Califon Borough

Introduction

Located in Hunterdon County in New Jersey, Califon Borough covers about 0.98 square miles. With a population of 1,005 (2020 United States Census), Califon Borough consists of 53.4% of urban land uses by area. Of that urban land use, approximately 31.9% is comprised of low-density residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial and recreational purposes. Natural lands (forests, wetlands, and water) make up approximately 44.4% of Califon Borough.

Califon Borough contains portions of three subwatersheds (Table 1). There are approximately 3.1 miles of rivers and streams within the municipality; these include Frog Hollow Brook and its tributaries, South Branch Raritan River and its tributaries, and an uncoded tributary. Califon 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 Califon Borough

Subwatershed	HUC14
Raritan River South Branch (Califon Bridge to Long Valley)	02030105010060
Raritan River South Branch (Stone Mill gage to Califon)	02030105010070
Rockaway Creek (above McCrea Mills)	02030105050080

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

The Q-Farms in Califon Borough have been identified (see Figure 6). Table 5 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. The Q-Farms in the study area of Califon Borough have been identified (see Figure 7 and Table 6). It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 8 illustrates the land use on the Q-Farms, which is summarized in Table 7. There are 13.3 acres of agricultural land use in Califon Borough, of which, 10.4 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 16 Q-Farms and a portion of one Q-Farm in the study area portion of Califon Borough, totaling 112.3 acres. Within the 16 Q-Farms and portion of one Q-Farm, there are approximately 5.5 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. For the Q-Farms in Califon Borough, 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. Two HUC14s are included in the study area (02030105010060, 02030105010070). Within these two HUC14s, there are 22.2 acres of buildings and 36.4 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 Califon Borough, approximately 1.4 acres of rooftop runoff would be managed with 0.28 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Califon Borough, approximately 3.6 acres of roadway would be managed, or 1.0 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. The Property Class 15 parcels for Califon Borough are shown in Figure 10 and presented in Table 8. All tax-exempt parcels in Califon Borough are within the study area. Available information for each parcel in the study area is presented in Table 8. Class 15E parcels were excluded from the assessment. Six 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 Califon Borough. Figure 12 depicts the water quality classifications of surface waters throughout Califon Borough and Table 9 summarizes the total miles and percentage of each surface water quality classification in the municipality.

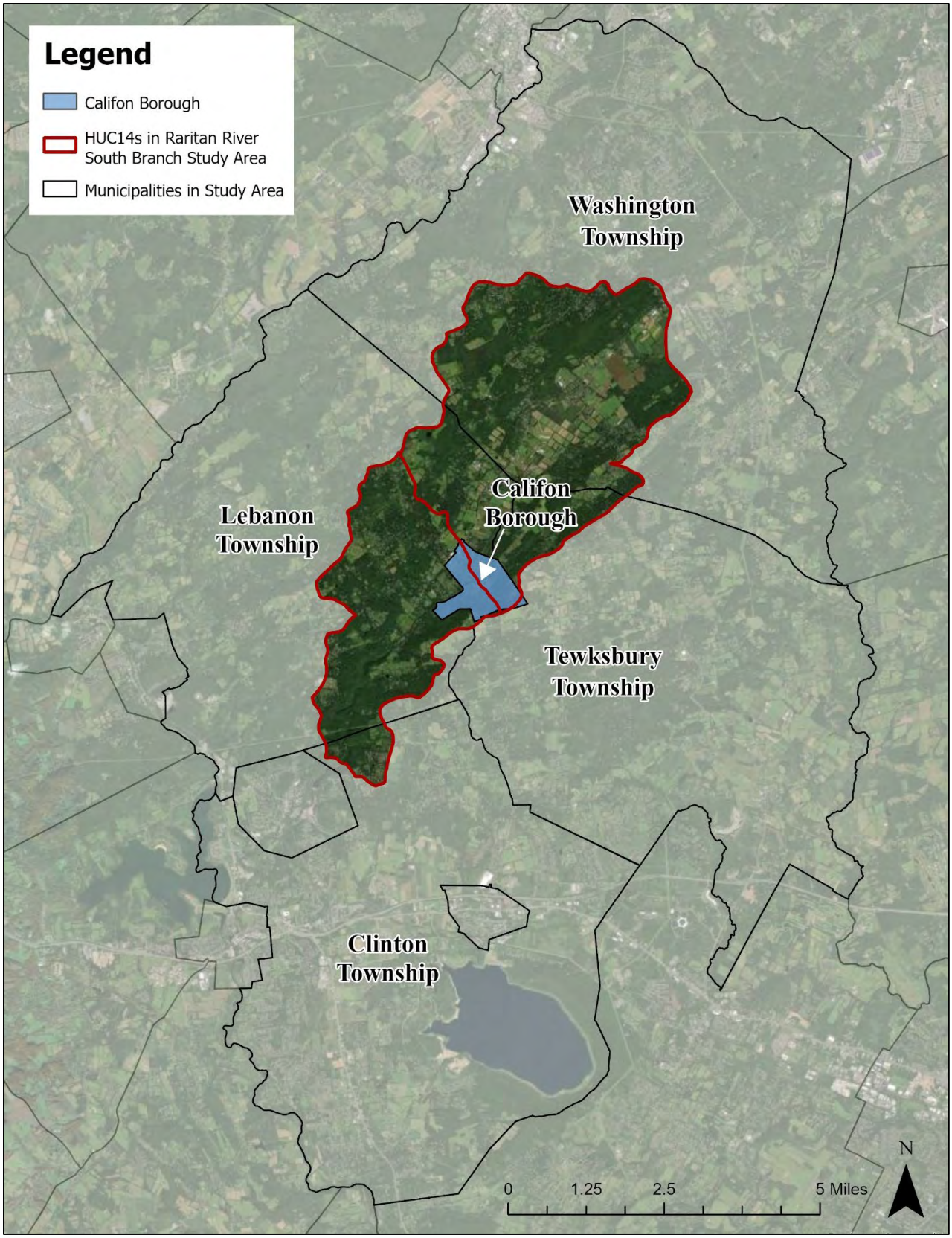


Figure 1: Municipalities in the Study Area

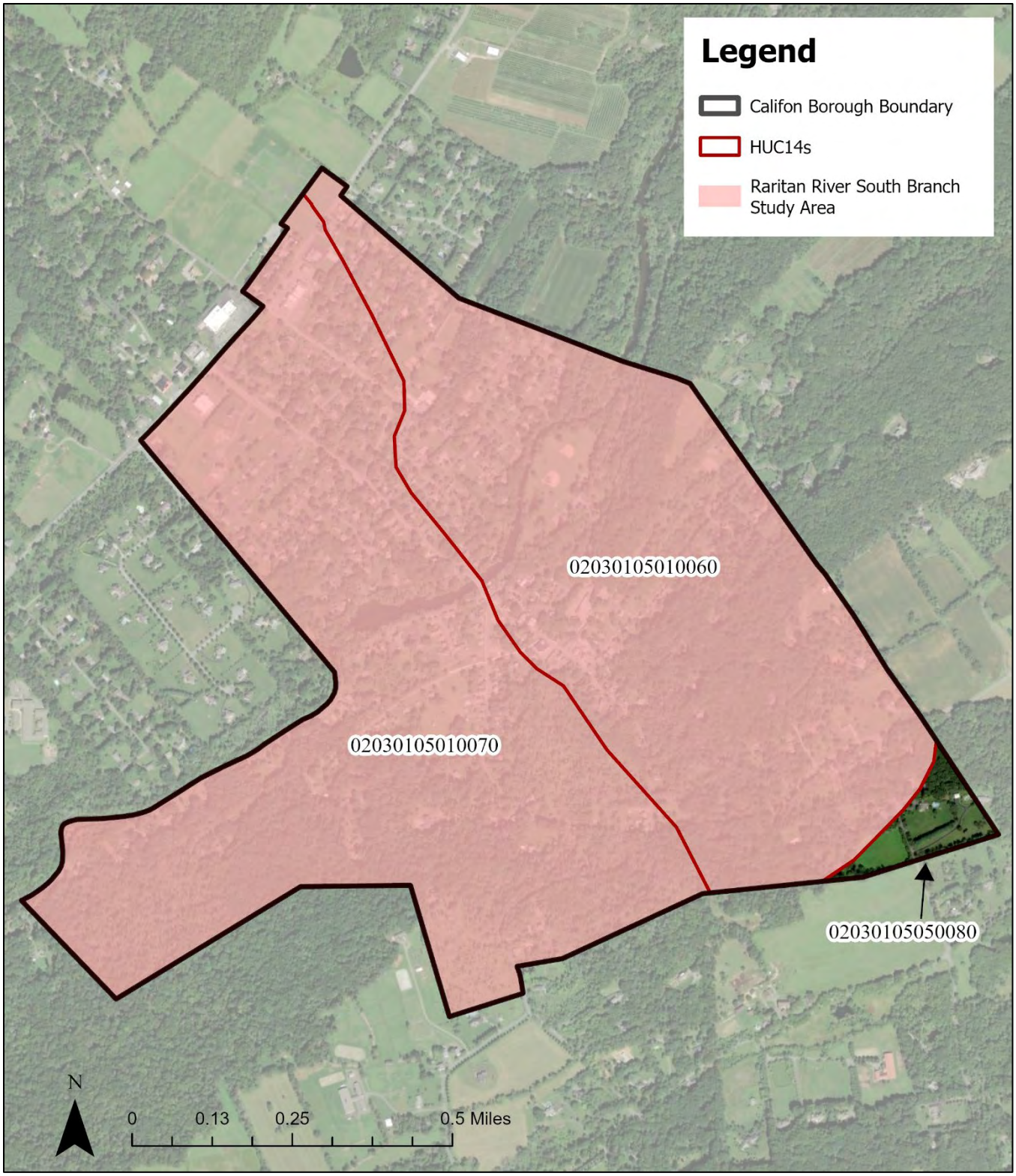


Figure 2: Portions of three HUC14s are in Califon Borough

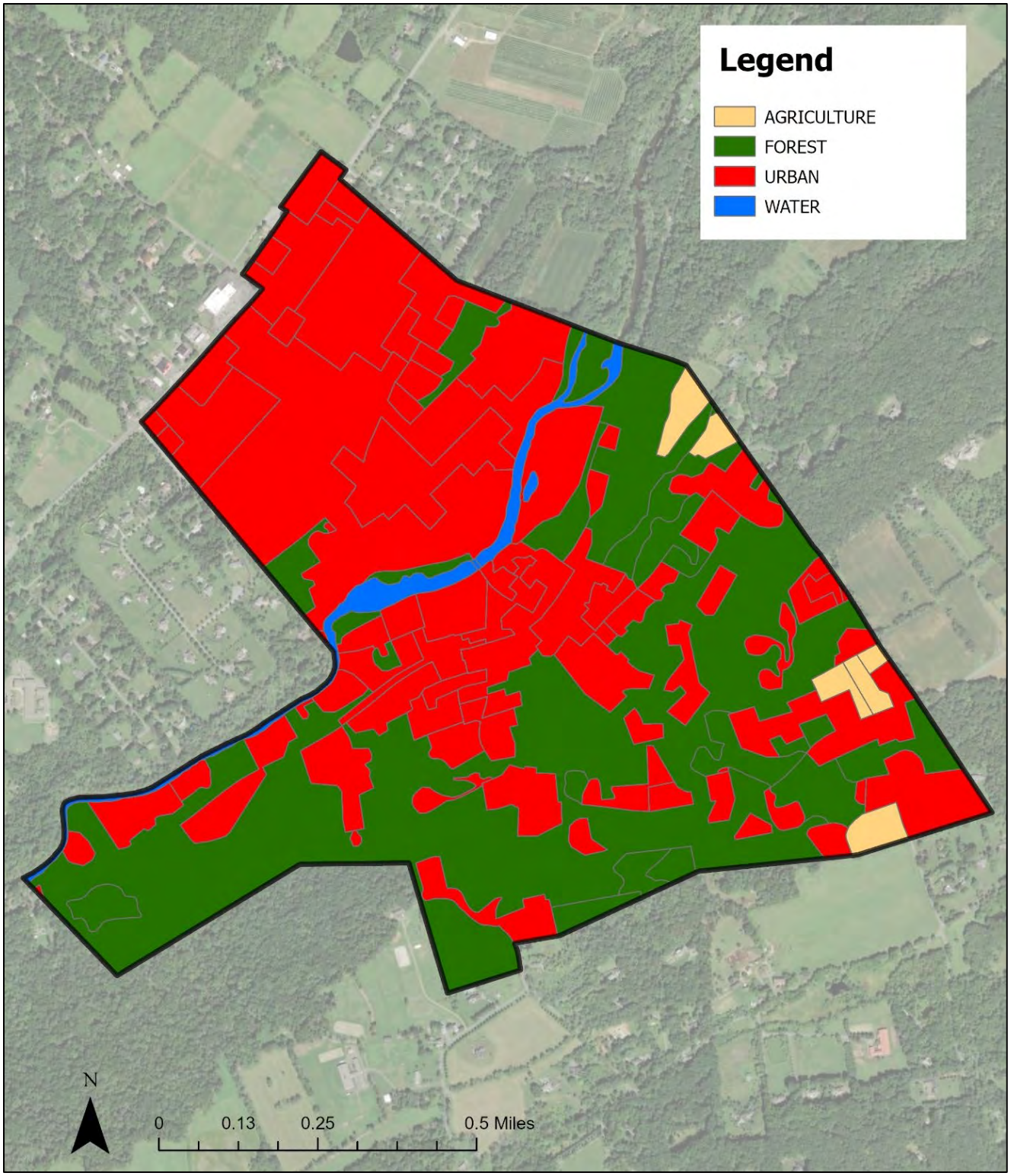


Figure 3: Land Use in Califon Borough

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010060				
Agriculture	10.3	13.4	103.3	3,097.7
Barren Land	0.0	0.0	0.0	0.0
Forest	120.1	12.0	360.4	4,805.7
Urban	144.0	201.6	2,160.0	20,159.6
Water	5.4	0.5	16.2	215.8
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**279.9**	**227.6**	**2,639.8**	**28,278.8**
02030105010070				
Agriculture	0.1	0.1	0.9	27.3
Barren Land	0.0	0.0	0.0	0.0
Forest	143.2	14.3	429.5	5,726.9
Urban	183.0	256.2	2,745.0	25,620.3
Water	7.9	0.8	23.6	315.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**334.1**	**271.4**	**3,199.1**	**31,689.5**
02030105050080				
Agriculture	2.9	3.8	29.0	870.3
Barren Land	0.0	0.0	0.0	0.0
Forest	1.8	0.2	5.5	73.3
Urban	7.9	11.0	118.3	1,103.8
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**12.6**	**15.0**	**152.8**	**2,047.3**
All HUCs				
Agriculture	13.3	17.3	133.2	3,995.2
Barren Land	0.0	0.0	0.0	0.0
Forest	265.1	26.5	795.4	10,605.9
Urban	334.9	468.8	5,023.3	46,883.7
Water	13.3	1.3	39.8	530.8
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**626.6**	**514.0**	**5,991.7**	**62,015.6**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Califon 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 Califon Borough. Based upon the NJDEP impervious surface data, Califon Borough has impervious cover totaling 17.0%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Califon 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, Califon Borough's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to not meeting the state's surface water quality standards.

