15C	Naughright Rd	Vacant Land
13.16	13	15C	Naughright Rd	Vacant Land
14	9.03	15C	16 Laketown Rd	Vacant Land
14	3.02	15C	822 Laketown Rd	Vacant Land
14	12	15C	413 Fairview Ave	Vacant Land
14	1.01	15C	Drakestown Rd	Vacant Land
14	3	15C	N Four Bridges Rd	Vacant Land
15	13	15C	202 Bartley Rd	Vacant Land
15	8	15C	N Four Bridges Rd	Vacant Land
15	13.07	15C	16 Elizabeth Ln	Vacant Land
15	300	15C	Naughright Rd	Vacant Land
15	13.99	15C	22 Stony Brook Rd	Vacant Land
16	11	15C	274 Bartley Rd	Vacant Land
16	10.01	15C	306 Bartley Rd	Vacant Land
16	300	15C	N Four Bridges Rd	Vacant Land
16	10	15C	290 Bartley Rd	Vacant Land
16	6	15C	Bartley Rd	Farm
16	24	15C	N Four Bridges Rd	Vacant Land
16	5.01	15C	Drakestown Rd	Vacant Land
16	22.01	15C	N Four Bridges Rd	Vacant Land
17	2.02	15C	279 Bartley Rd	Vacant Land
17	2.01	15C	291 Bartley Rd	Vacant Land
17	300	15C	Bartley Rd	Vacant Land
18	10.03	15C	Coleman’s Rd	Vacant Land
18	10.02	15C	26 Coleman’s Rd	Vacant Land
18	28	15C	209 Bartley Rd	Park
18	4	15C	S Four Bridges Rd	Vacant Land
19	7	15C	429 Schooleys Mtn Rd	Well House
20	54	15C	376 Schooleys Mtn Rd	Vacant Land
20	49	15C	376 Schooleys Mtn Rd	Vacant Land
20	51	15C	Schooleys Mtn Rd	Vacant Land
20	21.50	15C	72 Ann Rd	Vacant Land Flag
20	21	15C	Winay Ter	Utlity Bldg
20	78	15C	Ann Rd	Vacant Land
20	84	15C	Mission Rd	Vacant Land
20	82	15C	Mission Rd	Vacant Land
20	83	15C	Mission Rd	Vacant Land
20	86	15C	Mission Rd	Vacant Land
20	85	15C	Mission Rd	Vacant Land
20	88	15C	Spring Ln	Vacant Land
20	87	15C	Mission Rd	Park

20	49.01	15C	Flocktown Rd	Vacant Land
20.02	39	15C	10 High Ridge Rd	Water Tower
20.02	1	15C	Rosalyn Dr	Vacant Land
20.04	1	15C	Nestling Wood Dr	Vacant Land
20.08	9	15C	Buttonwood Dr	Vacant Land
20.10	33	15C	Nestling Wood Dr	Pumping Station
20.10	49.02	15C	Spring Ln	Vacant Land
20.10	1.02	15C	Marliene Rd	Vacant Land
20.11	20	15C	8 Hunter Dr	Vacant Land
20.12	23	15C	Hunter Dr	Vacant Land
20.15	1	15C	Pheasant Dr	Water Supply
22	3.27	15C	4 Briarwood Rd	Vacant Land
22	3.03	15C	79 Rock Rd	Park
22	30.01	15C	Flocktown Rd	Vacant Land
22	3	15C	Rock Rd	Vacant Land
22	3.072	15C	13 Blackberry Pl	Vacant Land
23	16.01	15C	54 Rock Rd	Garage
23	8.08	15C	E Springtown Rd	Vacant Land
23	4.02	15C	5 Dogwood Dr	Vacant Land
23	17.01	15C	Rock Rd	Vacant Land
23	3.30	15C	Hemlock Dr	Vacant Land
23	16	15C	Rock Rd	Park
23	18.05	15C	Rock Rd	Garage
23	18.06	15C	Rock Rd	Vacant Land
23	18	15C	119 Flocktown Rd	Rescue Squad
23	18.07	15C	Cherry St	Vacant Land
23	18.08	15C	Flocktown Rd	Vacant Land
23.02	39	15C	Hemlock Dr	Water Supply
23.03	14	15C	Hemlock Dr	Vacant Land
23.04	2.06	15C	Flocktown Rd	Vacant Land
24	9	15C	116 Schooleys Mtn Rd	Vacant Lanc
24	8	15C	Schooleys Mtn Rd	Vacant Land
24	8.01	15C	E Springtown Rd	Police Station
24	8.01	15C	1 E Springtown Rd	Police Station
24	1	15C	Camp Washington Rd	Park
24	2.01	15C	79 Schooleys Mtn Rd	Vacant Land
24	2.02	15C	78 Schooleys Mtn Rd	Vacant Land
24	7	15C	Schooleys Mtn Rd	Park
25	52	15C	62 Schooleys Mtn Rd	Vacant Land
25	52.02	15C	64 Schooleys Mtn Rd	Vacant Land
25	55.01	15C	Camp Washington Rd	Pumping Station
25	55	15C	Camp Washington Rd	Park
25	23.01	15C	Fairview Ave	Park
25	53.05	15C	Camp Washington Rd	Park
25	53.06	15C	Camp Washington Rd	Park
25	54.01	15C	Camp Washington Rd	Park
25	9.02	15C	Camp Washington Rd	Park
25	47.03	15C	66 Schooleys Mtn Rd	Vacant Land
25	70	15C	Schooleys Mtn Rd	Water Supply

25	8	15C	Fairview Ave	Vacant Land
25	62	15C	Naughright Rd	Park
25	63	15C	Naughright Rd	Park
25	9.01	15C	Camp Washington Rd	Park
25	9	15C	Fairview Ave	Park
25	61	15C	Naughright Rd	Park
25	65.19	15C	Ranney Rd	Vacant Land
25	56.04	15C	Naughright Rd	Park
25	59	15C	Naughright Rd	Park
25	60	15C	Naughright Rd	Park
25	56.03	15C	Naughright Rd	Park
25	56.01	15C	E Springtown Rd	Park
25	56.02	15C	E Springtown Rd	Park
25	58	15C	Naughright Rd	Park
25	56	15C	E Springtown Rd	Park
26	8	15C	49 Schooleys Mtn Rd	Vacant Land
26	2	15C	43 Schooleys Mtn Rd	Municipal Bldg
27	17	15C	6 Fairview Ave	Historic Site
27	300	15C	20 Schooleys Mtn Rd	Vacant Land
28	19	15C	46 E Mill Rd	Administrative Bldg.
28	18.03	15C	70 E Mill Rd	Vacant Land
28	28	15C	12 E Mill Rd	Historic Site
28	38	15C	5 Fairview Ave	Volunteer Fire Co
28	47.01	15C	Fairview Ave	Vacant Land
28	46.103	15C	Welsh Farm Rd	Vacant Land
28	59	15C	Fairview Ave	Vacant Land
28	60.02	15C	Fairview Ave	Vacant Land
28	62	15C	Fairview Ave	Vacant Land
28	60	15C	Fairview Ave	Park
28	17	15C	E Mill Rd	Park
28	300	15C	Fairview Ave	Vacant Land
28	3.01	15C	Naughright Rd	Vacant Land
28	26.01	15C	E Mill Rd	Vacant Land
28	26	15C	E Mill Rd	Vacant Land
28	24	15C	34 E Mill Rd	Garage
29	2.02	15C	E Mill Rd	Vacant Land
29	24	15C	Bartley Rd	Vacant Land
29	22	15C	101 Bartley Rd	Pumping Station
30	49.03	15C	Kings Hwy	Vacant Land
30	39	15C	Kings Hwy	Vacant Land
30	59	15C	Kings Hwy	Vacant Land
30	71.02	15C	71 Esna Dr	Sewage Disposal
30.02	44	15C	Pleasant Grove Rd	Vacant Land
30.02	47.04	15C	Cobblestone Ln	Vacant Land
31	27	15C	231 Schooleys Mtn Rd	Volunteer Fire Co
33	76	15C	Middle Valley Rd	Vacant Land
33	77	15C	Middle Valley Rd	Vacant Land
33	73	15C	W Mill Rd	Vacant Land
33	71.01	15C	W Mill Rd	Vacant Land

33	67.01	15C	212 W Mill Rd	Recreation Center
33	70.01	15C	W Mill Rd	Vacant Land
33	64.01	15C	W Mill Rd	Vacant Land
33	94.02	15C	W Springtown Rd	Vacant Land
33	63	15C	W Mill Rd	Park
33	87	15C	W Springtown Rd	Vacant Land
33	58.03	15C	62 W Mill Rd	Vacant Land
33	58	15C	W Mill Rd	Vacant Land
33	58.01	15C	W Mill Rd	Vacant Land
33	300	15C	Middle Valley Rd	Vacant Land
33	52	15C	W Mill Rd	Vacant Land
33	8.06	15C	20 James Trl	Vacant Land
33	19	15C	Schooleys Mtn Rd	Pumping Station
33	8	15C	Schooleys Mtn Rd	Vacant Land
33	9	15C	79 Schooleys Mtn Rd	Vacant Land
33	70.03	15C	W Mill Rd	Vacant Land
33	59.03	15C	James Trl	Vacant Land
33	68.01	15C	W Mill Rd	Vacant Land
33	69.01	15C	W Mill Rd	Vacant Land
33	65.02	15C	W Mill Rd	Vacant Land
33	65.03	15C	W Mill Rd	Vacant Land
33	69.03	15C	W Mill Rd	Vacant Land
33	68.03	15C	W Mill Rd	Vacant Land
34	7	15C	W Valley Brook Rd	Vacant Land
34	2	15C	123 Fairmount Rd	Vacant Land
34	1.08	15C	99 Fairmount Rd	Pumping Station
34	46.03	15C	73 W Mill Rd	Residence
34	46.04	15C	W Mill Rd	Vacant Land
35	3.05	15C	Old Farmers Rd	Water Tower
36	42	15C	Overlook Dr	Vacant Land
37	34.11	15C	Old Farmers Rd	Water Stand Pipe
39	1	15C	219 Fairmount Rd	Water Supply
39	11.01	15C	5 W Valley Brook Rd	Vacant Land
41	3.07	15C	2 Douglas Dr	Water Supply
41	3.08	15C	10 Douglas Dr	Vacant Land
41.01	1	15C	Old Farmers Rd	Wtr Booster Station
41.01	1.01	15C	Green Hills Rd	Vacant Land
42.02	36	15C	167 Old Farmers Rd	Vacant Land
42.03	21	15C	Long Hill Rd	Vacant Land
*42.03	22	15C	57 Long Hill Rd	Vacant Land
42.03	19	15C	55 Long Hill Rd	Vacant Land
42.03	18	15C	Long Hill Rd	Vacant Land
42.03	17	15C	Long Hill Rd	Vacant Land
43	66.06	15C	Old Turnpike Rd	Vacant Land
43	80	15C	Fishers Mine Rd	Vacant Land
43	76	15C	Fishers Mine Rd	Vacant Land
43	77	15C	Fishers Mine Rd	Vacant Land
43	81	15C	Fishers Mine Rd	Vacant Land
43	82	15C	Fishers Mine Rd	Vacant Land

43	77.01	15C	Fishers Mine Rd	Vacant Land
43	78	15C	Fishers Mine Rd	Vacant Land
43	79	15C	Fishers Mine Rd	Farm
43	83	15C	Fishers Mine Rd	Vacant Land
43	66.04	15C	Old Turnpike Rd	Vacant Land
43	85	15C	Kings Hwy	Vacant Land
43	4	15C	18 River Rd	Vacant Land
43	1	15C	227 Kings Hwy	Vacant Land
44	6.02	15C	180 Stephensburg Rd	Watershed
44	3.03	15C	38 Old Turnpike Rd	Vacant Land
44	2.02	15C	16 Old Turnpike Rd	Vacant Land
44	3.02	15C	Old Turnpike Rd	Vacant Land
44	2.03	15C	Old Turnpike Rd	Vacant Land
44	18	15C	194 Stephensburg Rd	Vacant Land
45	39.01	15C	Old Turnpike Rd	Vacant Land
45	40.01	15C	Old Turnpike Rd	Vacant Land
45	37.01	15C	Old Turnpike Rd	Vacant Land
45	38.01	15C	Old Turnpike Rd	Vacant Land
45	36.01	15C	Old Turnpike Rd	Vacant Land
45	35.01	15C	Roosevelt Ave	Vacant Land
45	3.01	15C	Stephensburg Rd	Vacant Land
45	1.01	15C	195 Stephensburg Rd	Vacant Land
46	59	15C	Old Turnpike Rd	Vacant Land
47	24	15C	Stephensburg Rd	Vacant Land
47	8	15C	99 Stephensburg Rd	Vacant Land
50	23.15	15C	Califon Rd	Vacant Land
50.02	25	15C	8 Ascot Dr	Vacant Land
50.02	23	15C	Califon Rd	Vacant Land
51	21	15C	220 Middle Valley Rd	Vacant Land
51	12	15C	Zellers Rd	Vacant Land
51	3.03	15C	Zellers Rd	Vacant Land
51	3	15C	Zellers Rd	Vacant Land
51	24	15C	Califon Rd	Vacant Land
52	7	15C	Sky Top Rd	Vacant Land
54	29.01	15C	W Mill Rd	Vacant Land
54	28.01	15C	W Mill Rd	Vacant Land
54	28	15C	W Mill Rd	Vacant Land
54	25	15C	W Mill Rd	Tax Lien Foreclosure
54	301	15C	W Mill Rd	Vacant Land
54	32	15C	22 Sky Top Rd	Garage
54	24.02	15C	Mallard Cove Rd	Vacant Land
54	24.01	15C	Mallard Cove Rd	Vacant Land
54	300	15C	W Mill Rd	Vacant Land
54	43	15C	Middle Valley Rd	Vacant Land
54	51.03	15C	Middle Valley Rd	Vacant Land
56	10	15C	16 Sand Hill Rd	Vacant Land
56	11	15C	14 Sand Hill Rd	Vacant Land
59	48	15C	Fairmount Rd	Vacant Land
59	49.02	15C	W Valley Brook Rd	Vacant Land

59	47.09	15C	Abedim Way	Vacant Land
59	49.01	15C	W Valley Brook Rd	Vacant Land
59	49	15C	Fairmount Rd	Vacant Land
59	10	15C	Fleming Ct	Vacant Land
59	1	15C	W Fox Hill Rd	Vacant Land
60	13	15C	12 Parker Rd	Volunteer Fire Co
60	13	15C	12 Parker Rd	Cell Tower
62	21	15C	378 Black River Rd	Vacant Land
62	12.03	15C	Black River Rd	Park
62	12.02	15C	196 Black River Rd	Park
62	12.01	15C	Black River Rd	Park
62	10.01	15C	Black River Rd	Park
62	11	15C	Black River Rd	Park
62	9	15C	119 Hacklebarney Rd	Park
62	8	15C	119 Hacklebarney Rd	Park
62	7	15C	119 Hacklebarney Rd	Park
*63	17	15C	347 Black River Rd	Vacant Land
*6700	1	15C	681 Bartley-Long Valley R	Vacant Land
3.01	1	15D	450 Schooleys Mtn Rd	Church & Parsonage
10	11	15D	Naughright Rd	Cemetery
18.01	18	15D	40 Coleman’s Rd	Church
20	90	15D	59 Spring Ln	Church
20	30	15D	Schooleys Mtn Rd	Camp
21	2.01	15D	6 Heath Ln	Parsonage
21	2.02	15D	8 Heath Ln	Residence
22	5	15D	10 E Springtown Rd	Church & Cemetery
22	4	15D	14 E Springtown Rd	Rectory
28	18.01	15D	70 E Mill Rd	Rescue Squad
29	20.03	15D	39 Bartley Rd	Church
30	42	15D	Pleasant Grove Rd	Camp
30	34.02	15D	Pleasant Grove Rd	Camp
30	32	15D	12 Pleasant Grove Rd	Parsonage
30	31	15D	3 Heath Ln	Church
30	30	15D	Heath Ln	Adminstrative Bldg
30	34	15D	26 Pleasant Grove Rd	Residence
31	26	15D	3 Pleasant Grove Rd	Church
33	44	15D	Schooleys Mtn Rd	Church
34	38.01	15D	265 W Mill Rd	Church
36	43.01	15D	115 E Mill Rd	Valley View Chapel
51	31.03	15D	132 Califon Rd	Church
51	1.08	15D	165 Pleasant Grove Rd	Church
51	1.07	15D	159 Pleasant Grove Rd	Church
55	29	15D	357 W Mill Rd	Community Center
3.01	7.21	15F	21 Trafalgar Ct	Disabled Veteran
3.01	7.10	15F	10 Trafalgar Ct	Residence
3.06	3	15F	98 Knob Hill Rd	Disabled Veteran
11.05	9	15F	245 Mission Rd	Residence
11.05	12	15F	257 Mission Rd	Residence
11.07	11	15F	86 Kim Ln	Disabled Veteran

12	30.42	15F	2 Hidden Glen Rd	Disabled Veteran
12	38.02	15F	490 Naughright Rd	Disabled Veteran
12.02	36	15F	28 Paula Dr	Disabled Veteran
13	50.05	15F	7 Chestnut St	Disabled Veteran
13	54.05	15F	8 Windswept Way	Disabled Veteran
13.17	7	15F	25 Squire Hill Rd	Disabled Veteran
16	15	15F	38 N Four Bridges Rd	Widow - Disabled Vet
18.01	23	15F	127 Bartley Rd	Disabled Veteran
20	78.31	15F	40 Ann Rd	Widow - Disabled Vet
20	72	15F	Schooleys Mtn Rd	Nursing Home
20.02	11	15F	41 Ann Rd	Disabled Veteran
20.14	3	15F	11 Pheasant Dr	Disabled Veteran
20.15	9	15F	49 Quail Run	Disabled Veteran
28	46.16	15F	27 Welsh Farm Rd	Disabled Veteran
28	11.02	15F	60 Bartley Rd	Disabled Veteran
30	58	15F	166 Kings Hwy	Vacant Land
30	62	15F	170 Kings Hwy	Dedicated Open Space
30	68	15F	192 Kings Hwy	Disabled Veteran
30	61	15F	Kings Hwy	Vacant Land
30	60	15F	Kings Hwy	Vacant Land
31	14.10	15F	74 Wehrli Rd	Widow - Disabled Vet
35.01	3101	15F	59 E Mill Rd	Community Center
35.03	37	15F	2 Hilltop Ter	Residence
36	42	15F	25 Overlook Dr	Residence
38	14	15F	208 Fairmount Rd	Residence
43	101.01	15F	39A Old Turnpike Rd	Residence
43	28	15F	185A Kings Hwy	Disabled Veteran
46	55	15F	195 Old Turnpike Rd	Disabled Veteran
50	26	15F	23 Califon Rd	Vacant Land
50	23.06	15F	5 Ascot Dr	Disabled Veteran
51	1.05	15F	163 Zellers Rd	Disabled Veteran

*Only a portion of the parcel is within the Washington Township boundary

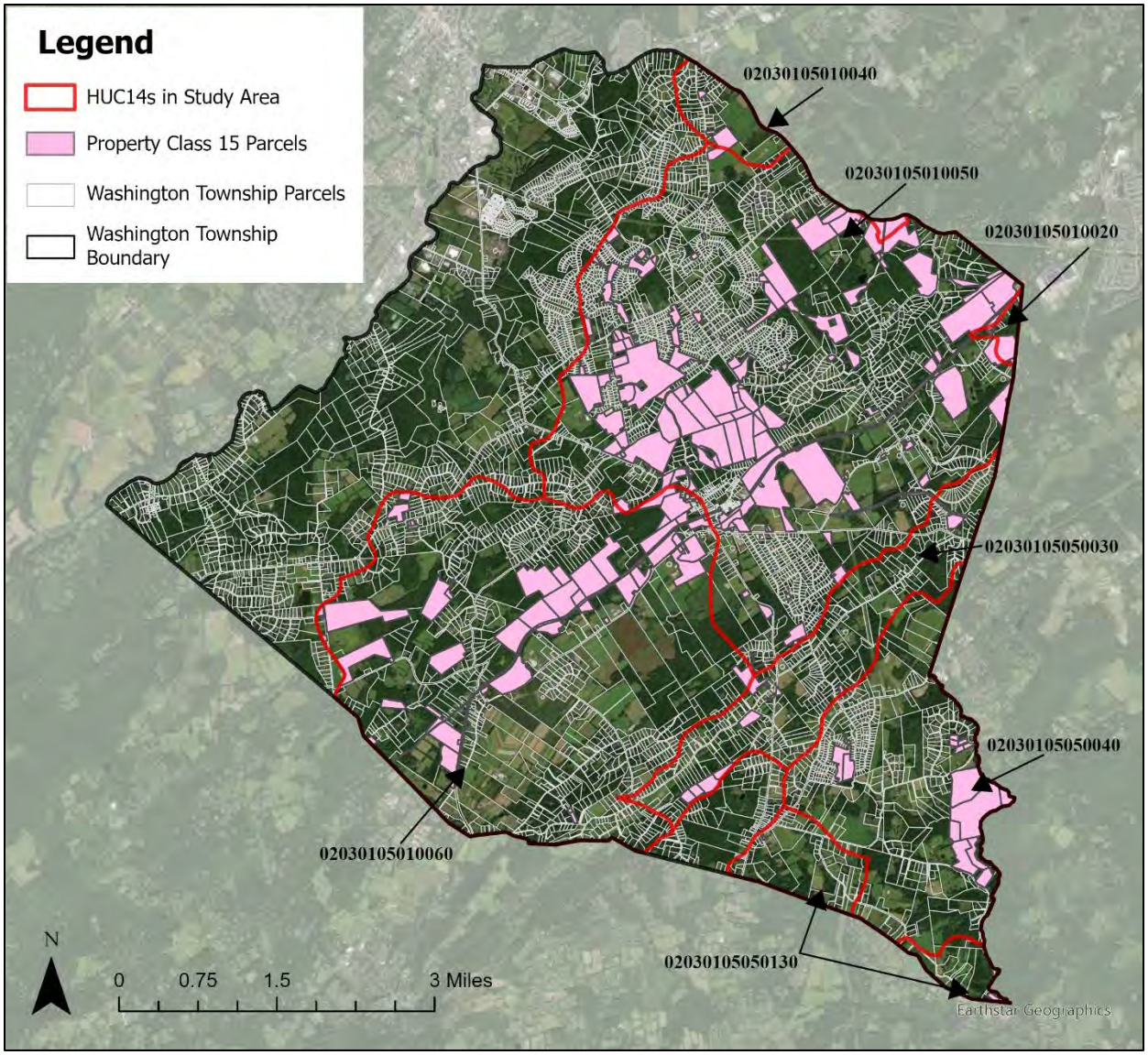


Figure 11: Property Class 15 parcels in the Study Area of Washington Township

Table 10: Property Class 15 Parcels in the Study Area of Washington Township

Block	Lot	Prop Class	Location	Facility Type
***12**	**37**	**15A**	**Naughright Rd**	**Schools**
17	9	15A	10 S Four Bridges Rd	Vacant Land
***17**	**8**	**15A**	**10 S Four Bridges Rd**	**Schools**
20.11	24	15A	Flocktown Rd	Vacant Land
34	48	15A	53 W Mill Rd	Administrative Bldg
***34**	**49**	**15A**	**35 W Mill Rd**	**Schools**
***35**	**3.01**	**15A**	**51 Old Farmers Rd**	**Schools**
51[3]	22.02	15B	40 Califon Rd	Farm
12	35	15C	424 Naughright Rd	Water Twr Booster St
12.02	1	15C	17 Cindy Ln	Vacant Land
13	42	15C	74 Naughright Rd	Vacant Land
13	37	15C	Fairview Ave	Vacant Land
13	26	15C	Jones Ln	Vacant Land
13	12.03	15C	9 Sylvan Cir	Sewage Disposal
13	57	15C	Naughright Rd	Vacant Land
13	63	15C	Flocktown Rd	Vacant Land
13	65.02	15C	Flocktown Rd	Vacant Land
13	4	15C	Drakestown Rd	Vacant Land
13	19	15C	Fairview Ave	Vacant Land
13	6	15C	416 Fairview Ave	Vacant Land
13	5.01	15C	Drakestown Rd	Vacant Land
13	5.03	15C	Drakestown Rd	Vacant Land
13	5.02	15C	Drakestown Rd	Vacant Land
13	9	15C	Drakestown Rd	Vacant Land
13	5	15C	Drakestown Rd	Vacant Land
13.04	8	15C	Devon Rd	Vacant Land
13.08	15	15C	564 Bolton Dr	Well
13.12	4	15C	Amherst Dr	Vacant Land
13.16	19	15C	Naughright Rd	Vacant Land
13.16	13	15C	Naughright Rd	Vacant Land
14	9.03	15C	16 Laketown Rd	Vacant Land
14	3.02	15C	822 Laketown Rd	Vacant Land
14	12	15C	413 Fairview Ave	Vacant Land
14	1.01	15C	Drakestown Rd	Vacant Land
14	3	15C	N Four Bridges Rd	Vacant Land
15	13	15C	202 Bartley Rd	Vacant Land
15	8	15C	N Four Bridges Rd	Vacant Land
15	13.07	15C	16 Elizabeth Ln	Vacant Land
15	300	15C	Naughright Rd	Vacant Land
15	13.99	15C	22 Stony Brook Rd	Vacant Land
16	11	15C	274 Bartley Rd	Vacant Land
16	10.01	15C	306 Bartley Rd	Vacant Land
16	300	15C	N Four Bridges Rd	Vacant Land
16	10	15C	290 Bartley Rd	Vacant Land
16	6	15C	Bartley Rd	Farm
16	24	15C	N Four Bridges Rd	Vacant Land

16	5.01	15C	Drakestown Rd	Vacant Land
16	22.01	15C	N Four Bridges Rd	Vacant Land
17	2.02	15C	279 Bartley Rd	Vacant Land
17	2.01	15C	291 Bartley Rd	Vacant Land
17	300	15C	Bartley Rd	Vacant Land
18	10.03	15C	Coleman's Rd	Vacant Land
18	10.02	15C	26 Coleman's Rd	Vacant Land
18	28	15C	209 Bartley Rd	Park
18	4	15C	S Four Bridges Rd	Vacant Land
20.02[3]	39	15C	10 High Ridge Rd	Water Tower
20.04	1	15C	Nestling Wood Dr	Vacant Land
20.08	9	15C	Buttonwood Dr	Vacant Land
20.10	33	15C	Nestling Wood Dr	Pumping Station
20.10	49.02	15C	Spring Ln	Vacant Land
20.10	1.02	15C	Marliene Rd	Vacant Land
22	3.27	15C	4 Briarwood Rd	Vacant Land
22	3.03	15C	79 Rock Rd	Park
22[3]	30.01	15C	Flocktown Rd	Vacant Land
22	3	15C	Rock Rd	Vacant Land
22	3.072	15C	13 Blackberry Pl	Vacant Land
***23**	**16.01**	**15C**	**54 Rock Rd**	**Garage**
23	8.08	15C	E Springtown Rd	Vacant Land
23	4.02	15C	5 Dogwood Dr	Vacant Land
23	17.01	15C	Rock Rd	Vacant Land
23	3.30	15C	Hemlock Dr	Vacant Land
23	16	15C	Rock Rd	Park
23	18.05	15C	Rock Rd	Garage
23	18.06	15C	Rock Rd	Vacant Land
23	18	15C	119 Flocktown Rd	Rescue Squad
23	18.07	15C	Cherry St	Vacant Land
23	18.08	15C	Flocktown Rd	Vacant Land
23.02	39	15C	Hemlock Dr	Water Supply
23.03	14	15C	Hemlock Dr	Vacant Land
23.04	2.06	15C	Flocktown Rd	Vacant Land
24	9	15C	116 Schooleys Mtn Rd	Vacant Lanc
***24**	**8**	**15C**	**Schooleys Mtn Rd**	**Vacant Land**
24	8.01	15C	E Springtown Rd	Police Station
24	8.01	15C	1 E Springtown Rd	Police Station
24	1	15C	Camp Washington Rd	Park
24	2.01	15C	79 Schooleys Mtn Rd	Vacant Land
24	2.02	15C	78 Schooleys Mtn Rd	Vacant Land
***24**	**7**	**15C**	**Schooleys Mtn Rd**	**Park**
25	52	15C	62 Schooleys Mtn Rd	Vacant Land
25	52.02	15C	64 Schooleys Mtn Rd	Vacant Land
25	55.01	15C	Camp Washington Rd	Pumping Station
25	55	15C	Camp Washington Rd	Park
25	23.01	15C	Fairview Ave	Park
25	53.05	15C	Camp Washington Rd	Park
25	53.06	15C	Camp Washington Rd	Park