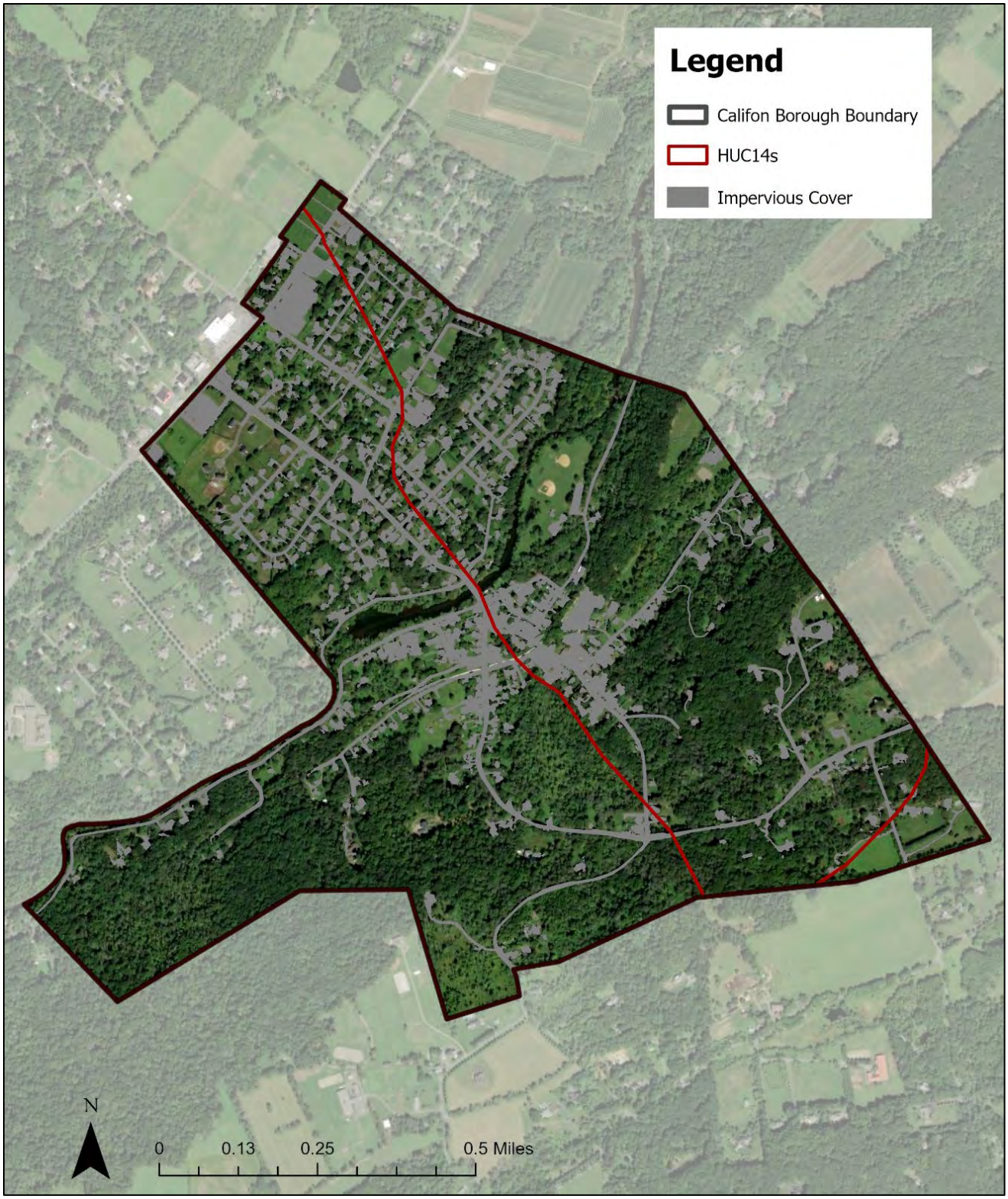


Figure 4: Impervious Cover in Califon Borough

Table 3: Impervious Cover Analysis by HUC14 for Califon Borough

Class	Area (acres)	HUC Impervious Cover (%)
02030105010060		
Building	10.94	
Other	23.02	
Road	14.42	
TOTAL =	**48.4**	**17.3%**
02030105010070		
Building	11.23	
Other	23.85	
Road	21.98	
TOTAL =	**57.1**	**17.1%**
02030105050080		
Building	0.14	
Other	0.75	
Road	0.24	
TOTAL =	**1.1**	**9.0%**
All HUCs		
Building	22.31	
Other	47.62	
Road	36.64	
TOTAL =	**106.6**	**17.0%**

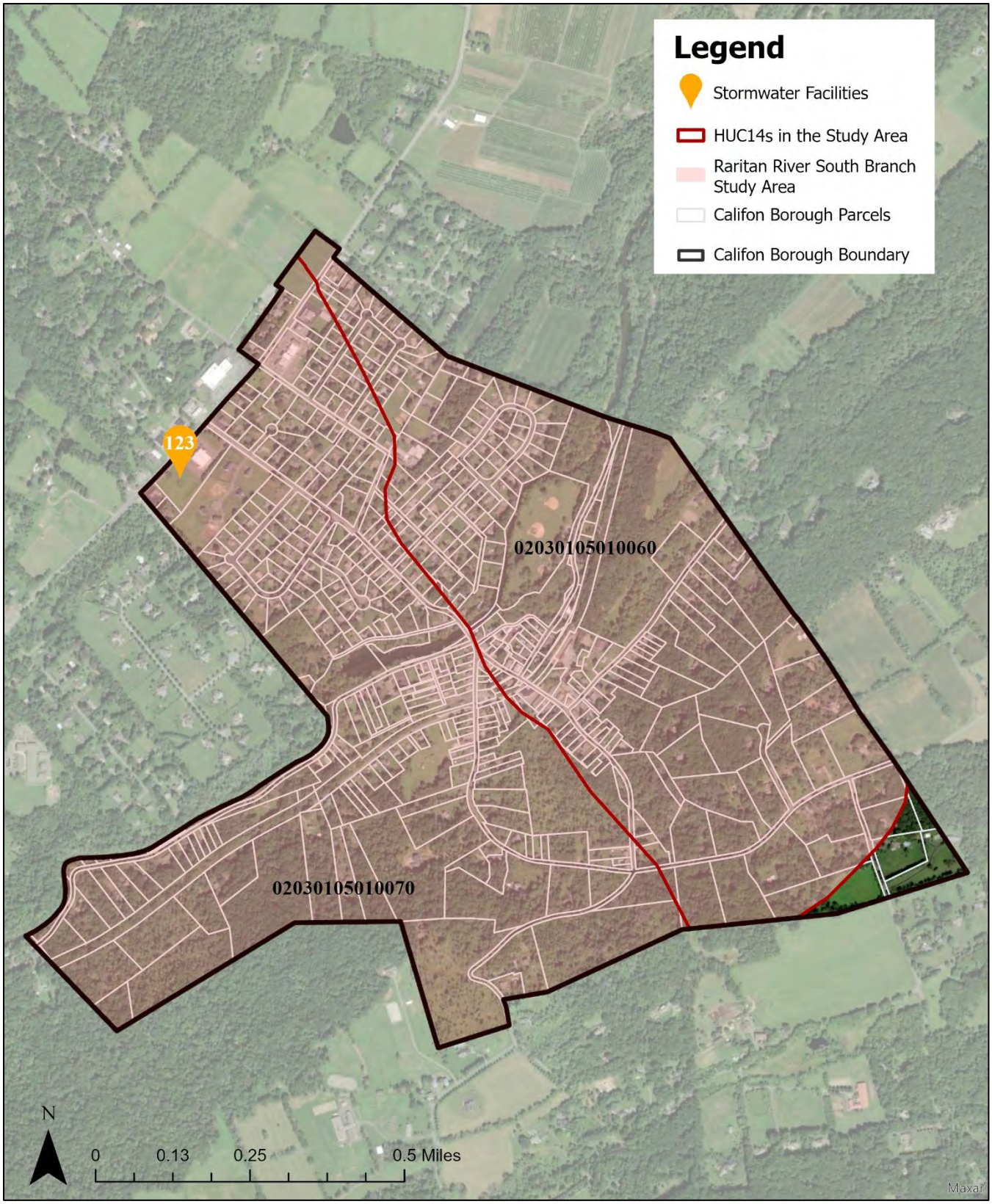


Figure 5: Stormwater Facilities in the Study Area of Califon Borough

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

Raritan River South Branch Study Area		
ID	**Address**	**Type**
123	428 County Rd 513	D

"D" = Detention

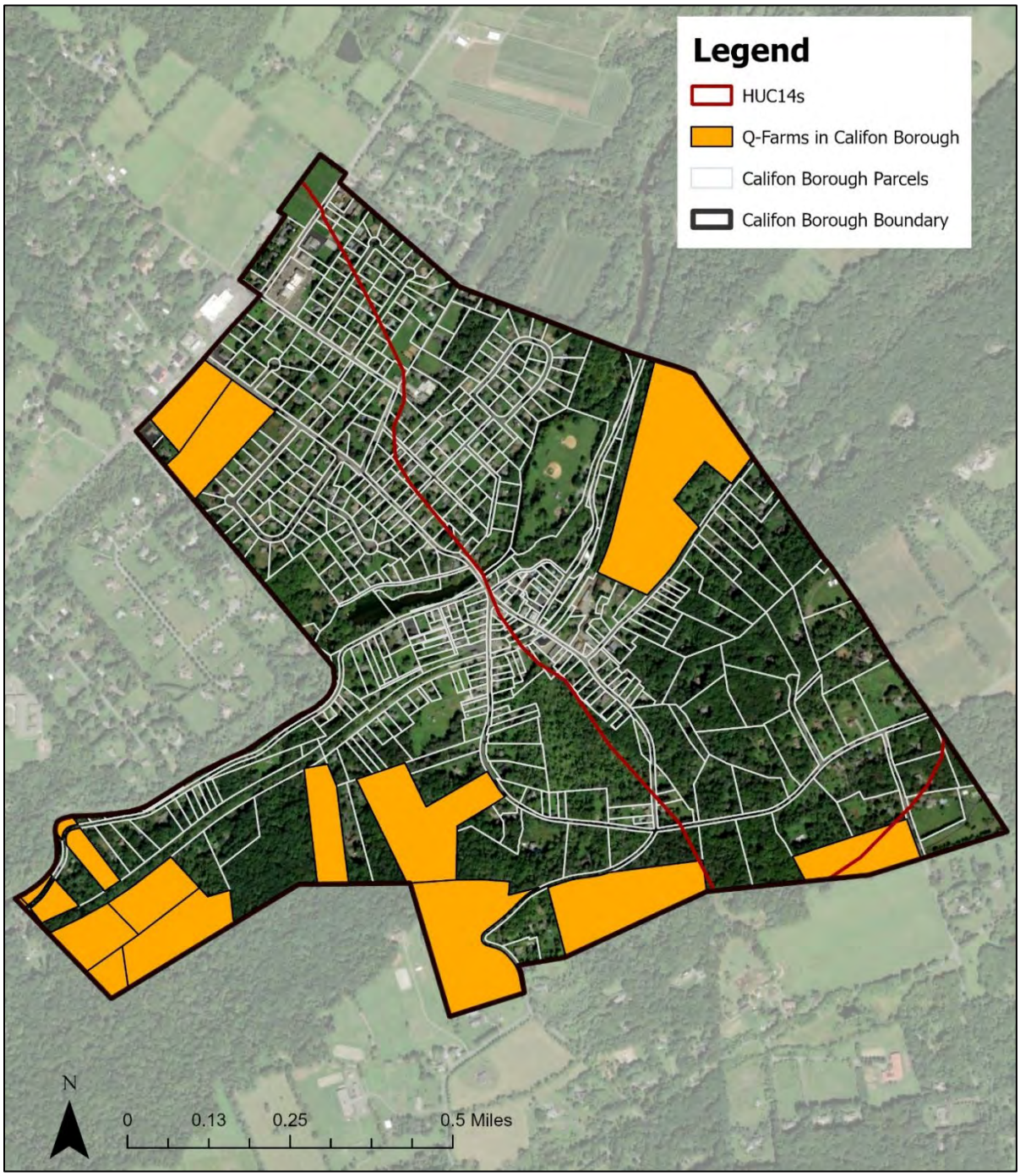


Figure 6: Q-Farm Parcels in Califon Borough

Table 5: Q-Farm Parcels in Califon Borough

Block	Lot	Q-Code	Prop Class	Location
2	3	QFARM		County Route 513
2	3.01	QFARM		County Route 512
14	1	QFARM	3B	River Road
14	1.01	QFARM	3B	River Strip
14	2.04	QFARM	3B	Access To River
15	3	QFARM	3B	Off River Road
15	4.04	QFARM	3B	91 River Road
17	1	QFARM	3B	101 River Road
17	2	QFARM	3B	95 River Road
17	6	QFARM	3B	59 Railroad Avenue
17	8	QFARM	3B	99 River Road
17	9	QFARM	3B	97 River Road
18	25	QFARM	3B	61 Academy Street
24	5	QFARM	3B	Philhower Avenue
25	1	QFARM	3B	1403 Califon-Cokesbury Rd
27	3	QFARM	3B	202 Cokesbury Road
28	6	QFARM	3B	106 Guinea Hollow Road