25	54.01	15C	Camp Washington Rd	Park
25	9.02	15C	Camp Washington Rd	Park
25	47.03	15C	66 Schooleys Mtn Rd	Vacant Land
25	70	15C	Schooleys Mtn Rd	Water Supply
25	8	15C	Fairview Ave	Vacant Land
25	62	15C	Naughright Rd	Park
25	63	15C	Naughright Rd	Park
25	9.01	15C	Camp Washington Rd	Park
25	9	15C	Fairview Ave	Park
25	61	15C	Naughright Rd	Park
25	65.19	15C	Ranney Rd	Vacant Land
25	56.04	15C	Naughright Rd	Park
25	59	15C	Naughright Rd	Park
25	60	15C	Naughright Rd	Park
25	56.03	15C	Naughright Rd	Park
***25[1]**	**56.01**	**15C**	**E Springtown Rd**	**Park**
***25[1]**	**56.02**	**15C**	**E Springtown Rd**	**Park**
25	58	15C	Naughright Rd	Park
25	56	15C	E Springtown Rd	Park
***26[2]**	**8**	**15C**	**49 Schooleys Mtn Rd**	**Vacant Land**
***26[2]**	**2**	**15C**	**43 Schooleys Mtn Rd**	**Municipal Bldg**
27	17	15C	6 Fairview Ave	Historic Site
27	300	15C	20 Schooleys Mtn Rd	Vacant Land
28	19	15C	46 E Mill Rd	Administrative Bldg.
28	18.03	15C	70 E Mill Rd	Vacant Land
28	28	15C	12 E Mill Rd	Historic Site
28	38	15C	5 Fairview Ave	Volunteer Fire Co
28	47.01	15C	Fairview Ave	Vacant Land
28	46.103	15C	Welsh Farm Rd	Vacant Land
28	59	15C	Fairview Ave	Vacant Land
28	60.02	15C	Fairview Ave	Vacant Land
28	62	15C	Fairview Ave	Vacant Land
28	60	15C	Fairview Ave	Park
28	17	15C	E Mill Rd	Park
28	300	15C	Fairview Ave	Vacant Land
28	3.01	15C	Naughright Rd	Vacant Land
28	26.01	15C	E Mill Rd	Vacant Land
28	26	15C	E Mill Rd	Vacant Land
28	24	15C	34 E Mill Rd	Garage
29	2.02	15C	E Mill Rd	Vacant Land
29	24	15C	Bartley Rd	Vacant Land
29	22	15C	101 Bartley Rd	Pumping Station
30.02	44	15C	Pleasant Grove Rd	Vacant Land
33	76	15C	Middle Valley Rd	Vacant Land
33	77	15C	Middle Valley Rd	Vacant Land
33	73	15C	W Mill Rd	Vacant Land
33	71.01	15C	W Mill Rd	Vacant Land
33	67.01	15C	212 W Mill Rd	Recreation Center
33	70.01	15C	W Mill Rd	Vacant Land

33	64.01	15C	W Mill Rd	Vacant Land
33	94.02	15C	W Springtown Rd	Vacant Land
33	63	15C	W Mill Rd	Park
33	87	15C	W Springtown Rd	Vacant Land
33	58.03	15C	62 W Mill Rd	Vacant Land
33	58	15C	W Mill Rd	Vacant Land
33	58.01	15C	W Mill Rd	Vacant Land
33	300	15C	Middle Valley Rd	Vacant Land
33	52	15C	W Mill Rd	Vacant Land
33	8.06	15C	20 James Trl	Vacant Land
33	19	15C	Schooleys Mtn Rd	Pumping Station
33	8	15C	Schooleys Mtn Rd	Vacant Land
33	9	15C	79 Schooleys Mtn Rd	Vacant Land
33	70.03	15C	W Mill Rd	Vacant Land
33	59.03	15C	James Trl	Vacant Land
33	68.01	15C	W Mill Rd	Vacant Land
33	69.01	15C	W Mill Rd	Vacant Land
33	65.02	15C	W Mill Rd	Vacant Land
33	65.03	15C	W Mill Rd	Vacant Land
33	69.03	15C	W Mill Rd	Vacant Land
33	68.03	15C	W Mill Rd	Vacant Land
34	7	15C	W Valley Brook Rd	Vacant Land
34	2	15C	123 Fairmount Rd	Vacant Land
34	1.08	15C	99 Fairmount Rd	Pumping Station
34	46.03	15C	73 W Mill Rd	Residence
34	46.04	15C	W Mill Rd	Vacant Land
35	3.05	15C	Old Farmers Rd	Water Tower
36	42	15C	Overlook Dr	Vacant Land
37	34.11	15C	Old Farmers Rd	Water Stand Pipe
39	1	15C	219 Fairmount Rd	Water Supply
39	11.01	15C	5 W Valley Brook Rd	Vacant Land
41	3.07	15C	2 Douglas Dr	Water Supply
41	3.08	15C	10 Douglas Dr	Vacant Land
41.01	1	15C	Old Farmers Rd	Wtr Booster Station
41.01	1.01	15C	Green Hills Rd	Vacant Land
42.02	36	15C	167 Old Farmers Rd	Vacant Land
42.03	21	15C	Long Hill Rd	Vacant Land
42.03	22	15C	57 Long Hill Rd	Vacant Land
42.03	19	15C	55 Long Hill Rd	Vacant Land
42.03	18	15C	Long Hill Rd	Vacant Land
42.03	17	15C	Long Hill Rd	Vacant Land
50[3]	23.15	15C	Califon Rd	Vacant Land
50.02[3]	25	15C	8 Ascot Dr	Vacant Land
51	21	15C	220 Middle Valley Rd	Vacant Land
51	12	15C	Zellers Rd	Vacant Land
51	3.03	15C	Zellers Rd	Vacant Land
51	3	15C	Zellers Rd	Vacant Land
51	24	15C	Califon Rd	Vacant Land
52	7	15C	Sky Top Rd	Vacant Land

54	29.01	15C	W Mill Rd	Vacant Land
54	28.01	15C	W Mill Rd	Vacant Land
54	28	15C	W Mill Rd	Vacant Land
54	25	15C	W Mill Rd	Tax Lien Foreclosure
54	301	15C	W Mill Rd	Vacant Land
54	32	15C	22 Sky Top Rd	Garage
54	24.02	15C	Mallard Cove Rd	Vacant Land
54	24.01	15C	Mallard Cove Rd	Vacant Land
54	300	15C	W Mill Rd	Vacant Land
54	43	15C	Middle Valley Rd	Vacant Land
54	51.03	15C	Middle Valley Rd	Vacant Land
56	10	15C	16 Sand Hill Rd	Vacant Land
56	11	15C	14 Sand Hill Rd	Vacant Land
59	49.02	15C	W Valley Brook Rd	Vacant Land
59[3]	47.09	15C	Abedim Way	Vacant Land
59	49.01	15C	W Valley Brook Rd	Vacant Land
59[3]	49	15C	Fairmount Rd	Vacant Land
59[3]	10	15C	Fleming Ct	Vacant Land
59	1	15C	W Fox Hill Rd	Vacant Land
60	13	15C	12 Parker Rd	Volunteer Fire Co
60	13	15C	12 Parker Rd	Cell Tower
62	21	15C	378 Black River Rd	Vacant Land
62	12.03	15C	Black River Rd	Park
62	12.02	15C	196 Black River Rd	Park
62	12.01	15C	Black River Rd	Park
62	10.01	15C	Black River Rd	Park
62	11	15C	Black River Rd	Park
62	9	15C	119 Hacklebarney Rd	Park
62	8	15C	119 Hacklebarney Rd	Park
62	7	15C	119 Hacklebarney Rd	Park
63	17	15C	347 Black River Rd	Vacant Land
6700	1	15C	681 Bartley-Long Valley R	Vacant Land
***10**	**11**	**15D**	**Naughright Rd**	**Cemetery**
***18.01**	**18**	**15D**	**40 Coleman's Rd**	**Church**
***20[3]**	**90**	**15D**	**59 Spring Ln**	**Church**
22	5	15D	10 E Springtown Rd	Church & Cemetery
22	4	15D	14 E Springtown Rd	Rectory
28	18.01	15D	70 E Mill Rd	Rescue Squad
***29**	**20.03**	**15D**	**39 Bartley Rd**	**Church**
***33**	**44**	**15D**	**Schooleys Mtn Rd**	**Church**
***34**	**38.01**	**15D**	**265 W Mill Rd**	**Church**
36	43.01	15D	115 E Mill Rd	Valley View Chapel
51	31.03	15D	132 Califon Rd	Church
51	1.08	15D	165 Pleasant Grove Rd	Church
51	1.07	15D	159 Pleasant Grove Rd	Church
55	29	15D	357 W Mill Rd	Community Center
11.05[3]	12	15F	257 Mission Rd	Residence
11.07	11	15F	86 Kim Ln	Disabled Veteran
12	30.42	15F	2 Hidden Glen Rd	Disabled Veteran

12	38.02	15F	490 Naughright Rd	Disabled Veteran
12.02	36	15F	28 Paula Dr	Disabled Veteran
13	50.05	15F	7 Chestnut St	Disabled Veteran
13	54.05	15F	8 Windswept Way	Disabled Veteran
13.17	7	15F	25 Squire Hill Rd	Disabled Veteran
16	15	15F	38 N Four Bridges Rd	Widow - Disabled Vet
18.01	23	15F	127 Bartley Rd	Disabled Veteran
28	46.16	15F	27 Welsh Farm Rd	Disabled Veteran
28	11.02	15F	60 Bartley Rd	Disabled Veteran
35.01	3101	15F	59 E Mill Rd	Community Center
35.03	37	15F	2 Hilltop Ter	Residence
36	42	15F	25 Overlook Dr	Residence
38	14	15F	208 Fairmount Rd	Residence
50[3]	23.06	15F	5 Ascot Dr	Disabled Veteran
51	1.05	15F	163 Zellers Rd	Disabled Veteran

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

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

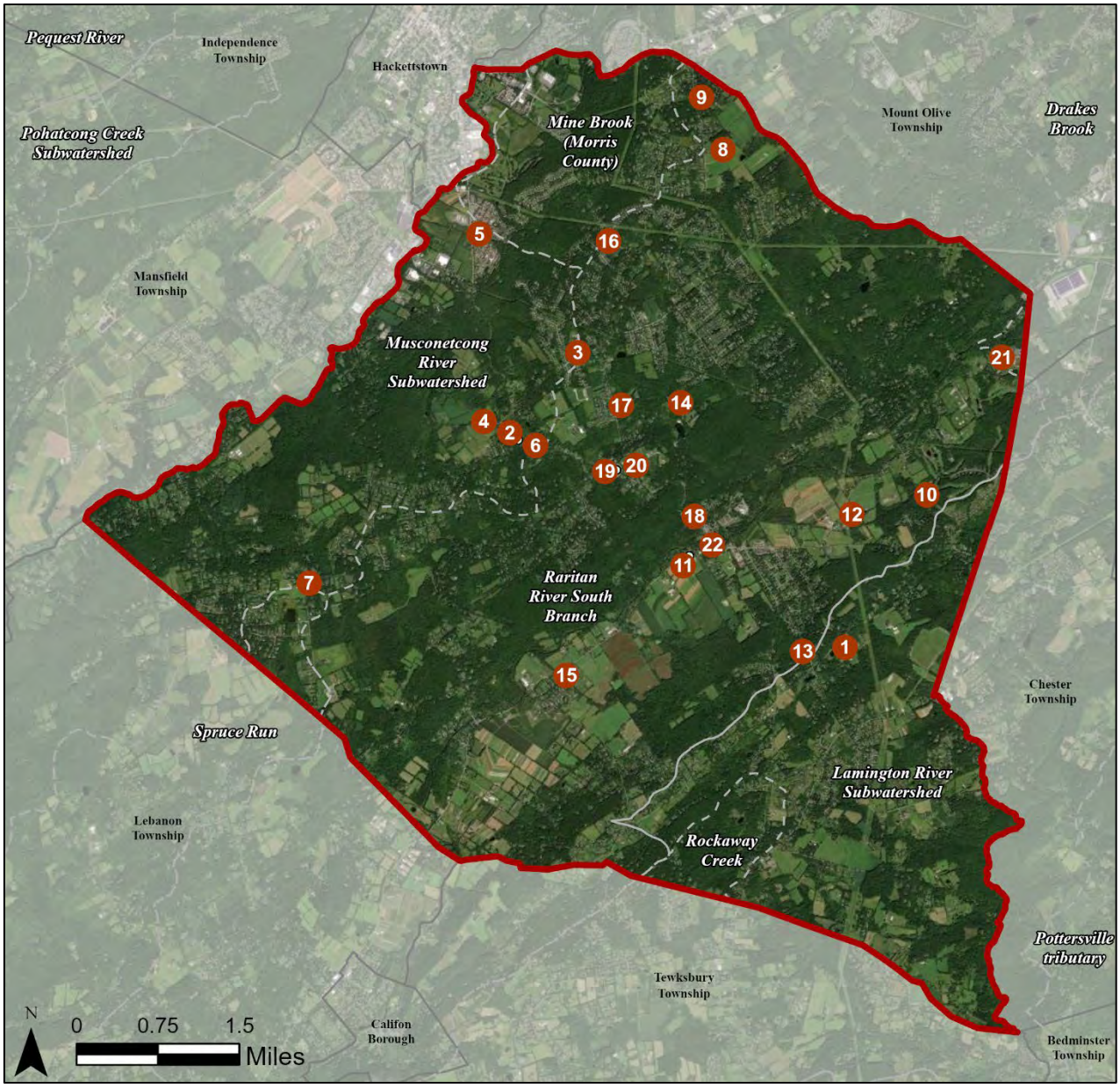


Figure 12: Sites with Green Infrastructure Opportunities in Washington Township

VALLEY BROOK COUNTRY DAY SCHOOL

RAP ID: 1

Subwatershed: Lamington River

Site Area: 1,079,999 sq. ft.

Address: 73 East Valley Brook Rd
Long Valley, NJ 07853

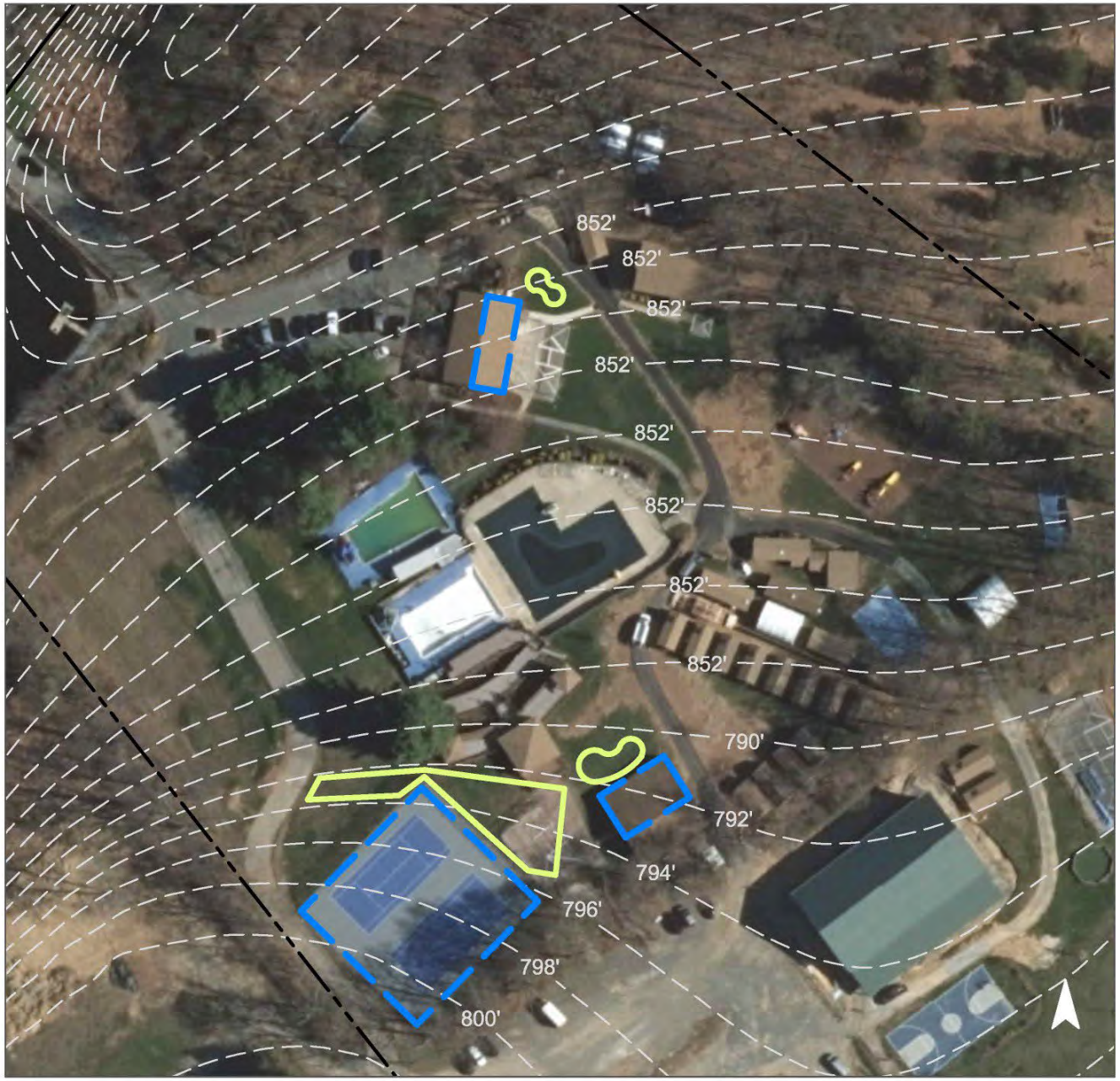
Block and Lot: Block 37, Lot 25

Rain gardens can be installed adjacent to buildings and impervious surfaces like the tennis courts to capture stormwater 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"
19	4.76	207,492	10.0	104.8	952.7	0.162

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	0.389	65	30,430	1.07	3,740	$18,700

GREEN INFRASTRUCTURE RECOMMENDATIONS



VALLEY BROOK COUNTRY DAY SCHOOL

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

0 50' 100'

EMMANUEL BIBLE CHURCH

RAP ID: 2

Subwatershed: Musconetcong River

Site Area: 622,785 sq. ft.

Address: 3 Pleasant Grove Road
Schooleys Mountain, NJ
07870

Block and Lot: Block 31 Lot 26

A rain garden and downspout planter boxes can be installed adjacent to the main building to capture, treat, and infiltrate stormwater runoff from the roof. Pervious pavement is proposed to treat runoff in the southeast parking lot. Planter boxes can also be installed to treat the rooftop drainage area. 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"
18	2.54	110,514	5.3	55.8	507.4	0.086

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	0.021	4	1,670	0.06	205	$1,025
Pervious pavement	0.269	45	21,030	0.74	1,845	$46,125
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Emmanuel Bible Church

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

0 50' 100'

FLOCKTOWN ROAD & KOSSMANN ELEMENTARY SCHOOLS

RAP ID: 3

Subwatershed: Musconetcong River

HUC14: 02040105160010

Site Area: 1,074,908 sq. ft.

Address: 90 Flocktown Road
Long Valley, NJ 07853

Block and Lot: Block 20.11, Lot 21-23

Rain gardens may be installed off the north, east, and west corners and the southeast facade of Flocktown Road Elementary (southern building in the depicted aerial). Rain gardens may also be installed off the north and south facades of Kossmann Elementary School (northern building in the provided aerial). These would capture, treat, and infiltrate stormwater runoff from the rooftops utilizing existing downspouts, most of which would require disconnection. The rain garden off the south facade of Kossmann Elementary School requires a downspout redirection as well. Portions of pavement in the parking lots along the east side of both buildings, and the basketball court in the west can be converted to pervious pavement. These sections of pervious pavement can capture and infiltrate stormwater runoff before reaching nearby catch basins or flooding the adjacent grassy 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 50"
22	235,615	11.4	119.0	1,081.8	0.184	7.34

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	19,885	0.589	87	41,480	1.56	4,970	$49,700
Pervious Pavement	43,805	1.297	192	91,370	3.43	14,330	$358,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Flocktown Road & Kossmann Elementary Schools

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

0 100' 200'

HIGHLANDS PRESBYTERIAN CHURCH

RAP ID: 4

Subwatershed: Musconetcong River

HUC14: 02040105160010

Site Area: 67,073 sq. ft.

Address: 3 Heath Lane
Long Valley, NJ 07853

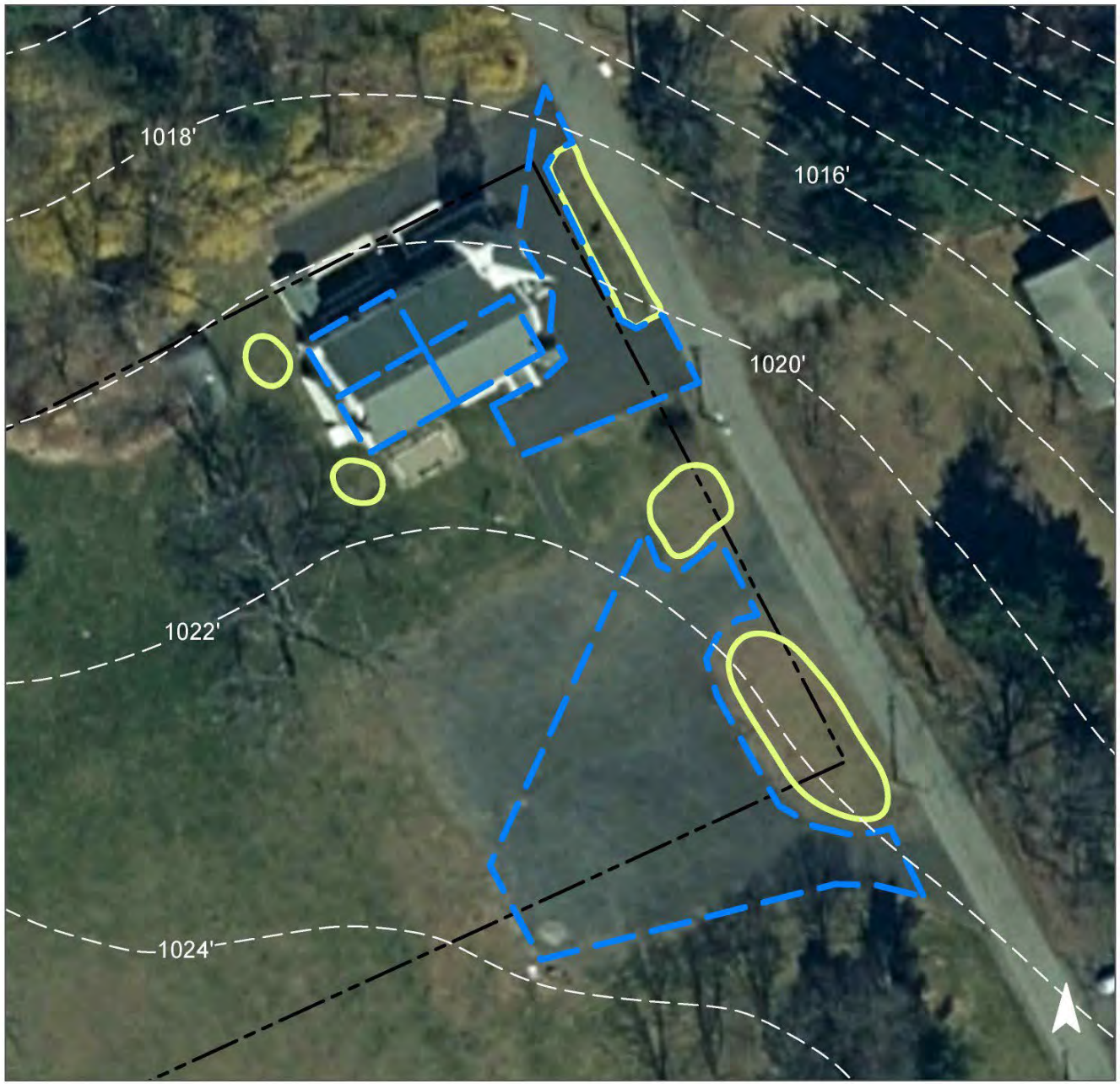
Block and Lot: Block 30, Lot 31

Rain gardens may be installed off the east face, northwest and southwest corners of the church, utilizing downspouts which require disconnection, as well as the north corner and east edge of the parking lot. These would capture, treat, and infiltrate stormwater runoff from the rooftops and pavement. All four exits from the parking lot to the road would require a trench drain to redirect and convey stormwater runoff to the surrounding rain gardens. 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 50"
32	21,403	1.0	10.8	98.3	0.017	0.67

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	12,965	0.384	57	27,040	1.02	3,245	$32,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Highlands Presbyterian Church

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

0 25' 50'

Hope Center Hackettstown

RAP ID: 5

Subwatershed: Musconetcong River

HUC14: 02040105160010

Site Area: 136,488 sq. ft.