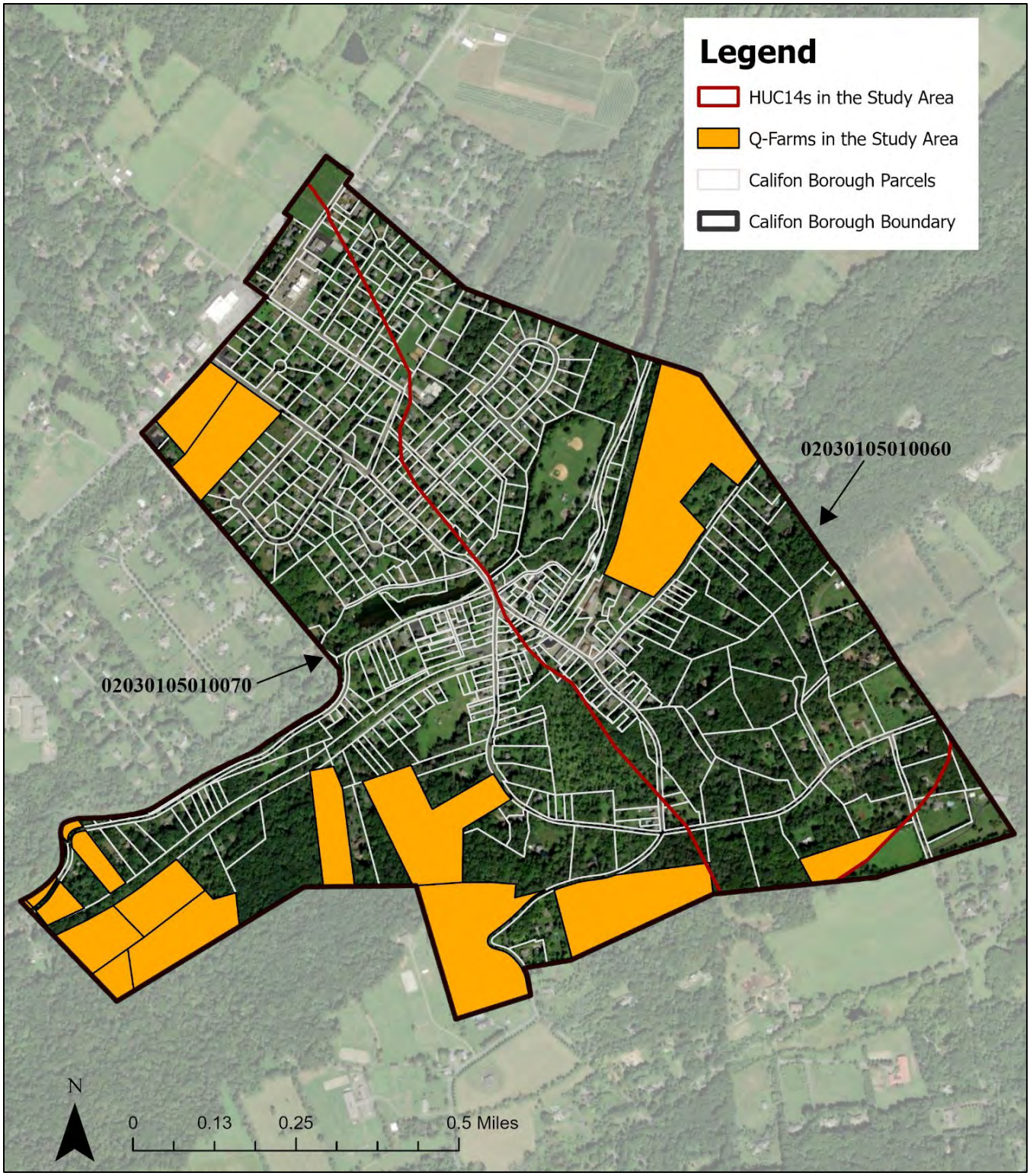


Figure 7: Q-Farm Parcels in the Study Area of Califon Borough

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

Block	Lot	Q-Code	Prop Class	Location
2	3	QFARM		County Route 513
2	3.01	QFARM		County Route 512
14	1	QFARM	3B	River Road
14	1.01	QFARM	3B	River Strip
14	2.04	QFARM	3B	Access To River
15	3	QFARM	3B	Off River Road
15	4.04	QFARM	3B	91 River Road
17	1	QFARM	3B	101 River Road
17	2	QFARM	3B	95 River Road
17	6	QFARM	3B	59 Railroad Avenue
17	8	QFARM	3B	99 River Road
17	9	QFARM	3B	97 River Road
18	25	QFARM	3B	61 Academy Street
24	5	QFARM	3B	Philhower Avenue
25	1	QFARM	3B	1403 Califon-Cokesbury Rd
27	3	QFARM	3B	202 Cokesbury Road
*28	6	QFARM	3B	106 Guinea Hollow Road

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

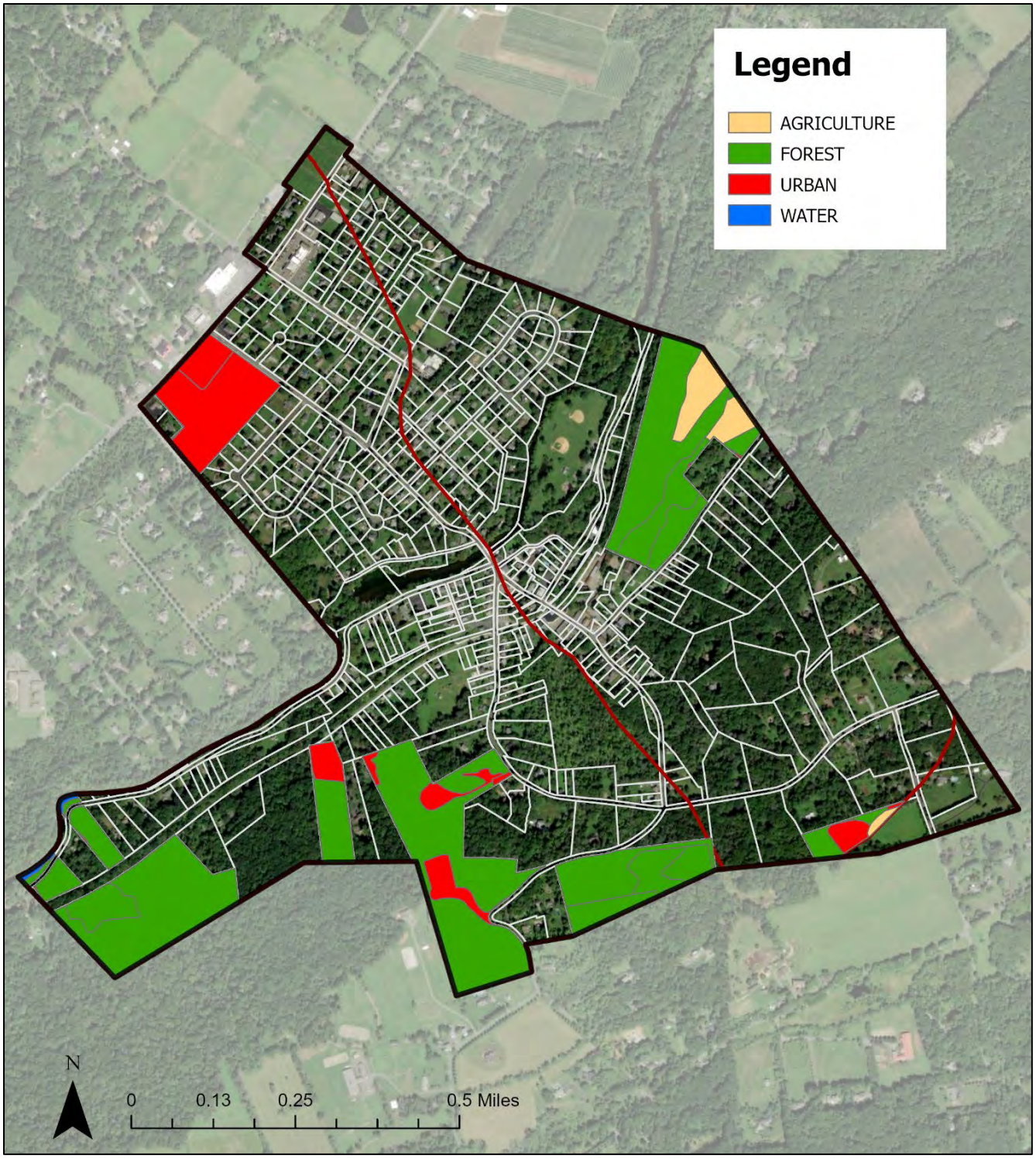


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Califon Borough

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

Land Use	Area (acres)
Agriculture	5.5
Barren Land	0.0
Forest	85.7
Urban	20.5
Water	0.5
Wetlands	0.0
Total:	**112.3**

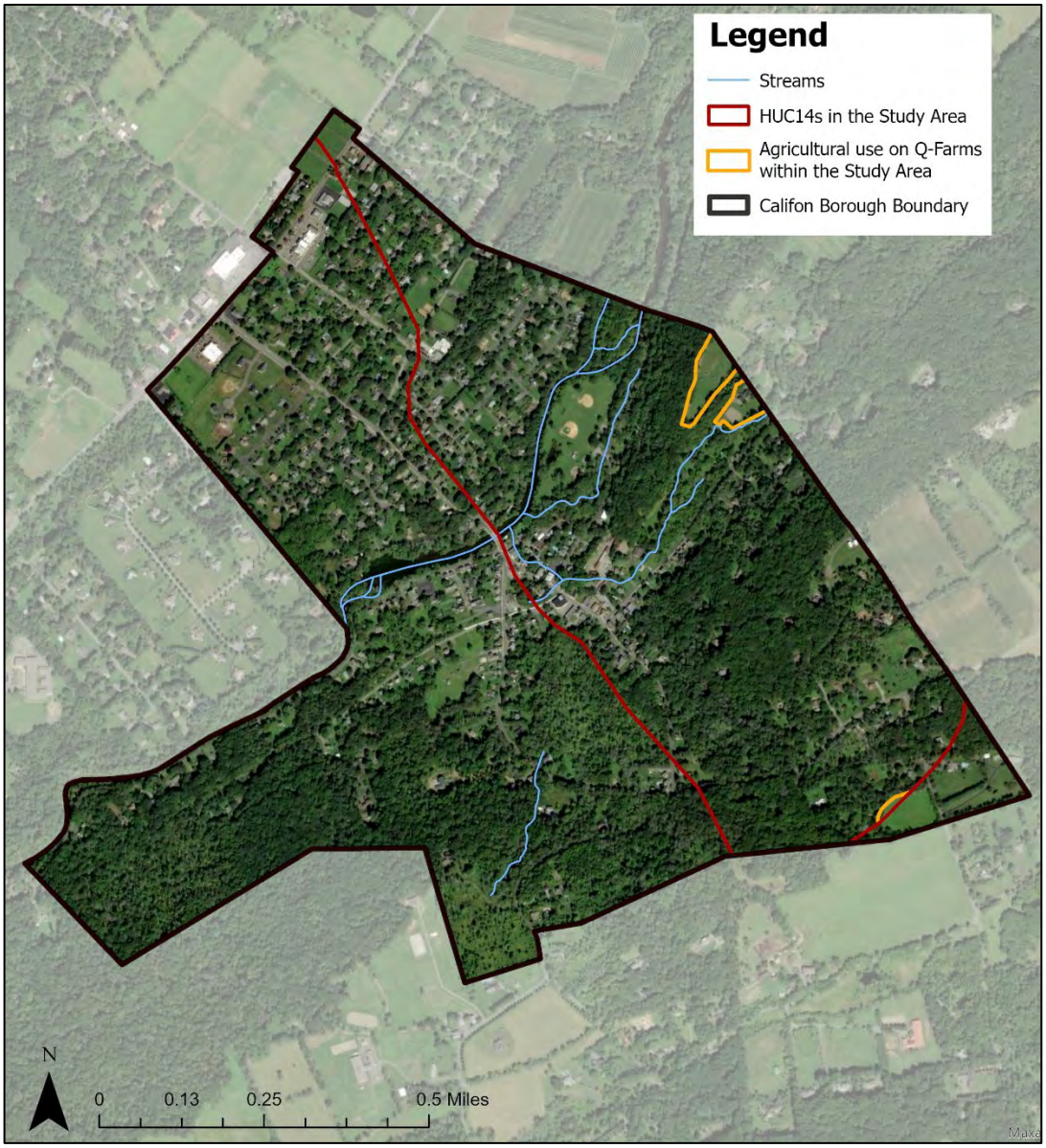


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Califon Borough

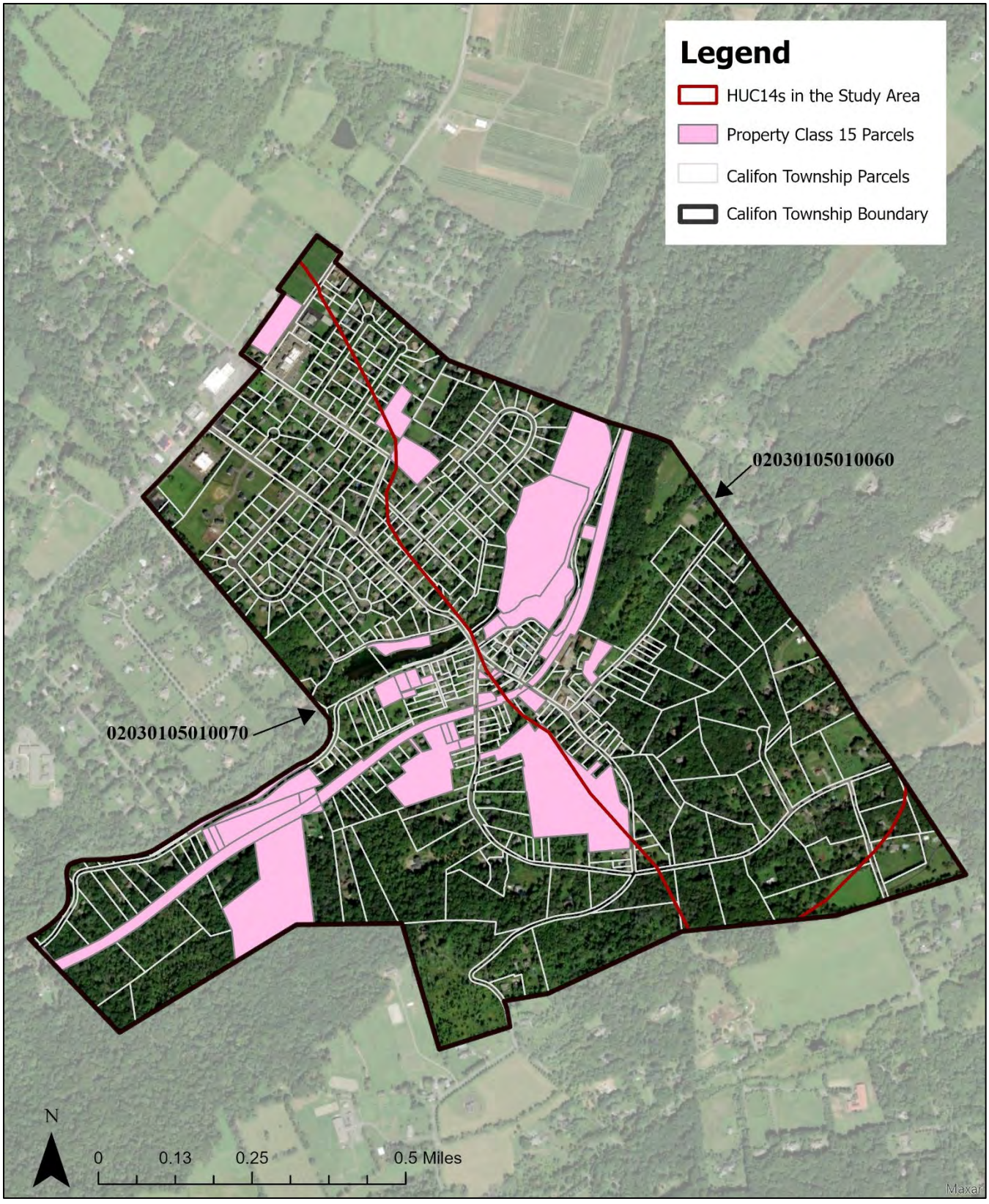


Figure 10: Property Class 15 Parcels in Califon Borough

Table 8: Property Class 15 Parcels in Califon Borough[1]

Block	Lot	Prop Class	Location	Facility Type
4.02	10	15A	34 School Street Ext.	Park (Ball Field)
***8**	**3**	**15A**	**6 School Street**	**School**
5	25	15C	First Street-River Strip	Park
14	4	15C	River Road	Water Quality
15	1	15C	Along High Bridge Branch	Park
15	8	15C	67 River Road	Watershed
15	9	15C	65 River Road	Watershed
15	10	15C	51 River Road	Watershed
15	11	15C	River Road	Park
15	12	15C	41 River Road	Watershed
16	1	15C	C R Of Nj Rr Bed	Park
16.01	1	15C	C R Of Nj Rr Bed	Park
16.02	1	15C	C R Of Nj Rr Bed	Park
16.03	1	15C	Cr Of Nj Rr-Track & Bed	Park
17	5	15C	57 River Road	Watershed
17	7	15C	Railroad Road	Park
***18**	**13.01**	**15C**	**39 Academy Street**	**Municipal Building**
19	4	15C	2 Academy Street	Parking Area
19	6	15C	51 Main Street	Parking Area
19	7	15C	49 Main Street	Parking Area
20	4.01	15C	Academy Street	Conservation
21	3	15C	103 Mill Street	Park
***21**	**4**	**15C**	**Row From Bank Street**	**Park**
21	6	15C	130 Bank Street	Park
23	5.01	15C	113 Bank Street	Park
***1**	**2**	**15D**	**443-445 County Road 513**	**Church**
***6**	**11**	**15D**	**15 River Road**	**Church**
6	12	15D	13 River Road	Church Parking
6	13	15D	11 River Road	Vacant Land
6	16	15D	2 Center Street	Parsonage
6	18	15D	4 Center Street	Church
18	13	15F	1e Railroad Avenue	Garage-Hall
18	14	15F	11 Railroad Avenue	Vacant Land
18	15	15F	9 Railroad Avenue	Vacant
19	1	15F	8 Academy Street	Vacant Land
20	6	15F	41 Main Street	Firehouse
21	2	15F	101 Mill Street	Disabled Veteran
23	3	15F	103 Bank Street	Widow - Disabled Vet
***23**	**4**	**15F**	**107 Bank Street**	**Rescue Squad**
24	8	15F	114 Philhower Avenue	Widow - Disabled Vet

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

[1]All tax-exempt parcels in Califon Borough are within the study area

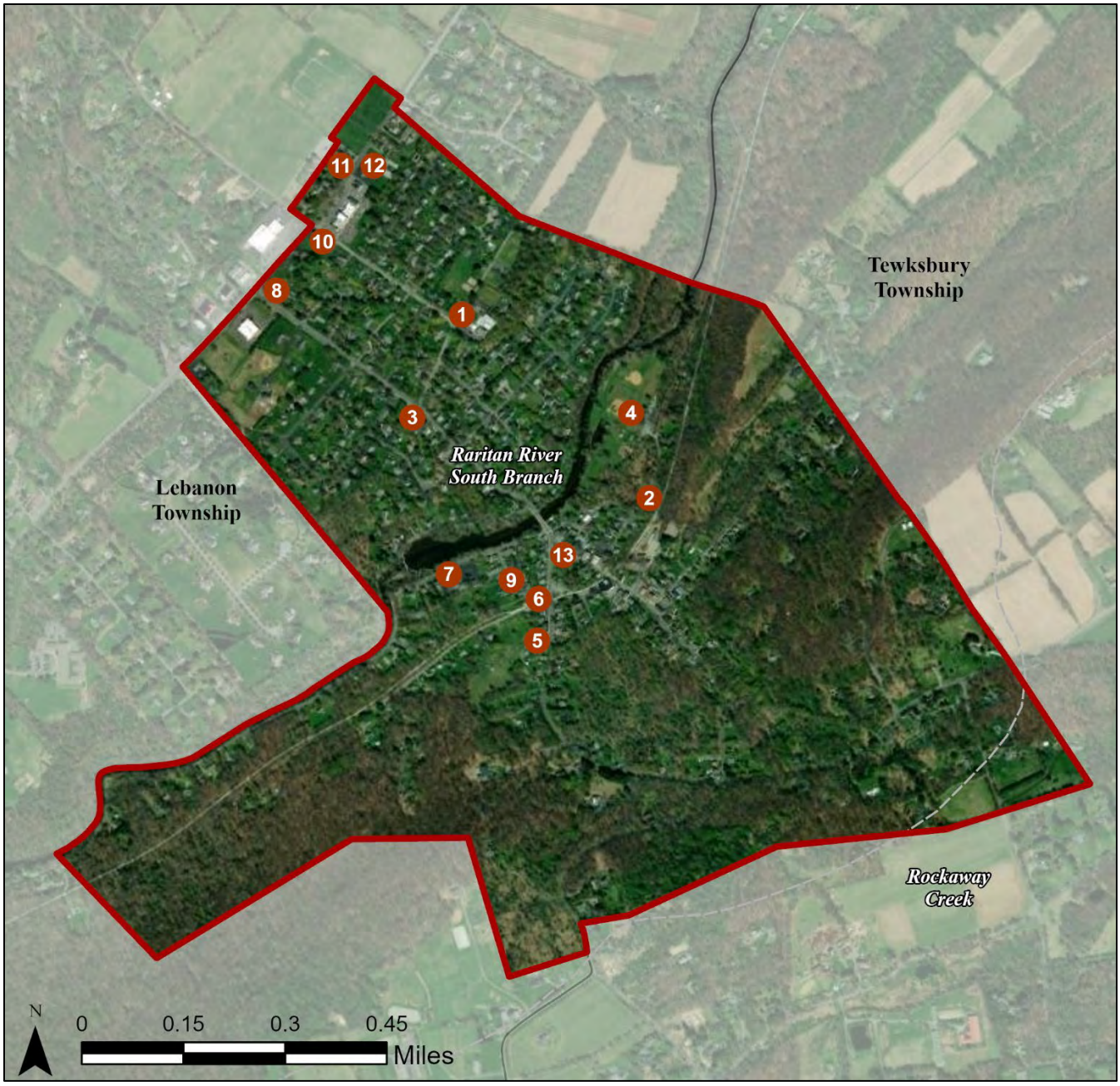


Figure 11: Sites with Green Infrastructure Opportunities in Califon Borough

CALIFON BOROUGH ELEMENTARY SCHOOL

RAP ID: 1

Subwatershed: Raritan River South Branch

Site Area: 96,268 sq. ft.

Address: 6 School Street
Califon, NJ 07830

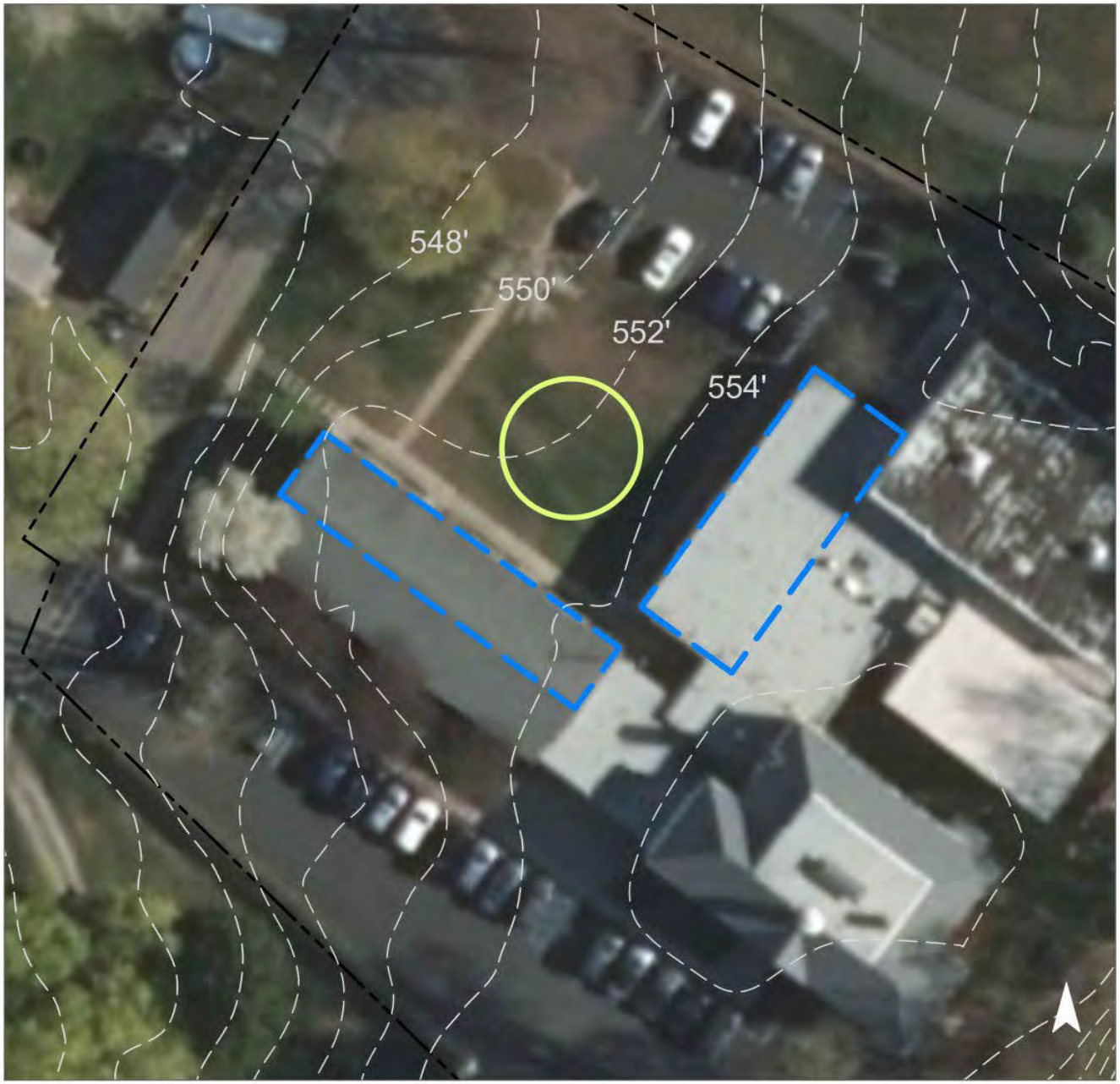
Block and Lot: Block 8, Lot 3

A rain garden centralized in the courtyard could be installed to collect rooftop 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"
52	49,605	2.4	25.1	227.8	0.039	1.36

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 system	0.108	18	8,198	0.31	1,040	$5,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Califon Borough Elementary School

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

0 20' 40'

CALIFON FIRST AID SQUAD

RAP ID: 2

Subwatershed: Raritan River South Branch

Site Area: 27,012 sq. ft.

Address: 107 Bank Street
Califon, NJ 07830

Block and Lot: Block 23, Lot 4

A rain garden can be installed next to the entrance of the parking lot to capture stormwater from the sloped lot. A cistern can be installed to harvest rainwater from the rooftop. Collected rainwater can be used for washing first aid squad vehicles or be used to water landscaping. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
54	14,648	0.7	7.4	67.3	0.011	0.40

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	0.045	8	3,396	0.13	430	$2,150
Rainwater harvesting	0.032	5	1,000	0.09	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Califon First Aid Squad

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

0 20' 40'

CALIFON GENERAL STORE

RAP ID: 3

Subwatershed: Raritan River South Branch

Site Area: 12,272 sq. ft.