Address: 450 Schooleys Mountain Road
Hackettstown, NJ 07840

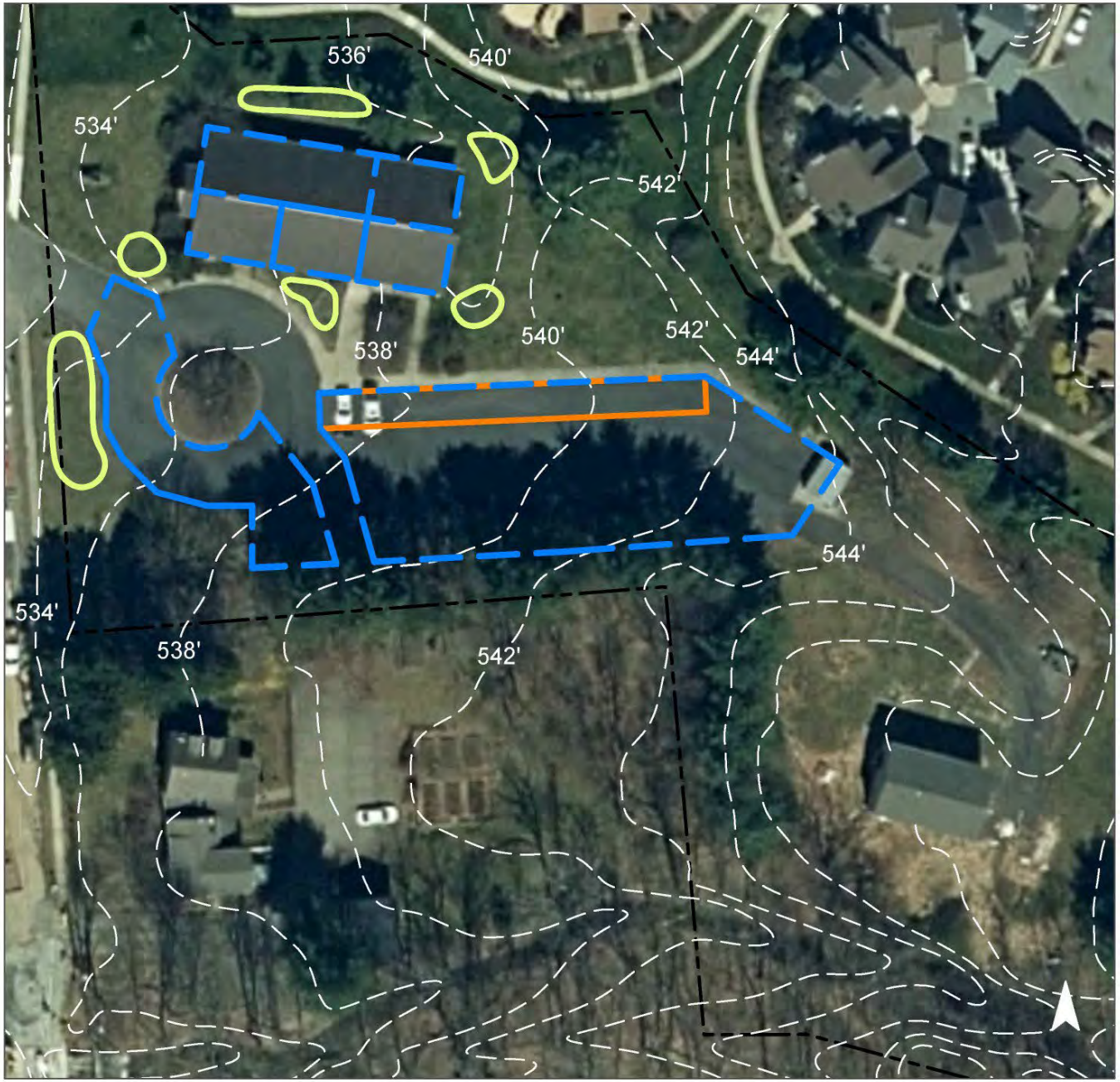
Block and Lot: Block 3.01, Lot 1

Rain gardens can be installed off the northeast, southeast, and southwest corners, the north and south facades of the building to capture, treat, and infiltrate stormwater runoff from the roof. Existing downspouts convey water to the rain gardens; the downspouts on the southwest corner and south facade require disconnection. In the parking lot, a rain garden can also be installed off the west side of the roundabout to capture, treat, and infiltrate runoff. A row of parking stalls on the north edge of the parking lot can be converted to pervious pavement to capture and infiltrate stormwater before it reaches the adjacent catch. Despite what the contour data suggests, the grading of the pavement pitches to the northwest to two catch basins. Additionally, a curb cut on the west side of the roundabout and a trench drain before the exit to the street would be required to allow stormwater runoff to flow into the rain garden. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
25	34,162	1.6	17.3	156.9	0.027	1.06

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	8,925	0.264	38	18,620	0.70	2,240	$22,400
Pervious pavement	11,565	0.342	51	24,120	0.91	2,130	$53,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hope Center
Hackettstown

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2017 - 2018 USGS Lidar: NW New Jersey 6 County

0 30' 60'

SCHOOLEYS MOUNTAIN FIRE PROTECTION

RAP ID: 6

Subwatershed: Musconetcong River

Site Area: 69,972 sq. ft.

Address: 231 Schooleys Mountain Road
Long Valley, NJ 07870

Block and Lot: Block 31, Lot 27

Runoff from different sections of the parking lot can be treated by a rain garden and also a section of porous parking spaces. A cistern can be installed adjacent to the building to capture runoff from the roof. The water can then be reused for washing vehicles or watering the lawn. Additionally, downspout planters can be installed to treat the northeast rooftop drainage area. 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"
36	0.58	25,147	1.2	12.7	115.5	0.020

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	0.248	42	20,031	0.88	2,385	$11,925
Pervious pavement	0.348	58	27,160	1.19	2,570	$64,250
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000
Rainwater harvesting	0.033	6	2,446	0.11	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Schooleys Mountain Fire Protection

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

0 30' 60'

THE LIFE GIVING FOUNTAIN ROMANIAN ORTHODOX CHURCH

RAP ID: 7

Subwatershed: Musconetcong River

HUC 14: 02040105160020

Site Area: 104,415 sq. ft.

Address: 132 Califon Road
Long Valley, NJ 07853

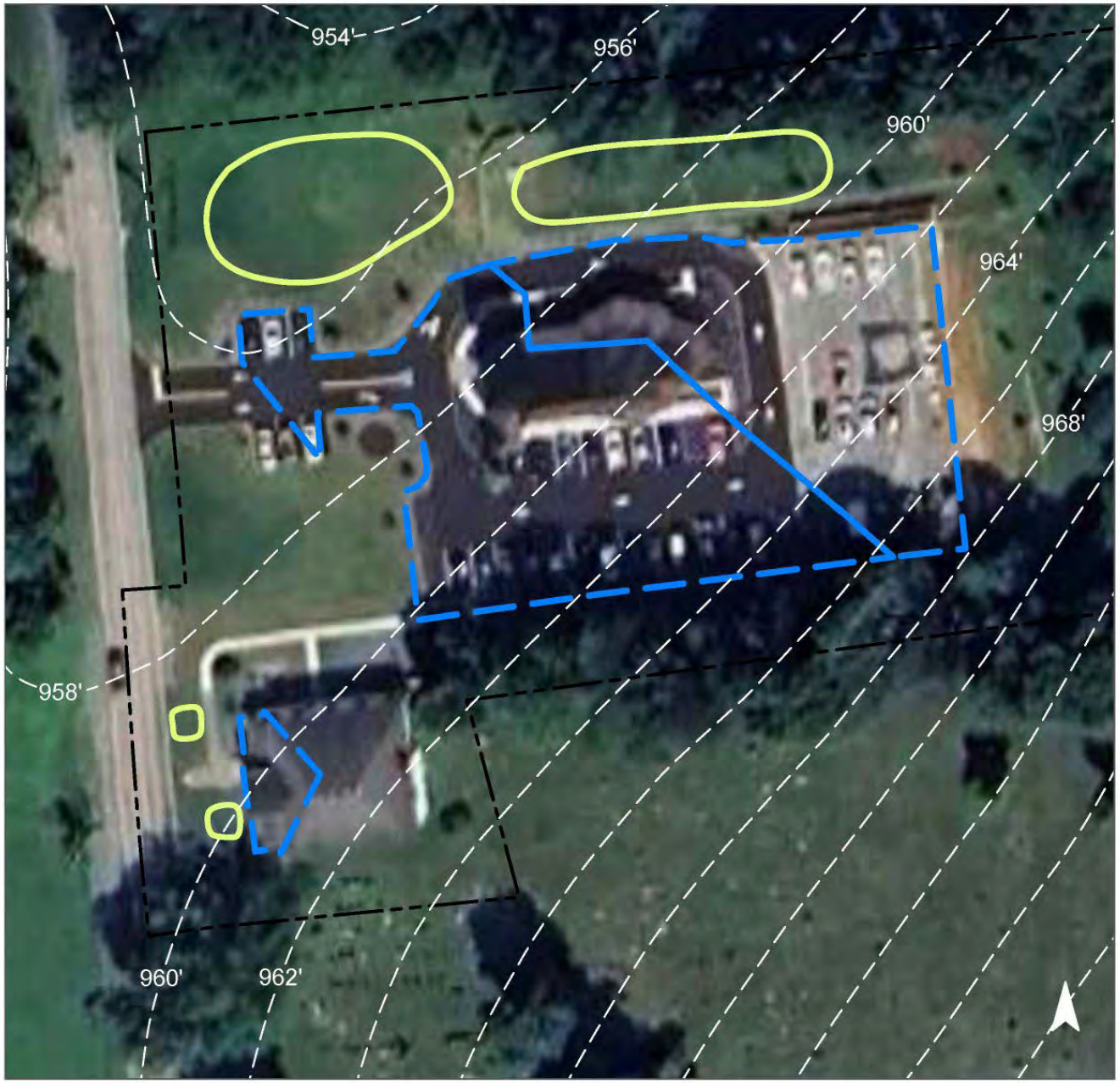
Block and Lot: Block 51, Lot 31.03

Rain gardens can be installed on the northwest corners of the parking lot to capture stormwater runoff from the pavement and rooftop of the church (which has no downspouts). and treat and infiltrate the stormwater. This requires curb cuts off the northwest corner of the building, and the north edge of the small row of parking stalls close to the road. An existing retention basin north of the parking lot can be transformed into a rain garden to capture, treat, and infiltrate runoff from the parking lot and church. Rain gardens can also be placed by disconnected downspouts off the northwest and southwest corners of the small building in the southwest corner of the property 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 50"
36	37,538	1.8	19.0	172.4	0.029	1.17

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	30,965	0.917	135	64,590	2.43	7,740	$77,400

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Life Giving Fountain Romanian Orthodox Church

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

0 30' 60'

BENEDICT A. CUCINELLA SCHOOL

RAP ID: 8

Subwatershed: Raritan River South Branch

Site Area: 1,278,641 sq. ft.

Address: 470 Naughright Road
Long Valley, NJ 07853

Block and Lot: Block 12, Lot 37

Downspout planter boxes are suggested at the entrance of the school to promote green infrastructure awareness. A section of parking spaces can be converted to pervious pavement to capture and infiltrate runoff from the parking lot. Tree filter boxes can be installed in islands in the parking lot to capture runoff from other spaces in 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	6.61	287,755	13.9	145.3	1,321.2	0.224

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	0.230	38	17,960	0.63	2,715	$67,875
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000
Tree filter boxes	n/a	116	n/a	n/a	3 (boxes)	$30,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Benedict A. Cucinella School

- pervious pavement
- planter box
- tree filter box
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

DRAKESTOWN UNITED METHODIST CHURCH

RAP ID: 9

Subwatershed: Raritan River South Branch

Site Area: 42,024 sq. ft.

Address: 6 Church Road
Hackettstown, NJ 0784

Block and Lot: Block 10, Lot 11

Downspout planter boxes can be installed to capture and retain runoff from the rooftop. Pervious pavement is proposed along the south edge of the parking lot to treat the entire parking lot's drainage area. 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"
39	0.38	16,468	0.8	8.3	75.6	0.013

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	0.168	28	13,090	0.46	1,630	$40,750
Planter boxes	n/a	1	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Drakestown United Methodist Church

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

0 25' 50'

Immanuel Lutheran Church

RAP ID: 10

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 218,150 sq. ft.