Address: 75 Main Street
Califon, NJ 07830

Block and Lot: Block 5, Lot 3

Porous pavement can be installed in the rear parking spaces to aid in infiltration of stormwater. A downspout planter box can be constructed along the building to allow roof runoff to be 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"
38	4,664	0.2	2.4	21.4	0.004	0.13

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	0.117	20	8,841	0.33	800	$20,000
Planter box	N/A	2	N/A	N/A	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Califon General Store

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

0 20' 40'

CALIFON ISLAND PARK

RAP ID: 4

Subwatershed: Raritan River South Branch

Site Area: 537,044 sq. ft.

Address: 111 Bank Street
Califon, NJ 07830

Block and Lot: Block 21, Lot 4

Porous pavement can be installed in the rear parking spaces to aid in infiltration of 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"
6	31,444	1.5	15.9	144.4	0.025	0.86

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	0.262	44	19,859	0.87	2,400	$60,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Califon Island Park

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

0 25' 50'

CALIFON MUNICIPAL BUILDING

RAP ID: 5

Subwatershed: Raritan River South Branch

Site Area: 11,422 sq. ft.

Address: 39 Academy Street
Califon, NJ 07830

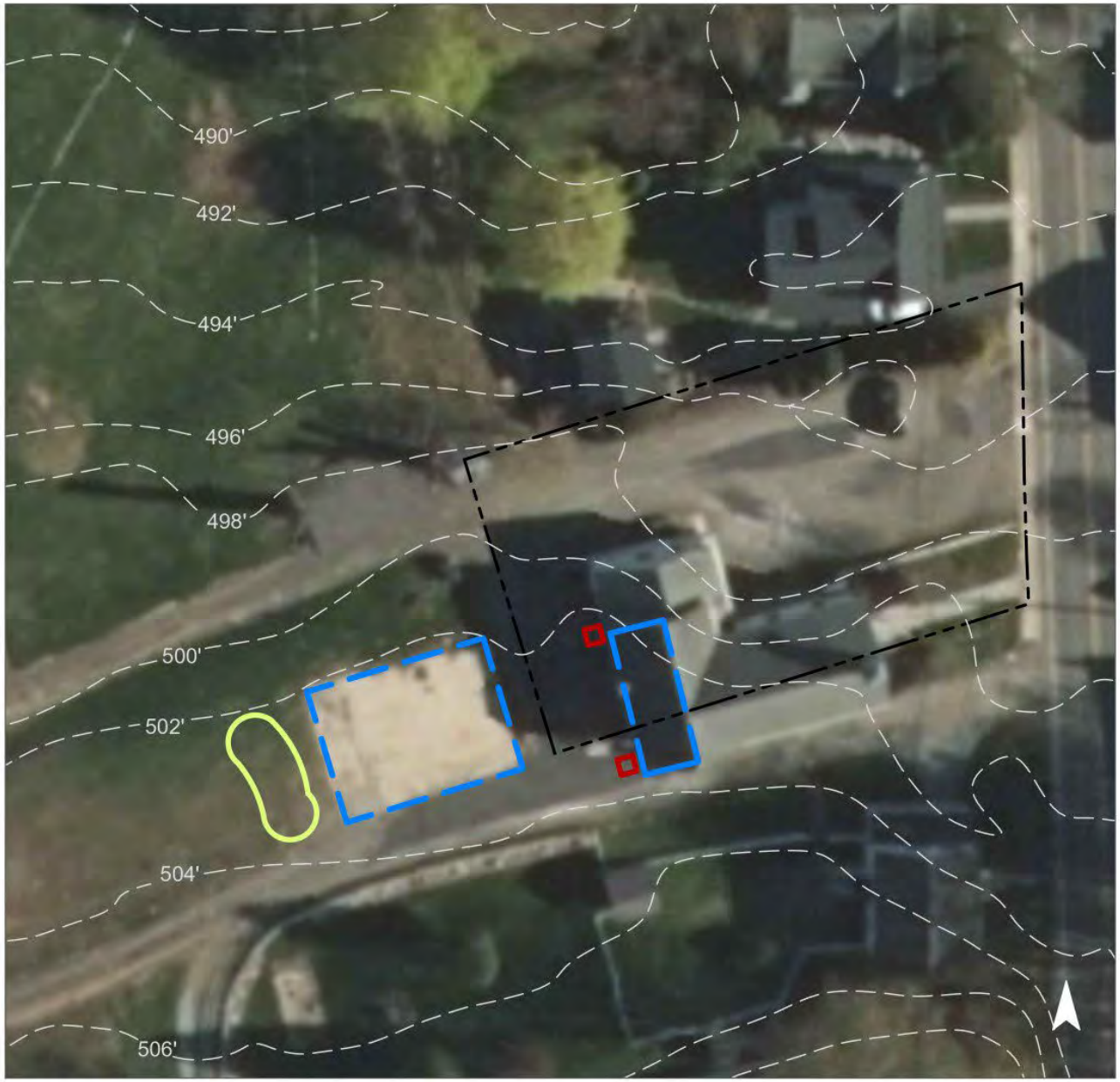
Block and Lot: Block 18, Lot 13.01

A rain garden can be installed to infiltrate stormwater draining from the parking lot. Downspout planter boxes can be constructed along the building to allow roof runoff to be 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"
42	4,817	0.2	2.4	22.1	0.004	0.13

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	0.045	8	3,418	0.13	440	$2,200
Planter boxes	N/A	2	N/A	N/A	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Califon Municipal Building

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

0 20' 40'

CALIFON TRAIN STATION

RAP ID: 6

Subwatershed: Raritan River South Branch

Site Area: 41,501 sq. ft.

Address: 15 Center Street
Califon, NJ 07830

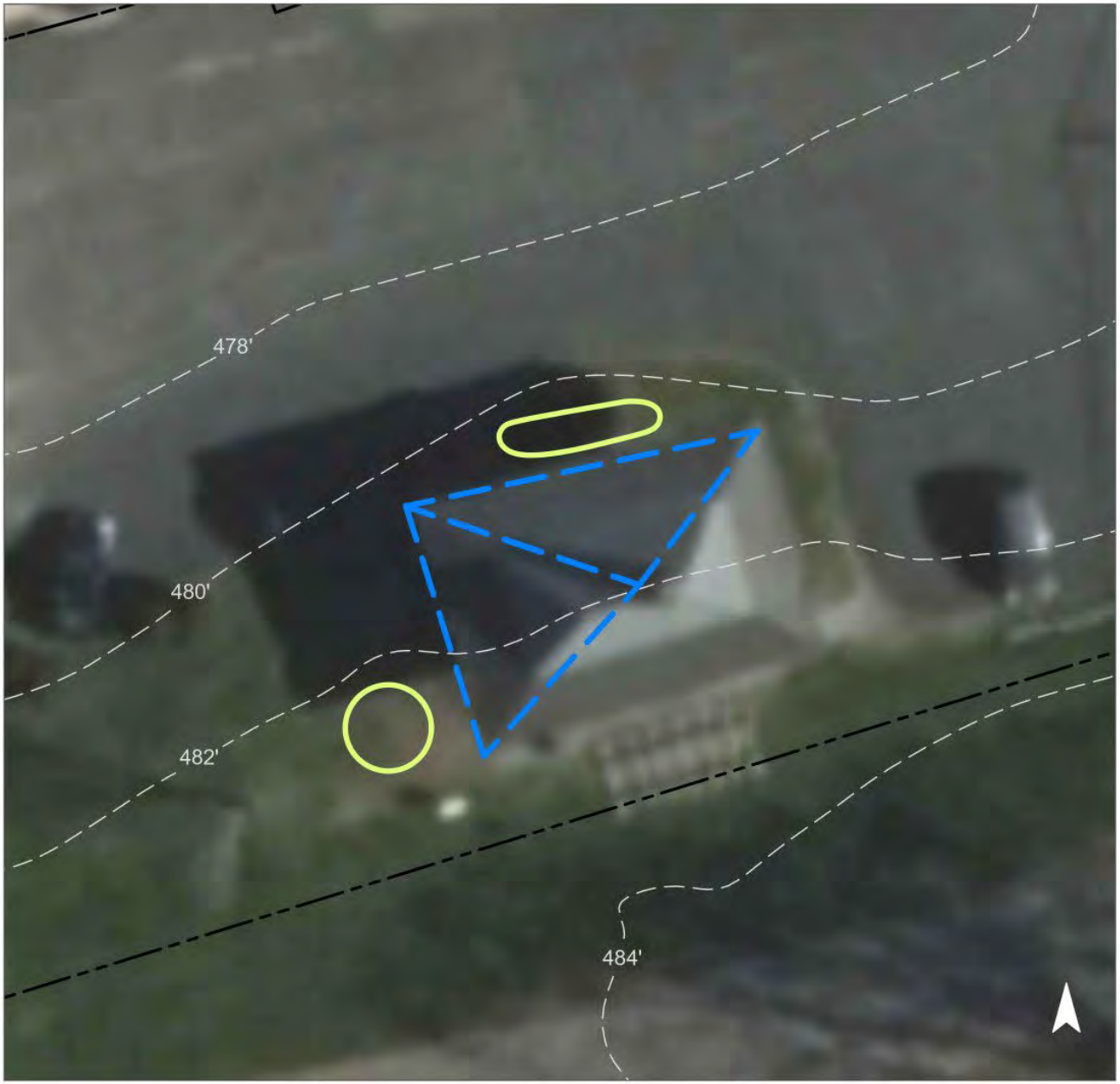
Block and Lot: Block 6, Lot 41

Rain gardens can be installed north of the building and in the turfgrass area east of the building to infiltrate stormwater draining 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"
47	19,639	0.9	9.9	90.2	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 systems	0.022	4	1,661	0.07	195	$975

GREEN INFRASTRUCTURE RECOMMENDATIONS



Califon Train Station

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

0 10' 20'

CALIFON UNITED METHODIST CHURCH

RAP ID: 7

Subwatershed: Raritan River South Branch

Site Area: 39,832 sq. ft.

Address: 15 Raritan River Road
Califon, NJ 07830

Block and Lot: Block 6, Lot 11

Two rain gardens can be installed 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 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"
65	25,759	1.2	13.0	118.3	0.020	0.71

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 system	0.067	11	5,109	0.19	645	$3,225
Planter boxes	N/A	2	N/A	N/A	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Califon United Methodist Church

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

0 20' 40'

CALIFON WINE AND SPIRITS

RAP ID: 8

Subwatershed: Raritan River South Branch

Site Area: 23,453 sq. ft.

Address: 430 County Road 513
Califon, NJ 07830

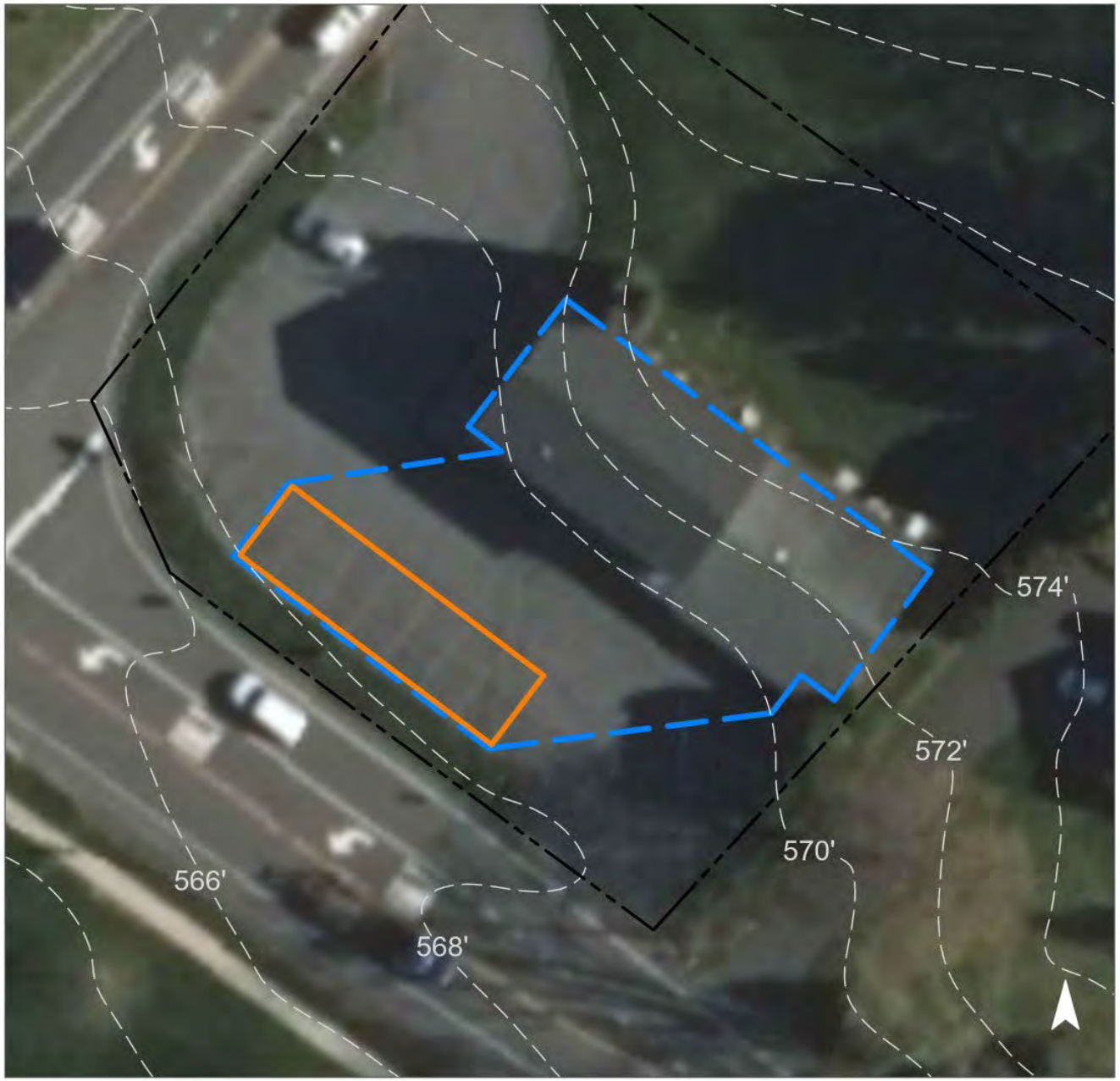
Block and Lot: Block 3, Lot 1

Areas of the parking lot can be retrofitted with porous pavement to capture stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
65	15,317	0.7	7.7	70.3	0.012	0.42

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 pavement	0.172	29	13,030	0.49	1,135	$28,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Califon Wine and Spirits

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

0 15' 30'

COUGHLIN FUNERAL HOME

RAP ID: 9

Subwatershed: Raritan River South Branch

Site Area: 7,381 sq. ft.