Address: 40 Coleman Road
Long Valley, NJ 07853

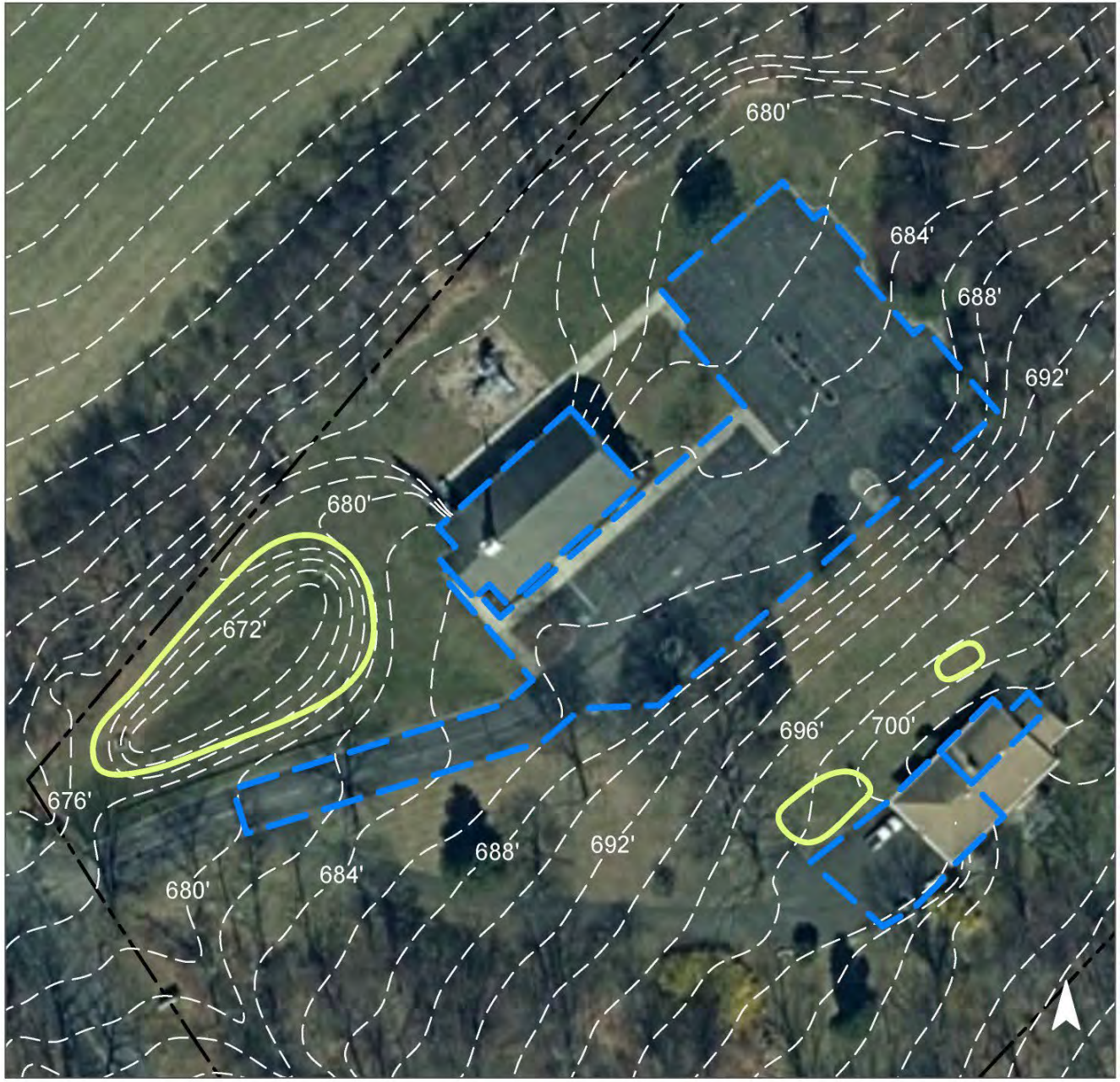
Block and Lot: Block 18.01, Lot 18

In the southwest corner of the property, there is an existing retention basin to which water is conveyed from the rooftop and pavement via connected downspouts and catch basins. This can be converted into a rain garden to capture, treat, and infiltrate stormwater runoff. A trench drain can be installed half-way up the driveway coming from the southwest to increase runoff capture and convey it to the rain garden. Two rain gardens can also be installed off the northwest facade of the house in the southeast section of the property. 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 50"
16	33,865	1.6	17.1	155.5	0.026	1.06

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	26,010	0.770	114	54,250	2.04	6,505	$65,050

GREEN INFRASTRUCTURE RECOMMENDATIONS



Immanuel Lutheran Church

- bioretention system
- captured drainage area
- property line
- 2017 - 2018 USGS Lidar: NW New Jersey 6 County

0 30' 60'

LONG VALLEY MIDDLE SCHOOL

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 1,089,160 sq. ft.

Address: 51 West Mill Road
Long Valley, NJ 07853

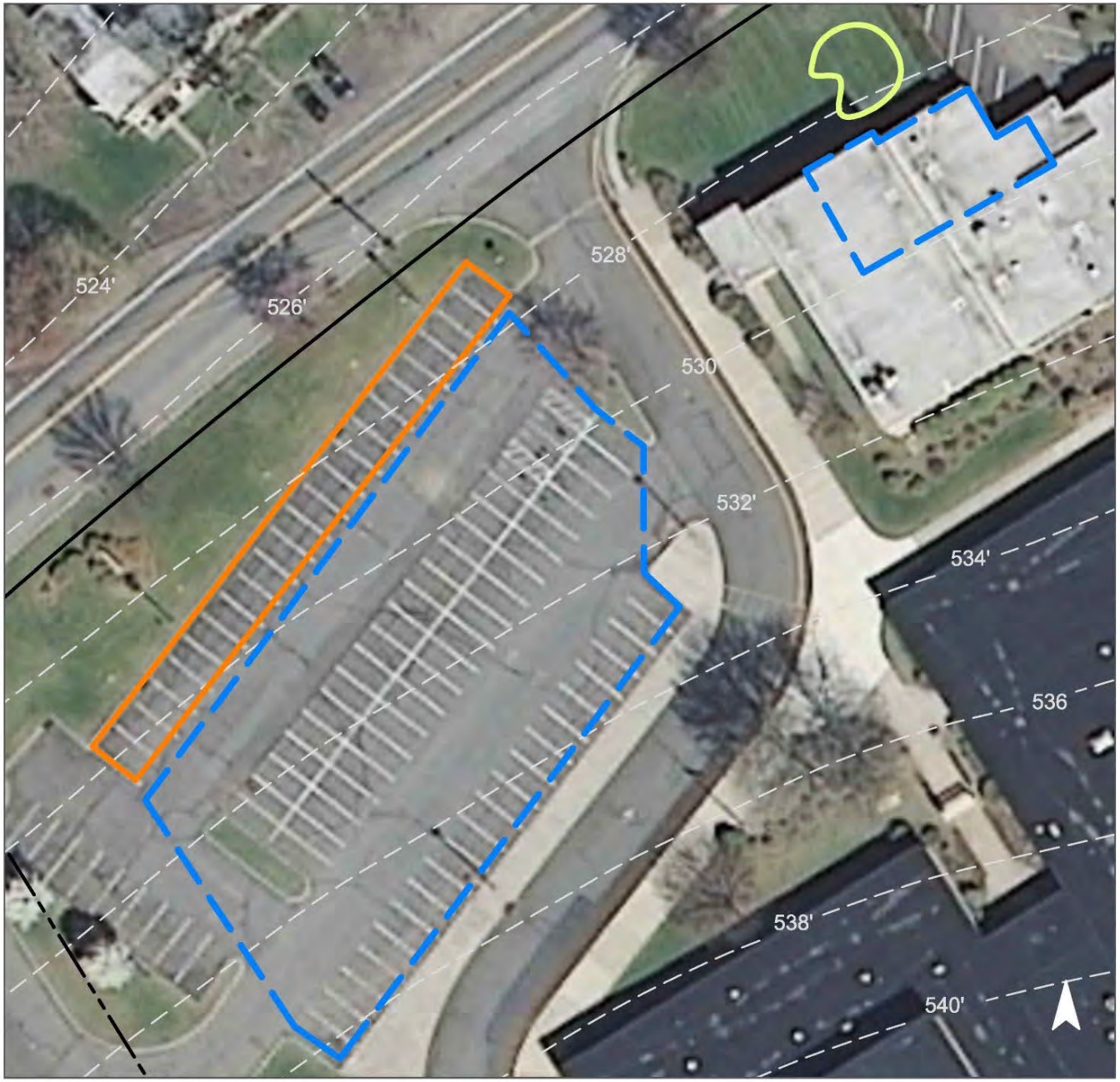
Block and Lot: Block 34 Lot 49

Pervious pavement is proposed in a section of parking spaces to capture and infiltrate runoff from the parking lot. A bioretention system is proposed in the north turfgrass area to capture runoff from the roof of the school. 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"
32	8.03	349,813	16.9	176.7	1,606.1	0.273

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	4,870	0.17	600	$3,000
Pervious pavement	0.527	88	41,160	1.45	3,610	$90,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Long Valley Middle School

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

0 25' 50'

LONG VALLEY PRESBYTERIAN CHURCH

RAP ID: 12

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 441,899 sq. ft.

Address: 39 Bartley Road
Long Valley, NJ 07853

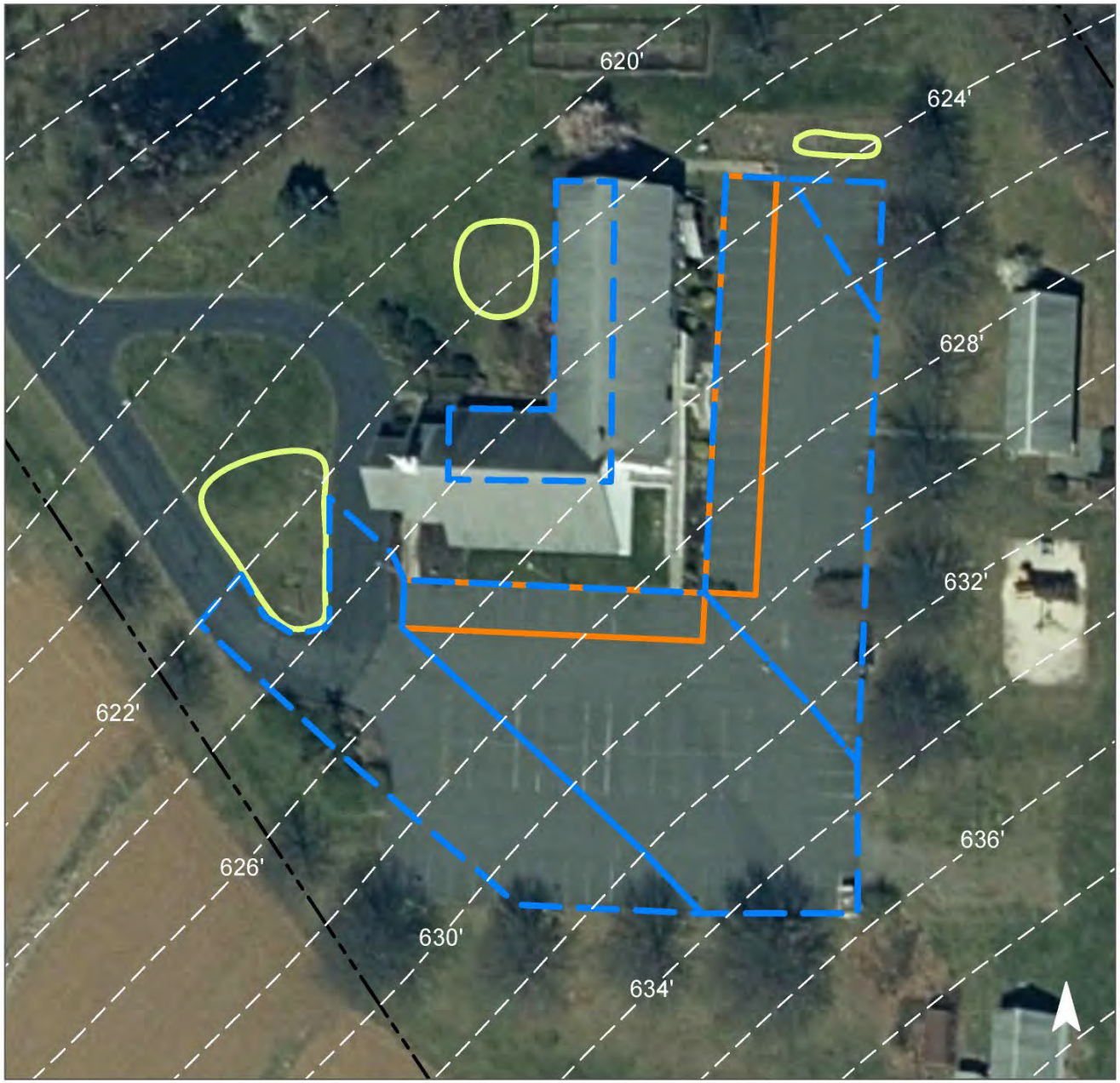
Block and Lot: Block 29, Lot 20.03

Rain gardens can be installed off the north and west ends of the parking lot, and the west face of the church to capture, treat, and infiltrate stormwater runoff. In the west end of the parking lot, a trench drain could be installed on the western side of the roundabout to increase stormwater runoff capture. The existing parking spaces off the south and east faces of the building can be converted into pervious pavement to capture and infiltrate stormwater. The pervious pavement off the south face of the building would collect runoff from the parking lot and via downspouts which require disconnection, and the pervious pavement off the east face would collect 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 50"
16	71,830	3.5	36.3	329.8	0.056	2.24

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	14,635	0.433	65	30,530	1.15	3,695	$36,950
Pervious pavement	23,795	0.705	105	49,630	1.87	5,520	$138,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Long Valley Presbyterian Church

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

0 30' 60'

OLD FARMERS ROAD ELEMENTARY SCHOOL

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 636,598 sq. ft.

Address: 51 Old Farmers Road
Long Valley, NJ 07853

Block and Lot: Block 35, Lot 3.01

Two rain gardens can be installed to capture, treat, and infiltrate stormwater runoff from the building's roof as well as the adjacent 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"
24	151,534	7.3	76.5	695.7	0.118	4.16

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 systems	0.349	58	27,290	0.96	3,350	$16,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

OLD FARMERS ROAD ELEMENTARY SCHOOL

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

0 50' 100'

SCHOOLEYS MOUNTAIN PARK PARKING

RAP ID: 14

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 1,975,631 sq. ft.