Address: 15 Academy Street
Califon, NJ 07830

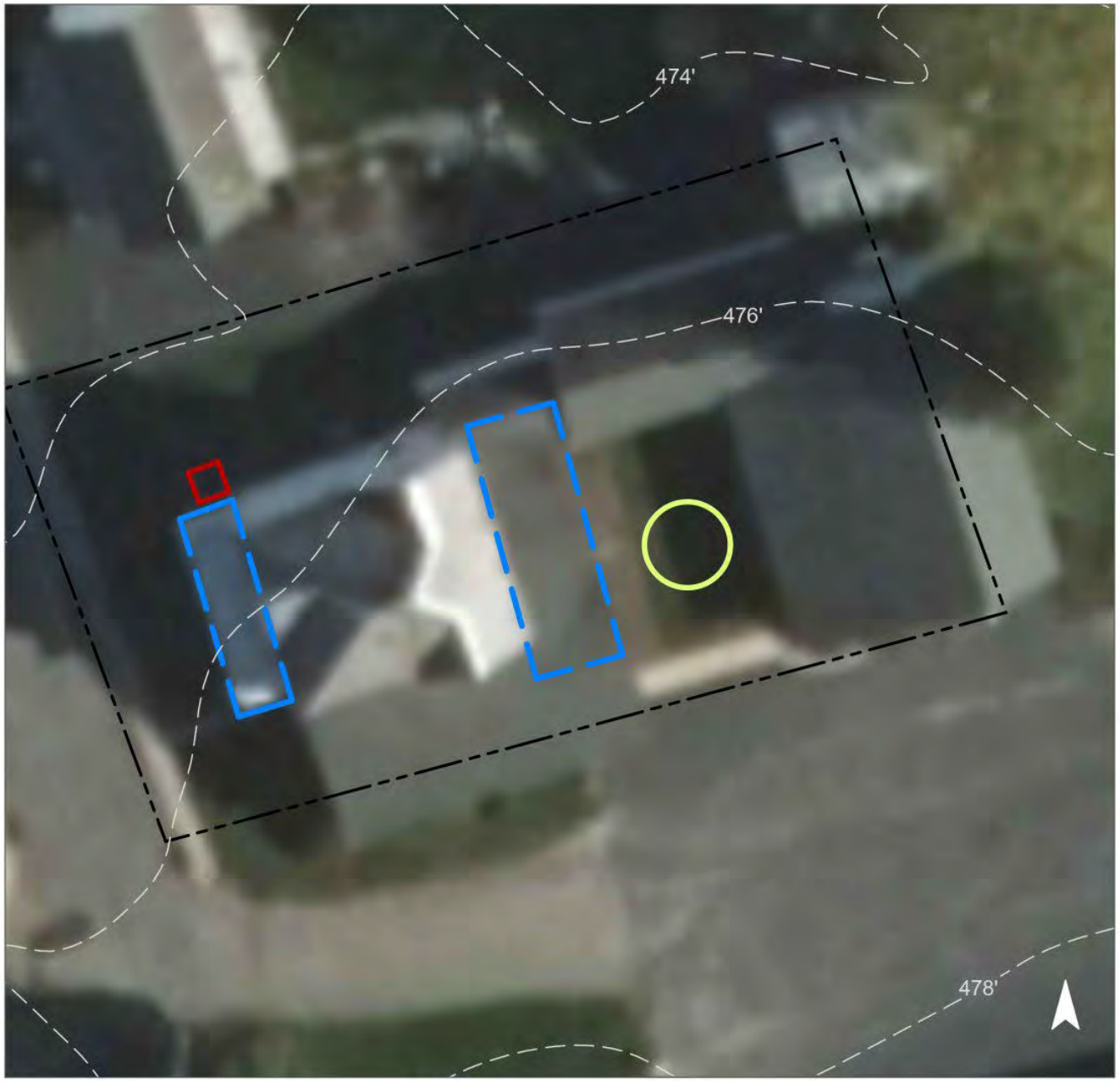
Block and Lot: Block 6, Lot 27

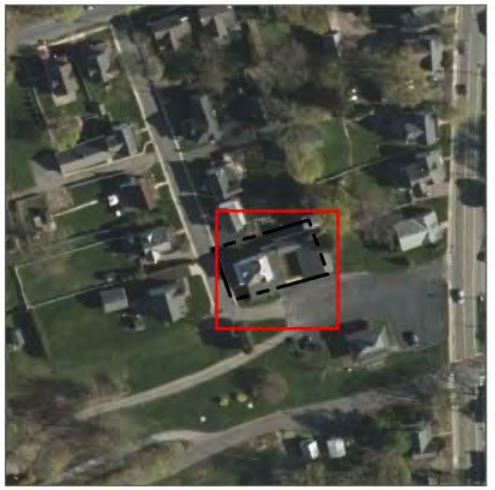
A central rain garden can be installed to capture stormwater runoff from the inward sloping rooftops. A downspout planter box can be constructed along the building to allow roof runoff to be reused. A preliminary soil assessment suggests that more soil testing would be required before determining the 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"
55	4,062	0.2	2.1	18.7	0.003	0.11

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	0.010	2	793	0.03	100	$500
Planter box	N/A	1	N/A	N/A	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Coughlin Funeral Home

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

0 10' 20'

JAMES M MURRAY CPA

RAP ID: 10

Subwatershed: Raritan River South Branch

Site Area: 44,433 sq. ft.

Address: 37 School Street
Califon, NJ 07830

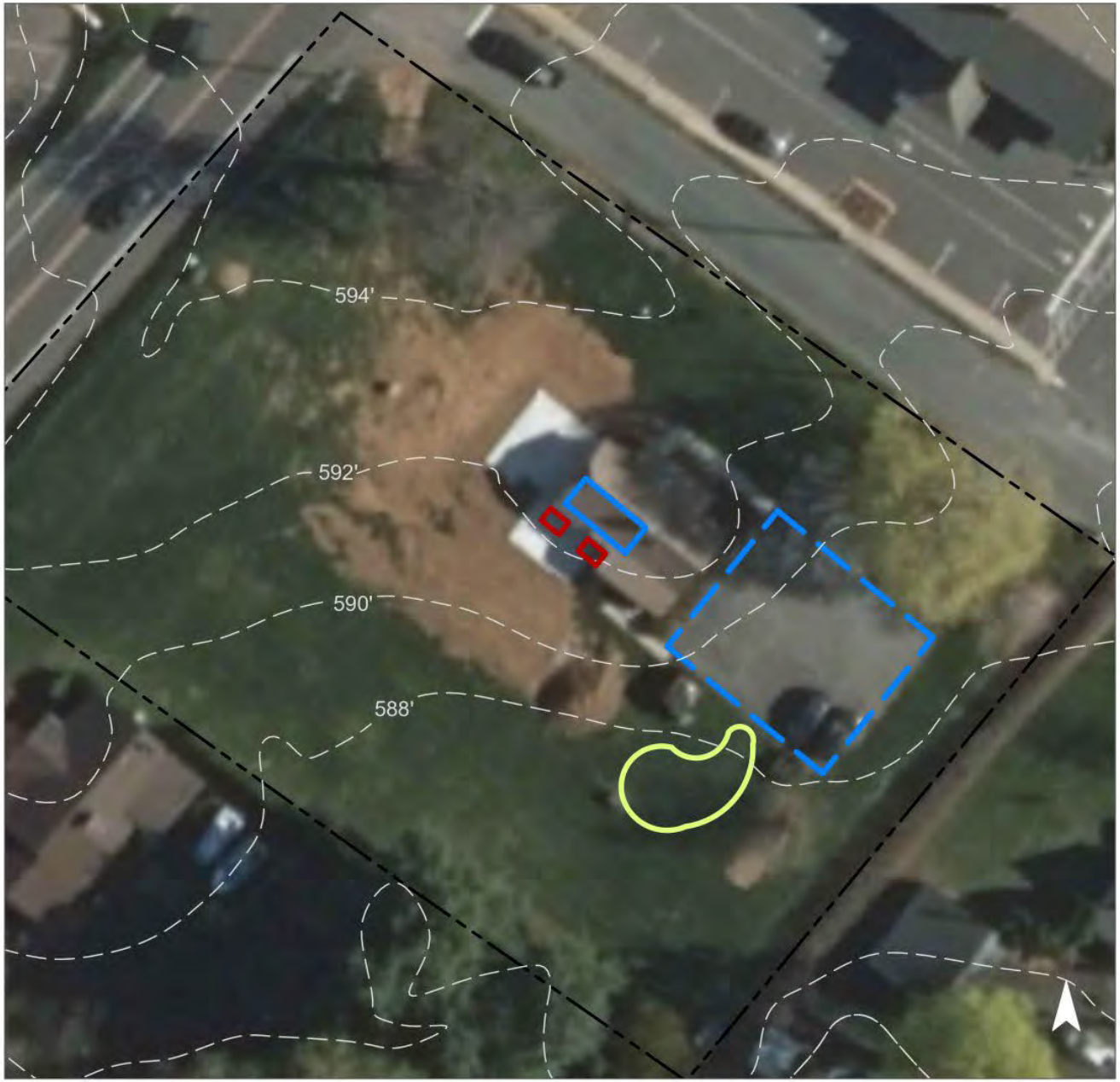
Block and Lot: Block 3, Lot 5,6

A rain garden can be installed at the end of the parking lot to capture, treat, and infiltrate stormwater runoff from the parking lot . Downspout planter boxes can be constructed along the building to allow roof runoff to be 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"
20	8,775	0.4	4.4	40.3	0.003	0.11

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	0.063	11	4,757	0.18	600	$3,000
Planter boxes	N/A	2	N/A	N/A	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



James M Murray CPA

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

0 20' 40'

LOWER VALLEY PRESBYTERIAN CHURCH

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 101,066 sq. ft.

Address: 445 County Road 513
Califon, NJ 07830

Block and Lot: Block 1, Lot 2

A rain garden can be installed 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 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"
47	47,178	2.3	23.8	216.6	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	0.018	3	1,354	0.05	170	$850
Planter boxes	N/A	3	N/A	N/A	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Lower Valley Presbyterian Church

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

0 10' 20'

STAIANOS FURNITURE

RAP ID: 12

Subwatershed: Raritan River South Branch

Site Area: 94,240 sq. ft.

Address: 442 County Road 513
Califon, NJ 07830

Block and Lot: Block 4, Lot 2

Porous pavement can be installed along the parking spots in the back lot of the building. The downspouts currently empty onto asphalt which is impervious and does not aid in infiltration. 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"
66	61,927	3.0	31.3	284.3	0.048	1.70

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	0.071	12	5,401	0.20	800	$20,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Staianos Furniture

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

0 30' 60'

UNITED STATES POSTAL SERVICES

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 10,212 sq. ft.

Address: 53 Main Street
Califon, NJ 07830

Block and Lot: Block 19, Lot 5

Porous pavement can be installed to collect stormwater from both the disconnected downspouts as well as from the parking lot 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"
79	8,102	0.4	4.1	37.2	0.006	0.22

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.095	16	7,188	0.27	1,000	$25,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

United States Postal Service

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

0 20' 40'

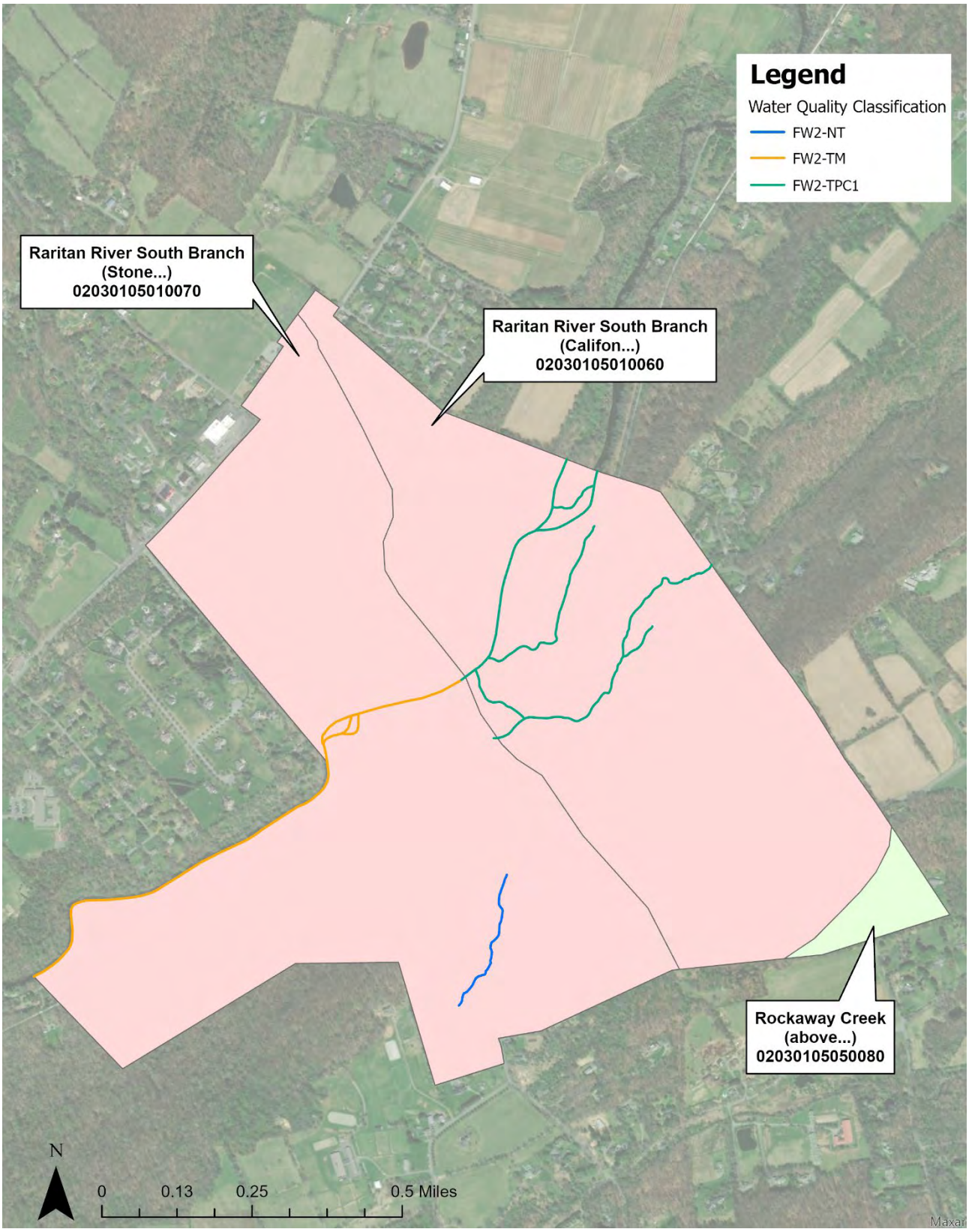


Figure 12. Water Quality Classification of Surface Waters in Califon Borough

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

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	0.3	8.1%
Freshwater 2, trout production, Category One	FW2-TPC1	1.8	56.7%
Freshwater 2, trout maintenance	FW2-TM	1.1	35.2%

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.