Address: 91 East Springtown Road
Long Valley, NJ 07853

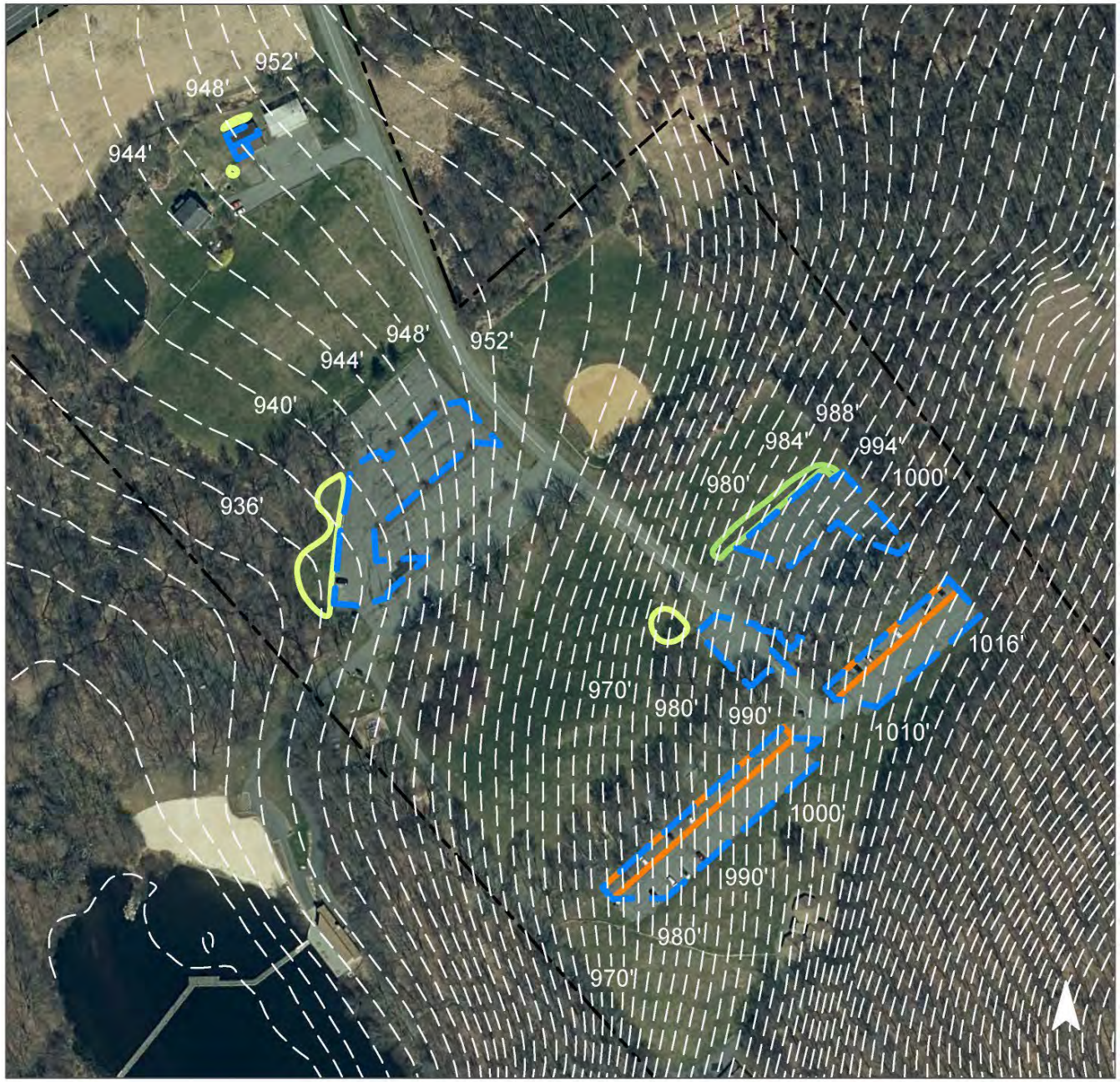
Block and Lot: Block 25, Lot 56.01,56.02

Rain gardens can be installed to capture, treat, and infiltrate stormwater runoff coming from the rooftops of buildings in the northwest corner of the property, in the west corners of the central parking lot, and the smaller parking lot further southeast. A bioswale can be installed off the northern edge of the central eastern parking lot to treat stormwater runoff while conveying it toward a catch basin in the western corner of this lot. In the furthest southeast parking lots, rows of parking stalls can be converted to pervious pavement to capture and infiltrate stormwater runoff from the pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
10	206,323	9.9	104.2	947.3	0.161	6.43

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	28,255	0.837	124	58,930	2.21	7,065	$70,650
Bioswale	12,310	0.182	38	11,520	0.12	3,080	$30,800
Pervious Pavement	33,080	0.979	144	69,000	2.59	10,680	$267,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Schooleys Mountain Park Parking

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

0 100' 200'

ST. LUKE PARISH

RAP ID: 15

Subwatershed: Raritan River South Branch

Site Area: 494,989 sq. ft.

Address: 265 West Mill Road
Long Valley, NJ 07853

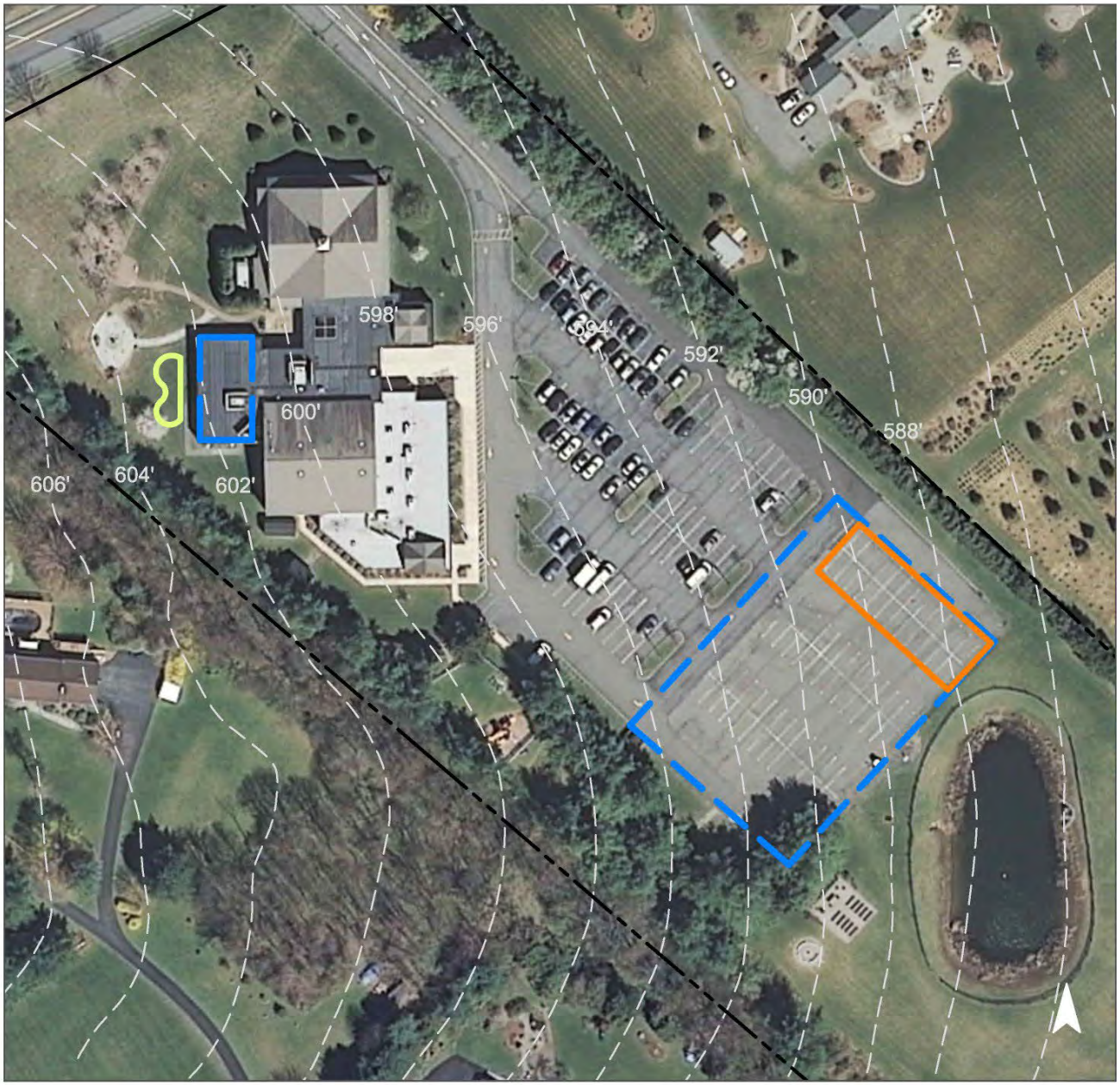
Block and Lot: Block 34 Lot 38

A bioretention system can be installed to infiltrate the water from three disconnected downspouts on the west side of the building. In addition, pervious pavement is proposed along the southeast corner of the parking lot to the parking lot's drainage area. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
28	136,492	6.6	68.9	626.7	0.106	3.74

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	0.060	10	4,710	0.17	580	$2,900
Pervious pavement	0.700	117	54,730	1.93	4,800	$120,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Luke Parish

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

0 50' 100'

ST. MARK THE EVANGELIST ROMAN CATHOLIC CHURCH

RAP ID: 16

Subwatershed: Raritan River South Branch

Site Area: 366,270 sq. ft.

Address: 59 Spring Lane
Long Valley, NJ 07853

Block and Lot: Block 20 Lot 90

A bioretention system can be installed in the southeast corner of the property to mitigate flooding. Additionally, pervious pavement is suggested adjacent to the southwest edge of the building to capture and infiltrate 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"
43	158,478	7.6	80.0	727.6	0.123	4.35

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	0.159	27	12,420	0.44	1,525	$7,625
Pervious pavement	1.473	247	115,100	4.06	8,910	$222,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Mark the Evangelist Roman Catholic Church

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

0 50' 100'

WASHINGTON TOWNSHIP DEPARTMENT OF PUBLIC WORKS

RAP ID: 17

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 576,734 sq. ft.

Address: 54 Rock Road
Long Valley, NJ 07853

Block and Lot: Block 23, Lot 16.01

Rain gardens can be installed off the northwest corner and southern edge of the two buildings in the west edge of the property, and off the southern facades of the two buildings in the southeast edge of the property to capture, treat, and infiltrate stormwater from the rooftops via downspouts requiring disconnection. Rows of parking stalls off the west face of the western buildings, south face of the building in the northeast, and northwest corner of the building in the east can be converted to pervious pavement to capture and infiltrate stormwater runoff. The northeast and east buildings require one downspout each to be disconnected. 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 50"
57	329,629	15.9	166.5	1,513.4	0.257	10.27

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	5,540	0.164	25	11,560	0.43	1,385	$13,850
Pervious pavement	21,085	0.624	91	43,980	1.65	5,405	$135,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

Washington Township Department of Public Works

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

0 50' 100'

WASHINGTON TOWNSHIP MUNICIPAL BUILDING

RAP ID: 18

Subwatershed: Raritan River South Branch

Site Area: 42,944 sq. ft.

Address: 43 Schooleys Mountain Road
Long Valley, NJ 07853

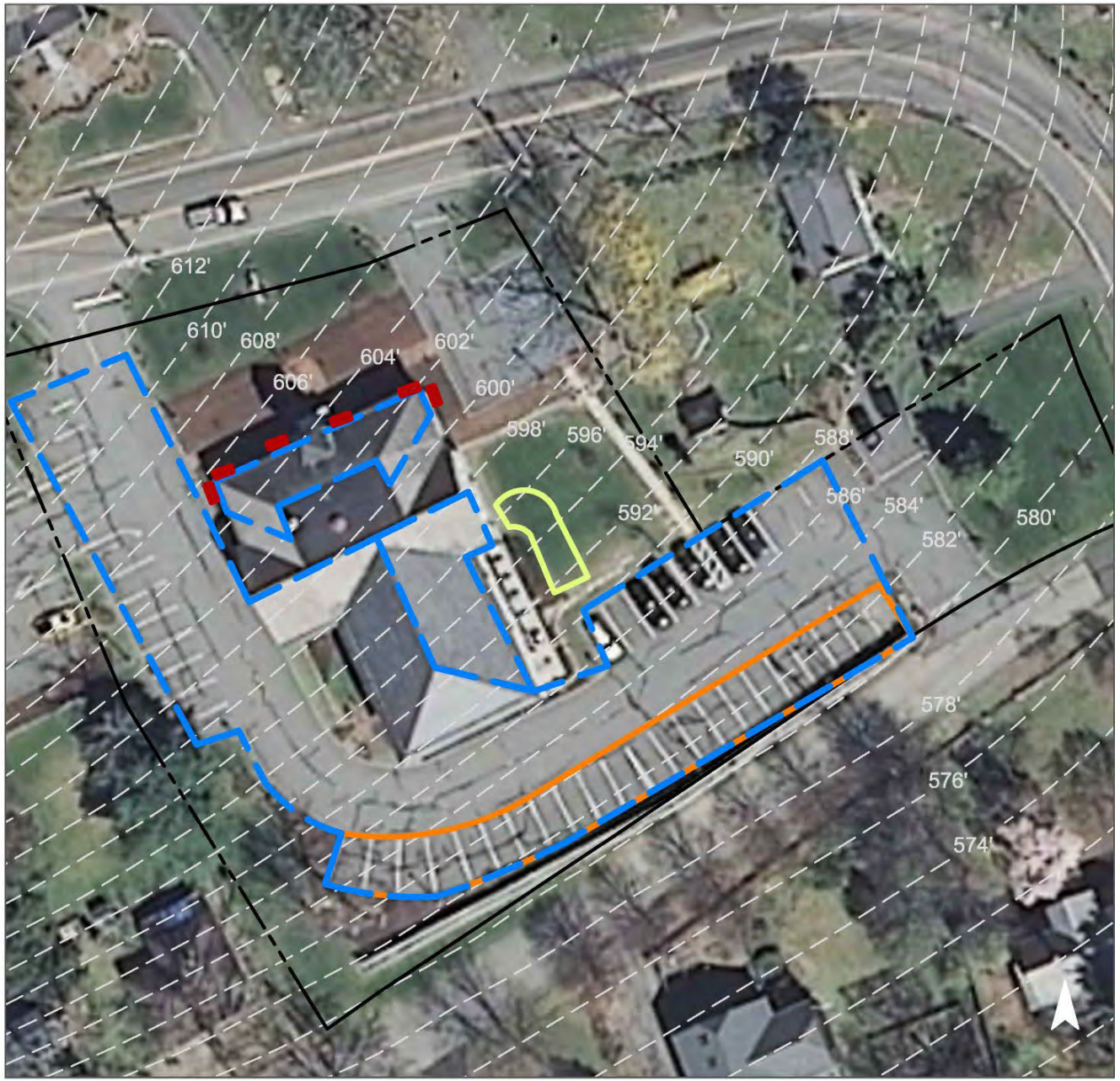
Block and Lot: Block 26 Lot 2

A rain garden can be installed adjacent to the building to infiltrate water from two connected downspouts. Additionally, pervious pavement can capture and infiltrate the stormwater runoff from the entire parking lot and a portion of the roof. Downspout planter boxes can be installed at downspouts to capture runoff from the roof as well. 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"
60	34,223	2.3	24.2	220.0	0.027	0.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.039	7	3,050	0.11	400	$2,000
Pervious pavement	0.519	87	40,560	1.43	4,020	$100,500
Planter boxes	n/a	5	n/a	n/a	6 (boxes)	$6,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Washington Township Municipal Building

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

0 25' 50'

WASHINGTON TOWNSHIP POLICE DEPARTMENT

RAP ID: 19

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 105,858 sq. ft.