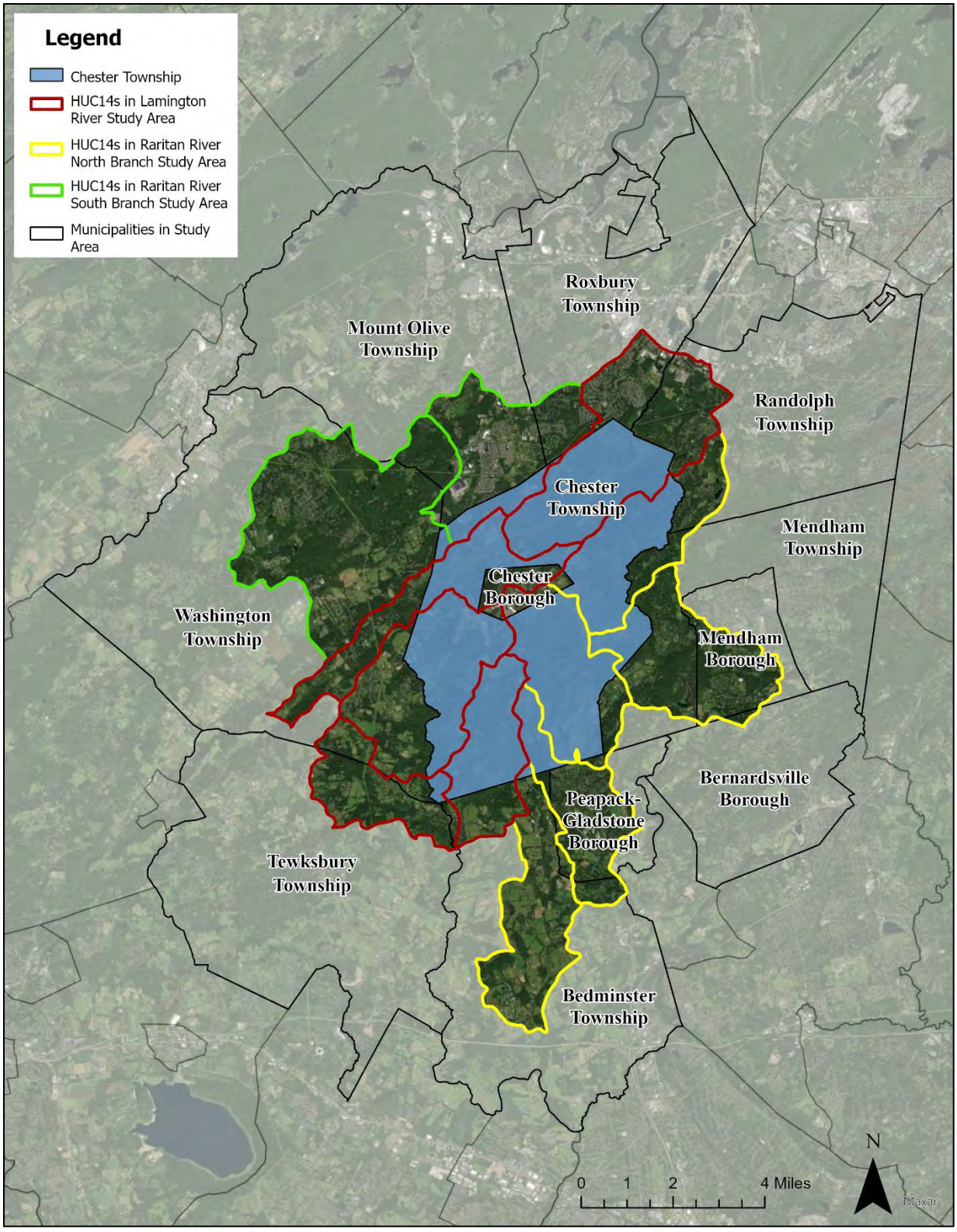


Figure 1: Municipalities in the Study Area

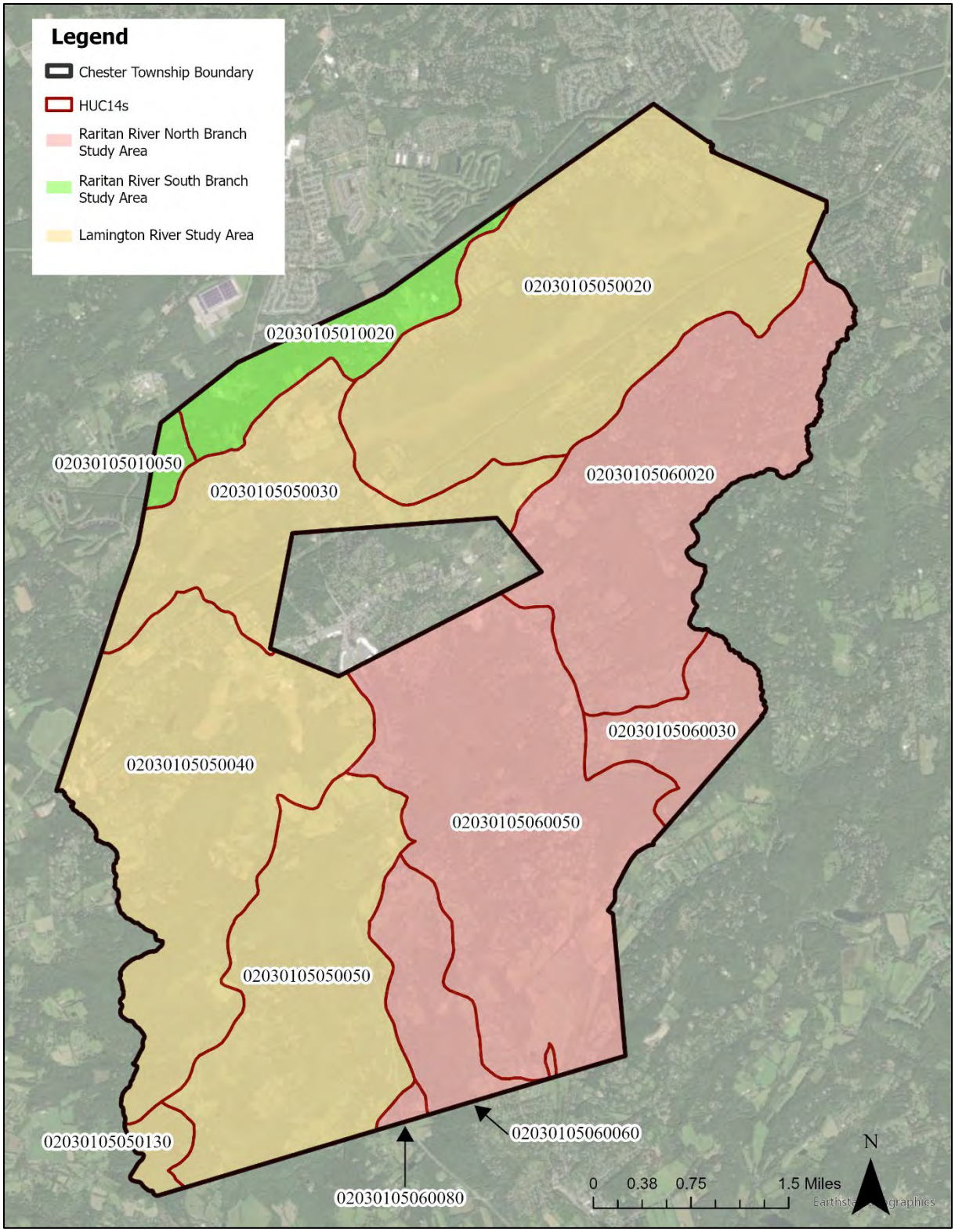


Figure 2: Portions of twelve HUC14s are in Chester Township

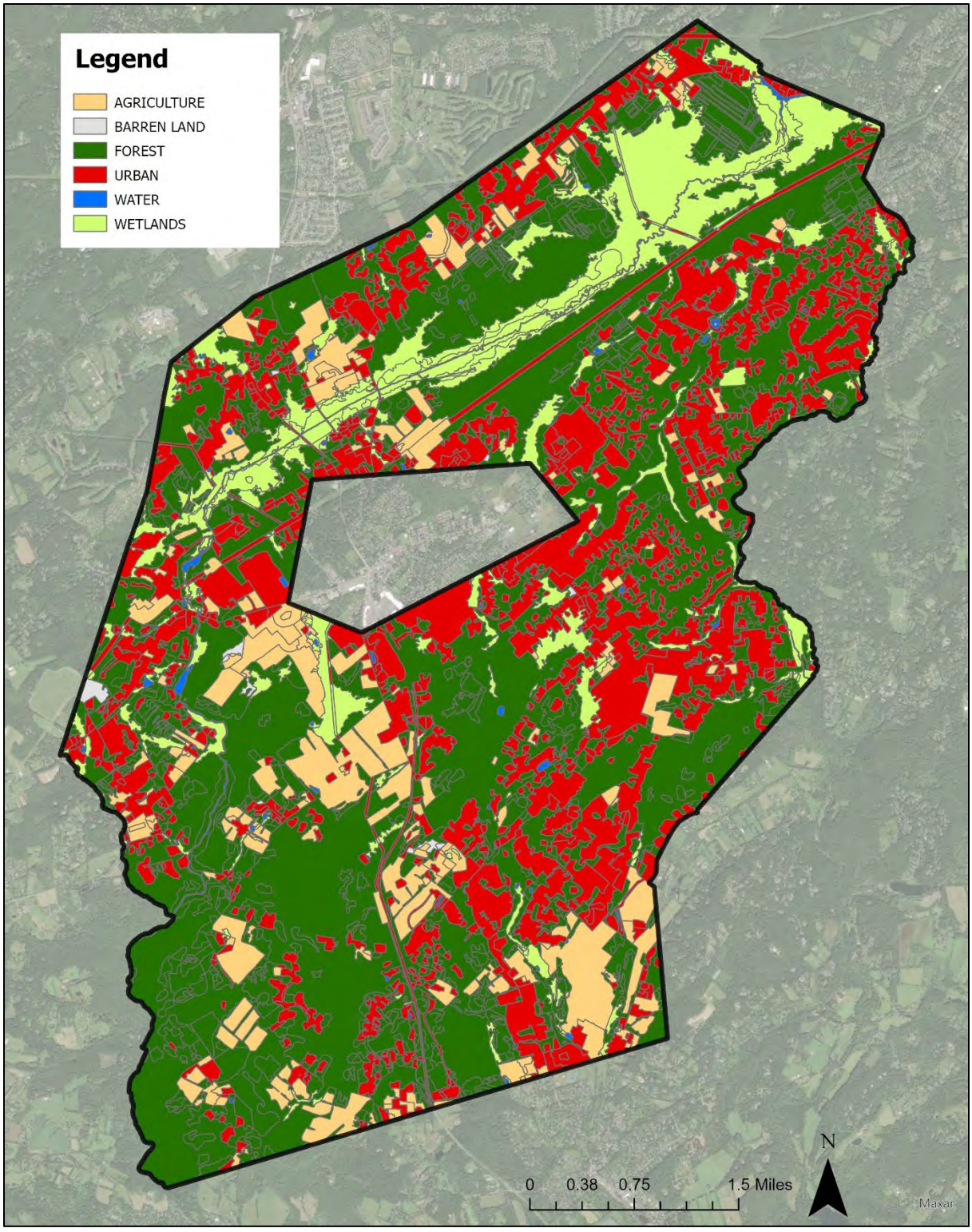


Figure 3: Land Use in Chester Township

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.