Address: 1 East Springtown Road
Long Valley, NJ 07853

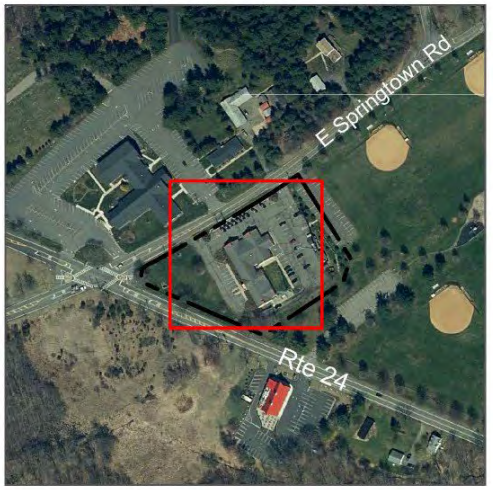
Block and Lot: Block 24, Lot 8,8.01

A rain garden off the southeast facade of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. The rows of parking stalls off the southwest and northeast facades of the building can be converted into pervious pavement to capture and infiltrate stormwater from the rooftop. Two cisterns could be installed off the northeast corner and eastern nook of the building to divert and detain stormwater runoff for later non-potable reuse such as washing police vehicles. All stormwater conveyed from the rooftop is via downspouts which would require disconnection. 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 50"
66	69,597	3.4	35.2	319.5	0.054	2.17

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	2,145	0.064	10	4,470	0.17	535	$5,350
Pervious pavement	23,275	0.689	101	48,550	1.82	6,040	$151,000
Rainwater Harvesting	2,110	0.062	10	1,650	0.00	1,650 (gal)	$4,950

GREEN INFRASTRUCTURE RECOMMENDATIONS



Washington Twp. Police Dept.

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

0 25' 50'

WASHINGTON TOWNSHIP PUBLIC LIBRARY AND SENIOR CITIZEN CENTER

RAP ID: 20

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 3,126,890 sq. ft.

Address: 35 & 37 East Springtown Road
Long Valley, NJ 07853

Block and Lot: Block 24, Lot 7

Rain gardens can be installed off the northeast and southwest corners of the senior center, and the south face of the library to capture, treat, and infiltrate stormwater from the roof via disconnected downspouts. Rows of parking stalls in the two parking lots to the north, the small parking lot off the south facade of the senior center, and the southern tip of the library's parking lot can be converted to pervious pavement to capture and infiltrate stormwater from the roof and pavement. A bioswale can also be installed along the northern half of the library's parking lot to convey water to the catch basins along the way while treating 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 50"
9	292,858	14.1	147.9	1,344.6	0.228	9.13

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	4,160	0.123	19	8,680	0.33	1,035	$10,350
Bioswale	16,175	0.239	50	15,130	0.26	4,045	$40,450
Pervious Pavement	45,780	1.355	200	95,490	3.59	13,410	$335,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Washington Twp. Public Library & Senior Citizen Center

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

0 50' 100'

WEST MORRIS CENTRAL HIGH SCHOOL

RAP ID: 21

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 1,827,488 sq. ft.

Address: 259 Bartley Road
Chester, NJ 07930

Block and Lot: Block 17, Lot 8

Rain gardens may be installed off portions of the west, south, and east facades of the school building to capture, treat and infiltrate stormwater runoff. Runoff would be conveyed to these rain gardens via downspouts requiring disconnection. Two existing swales can be converted to bioswales on the north and northwest sections of the property to treat stormwater runoff from adjacent parking lots, while conveying it to catch basins. Rows of parking stalls in the southeastern and northeastern parking lots can be converted to pervious pavement to capture and infiltrate stormwater runoff from the pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
40	734,334	35.4	370.9	3,371.6	0.572	22.89

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	38,760	1.148	169	80,840	3.04	9,690	$96,900
Bioswale	123,605	1.830	386	115,570	2.78	30,900	$309,000
Pervious Pavement	29,370	0.870	127	61,260	2.30	8,280	$207,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

West Morris Central High School

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

0 100' 200'

ZION LUTHERAN CHURCH AND PARISH CENTER

RAP ID: 22

Subwatershed: Raritan River South Branch

HUC 14: 02030105010050

Site Area: 401,736 sq. ft.

Address: 11 Schooleys Mountain Road
Long Valley, NJ 07853

Block and Lot: Block 33, Lot 44

Rain gardens can be installed on the north and southwest faces of the church, the north face of the parish center building, and along the southwest corner of the parking lot to capture, treat, and infiltrate stormwater from the rooftops via disconnected downspouts and 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 50"
16	63,124	3.0	31.9	289.8	0.049	1.97

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	15,560	0.461	68	32,460	1.22	3,885	$38,850

GREEN INFRASTRUCTURE RECOMMENDATIONS

Zion Lutheran Church and Parish Center

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

0 30' 60'

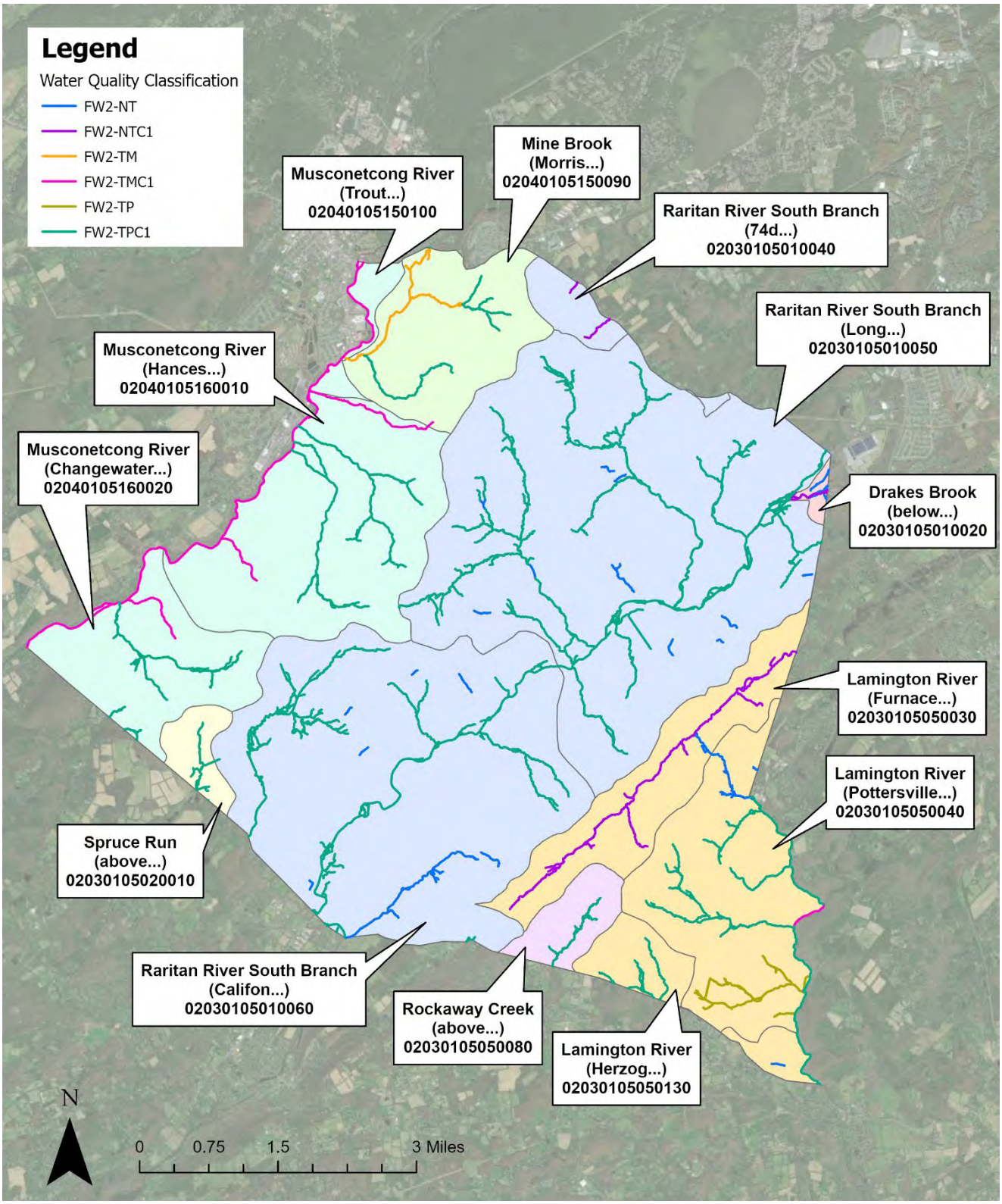


Figure 13. Water Quality Classification of Surface Waters in Washington Township

Table 11. Water Quality Classification of Surface Waters in Washington Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	8.4	6.7%
Freshwater 2, non-trout, Category One	FW2-NTC1	8.4	6.6%
Freshwater 2, trout production, Category One	FW2-TPC1	91.4	72.5%
Freshwater 2, trout maintenance	FW2-TM	2.8	2.3%
Freshwater 2, trout production	FW2-TP	3.8	3.0%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	11.4	9.0%

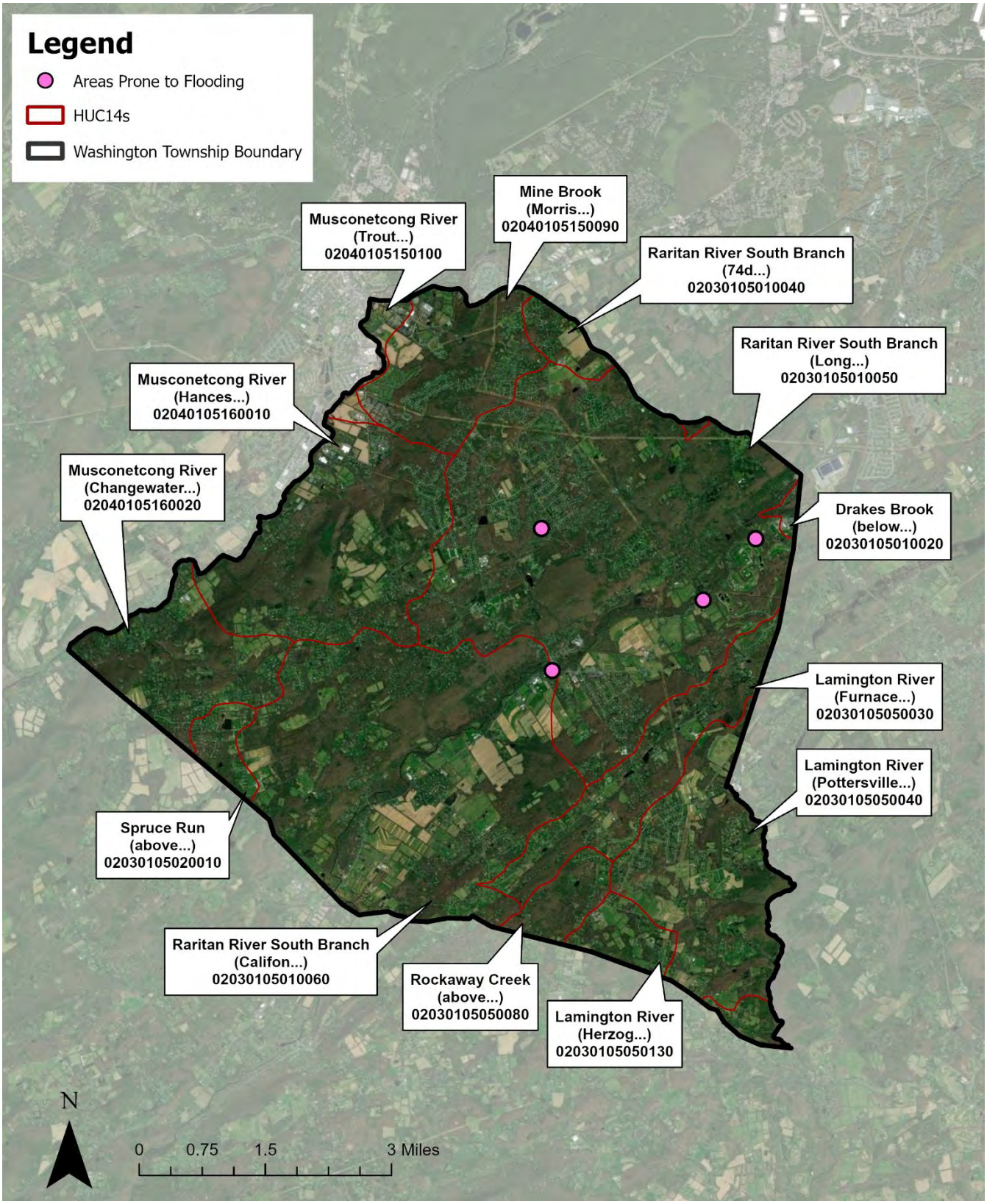


Figure 14. Areas Prone to Flooding in Washington Township