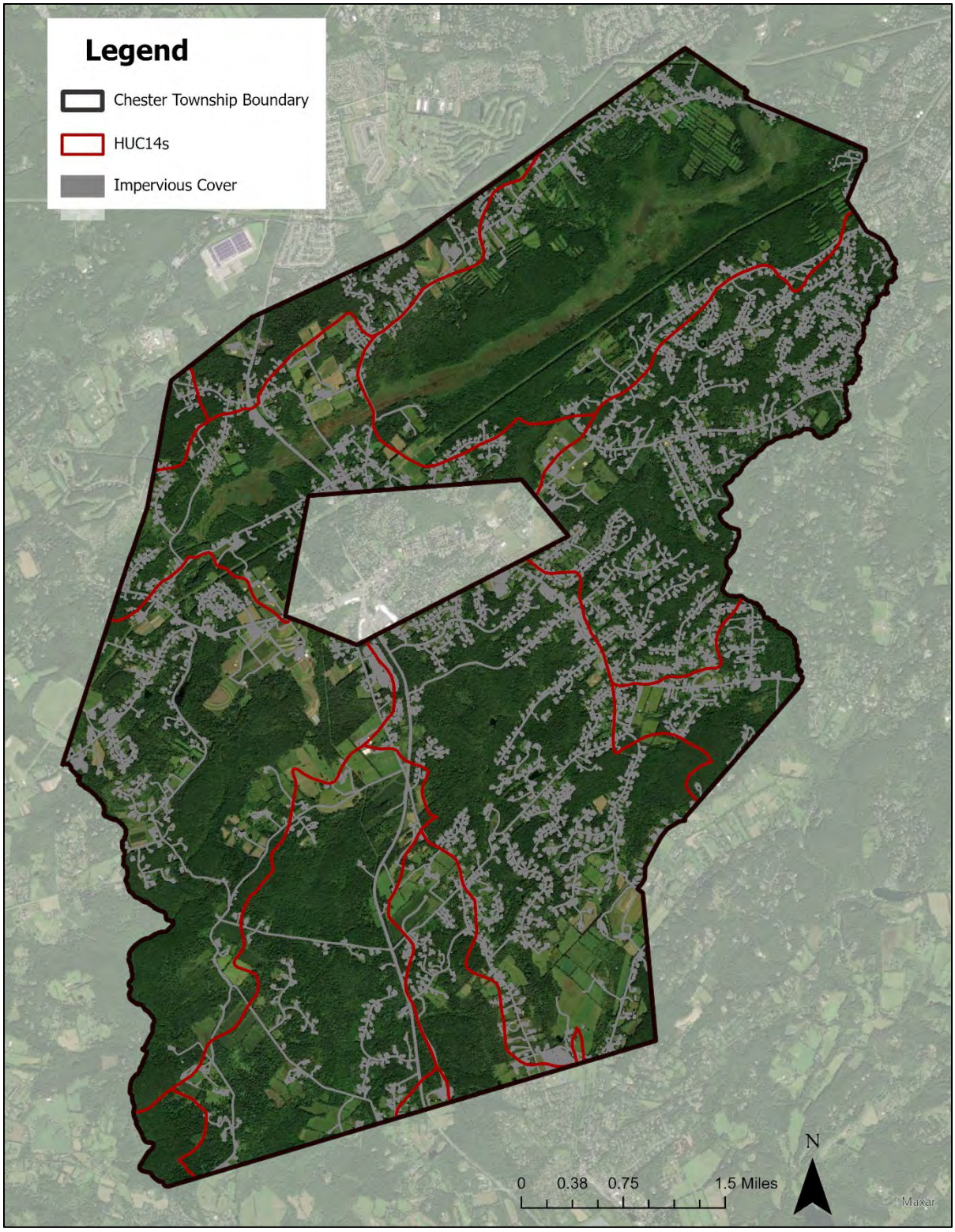


Figure 4: Impervious Cover in Chester Township

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%**

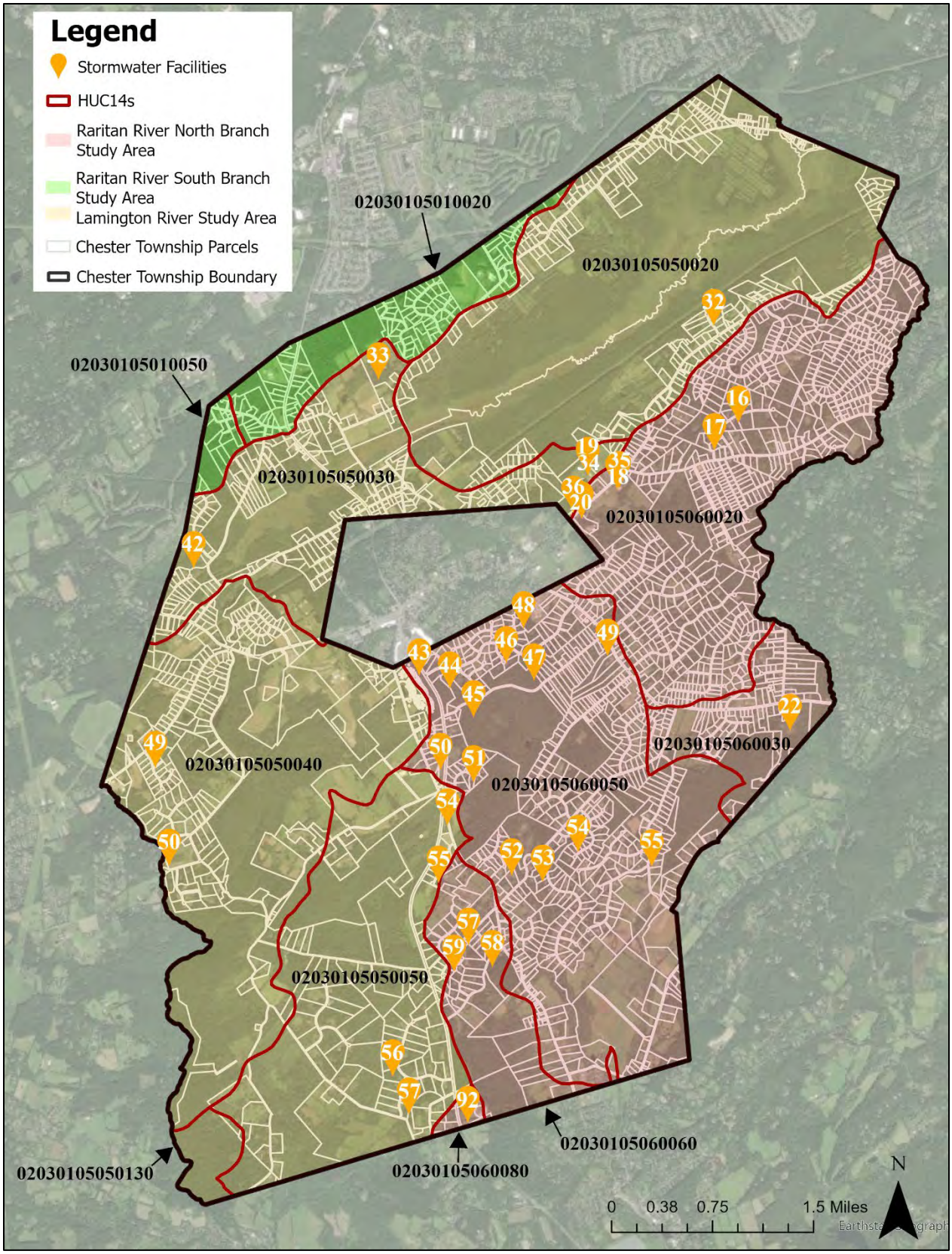


Figure 5: Stormwater Facilities in the Study Area of Chester Township

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

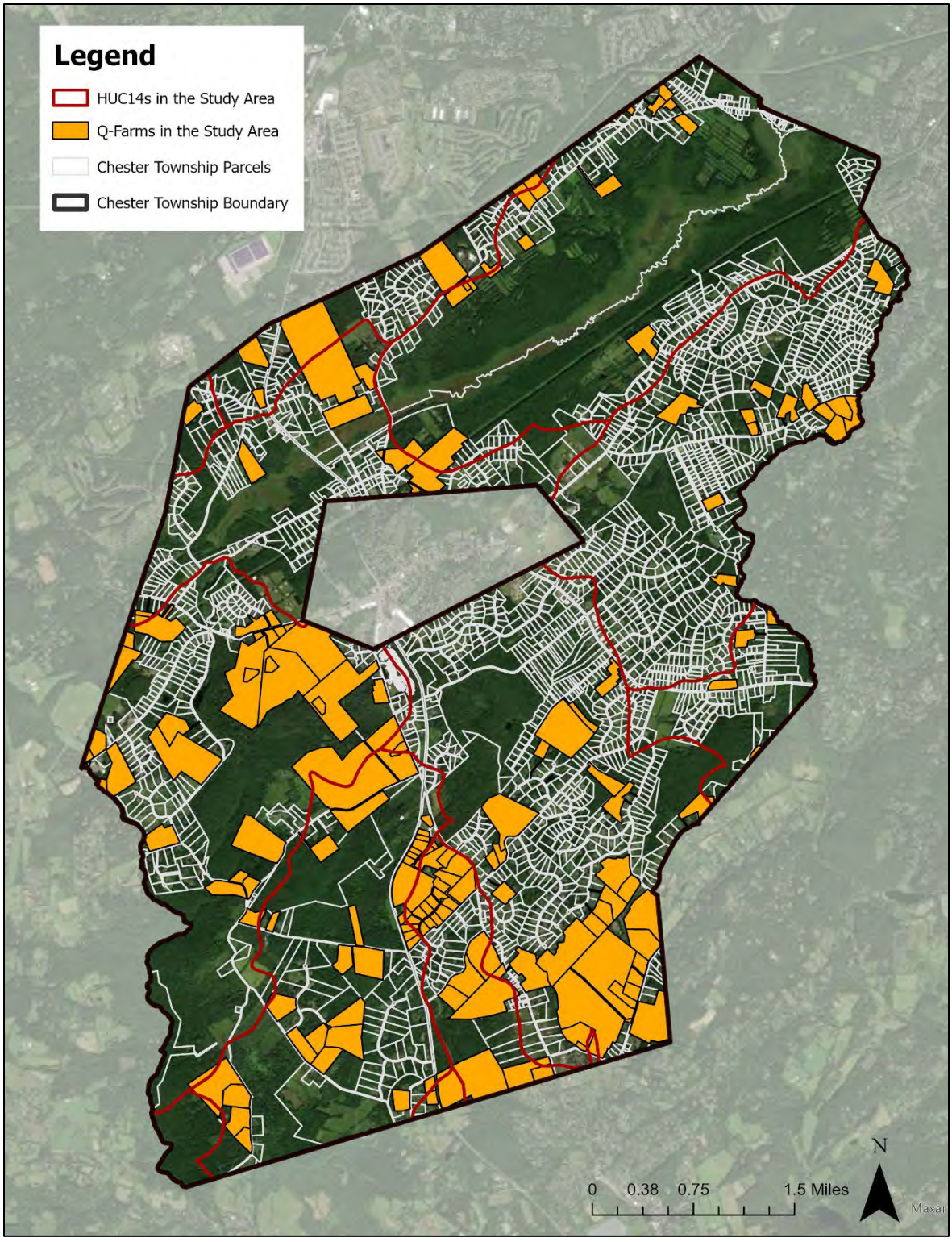


Figure 6: Q-Farm Parcels in the Study Area of Chester Township

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

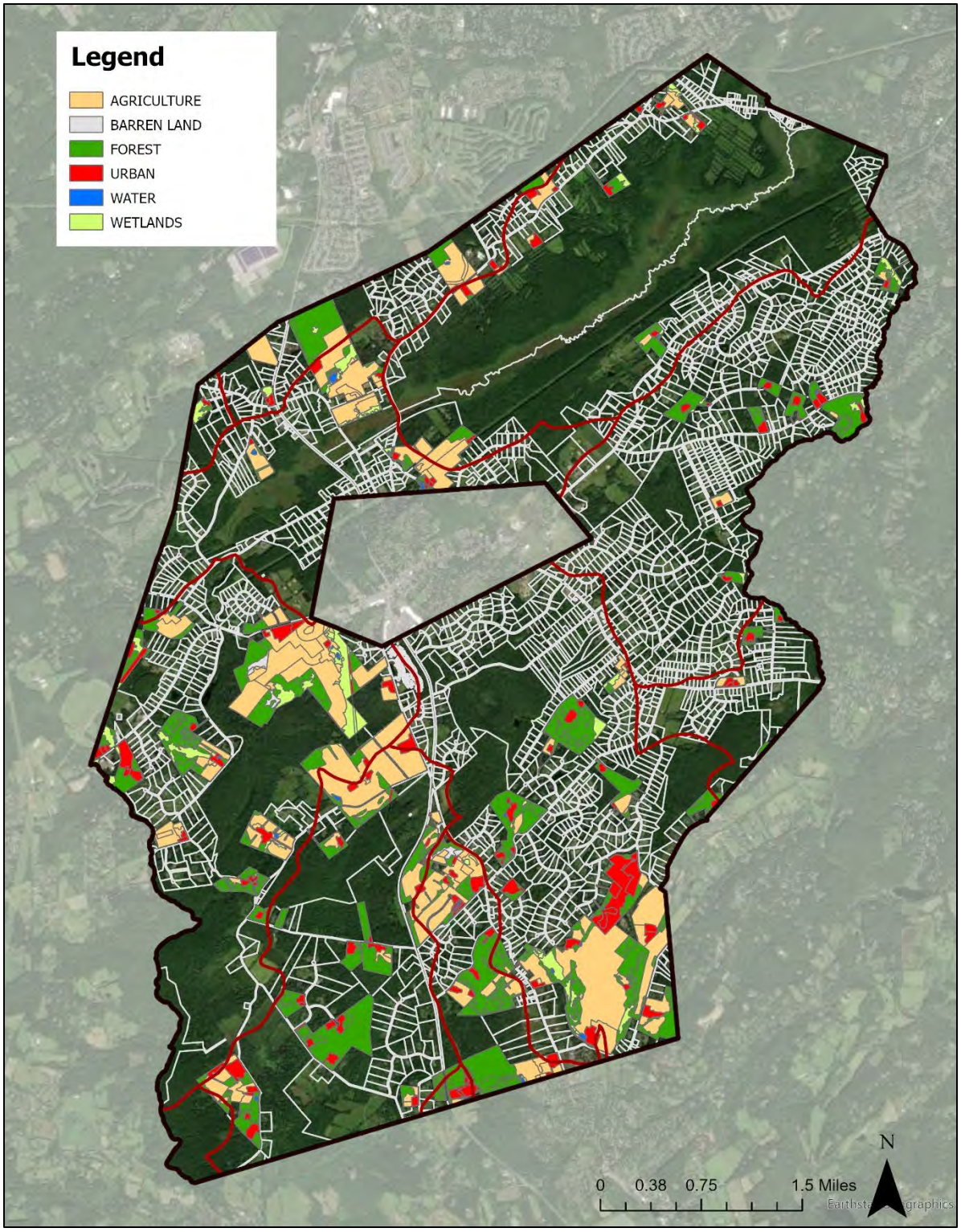


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Chester Township

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**

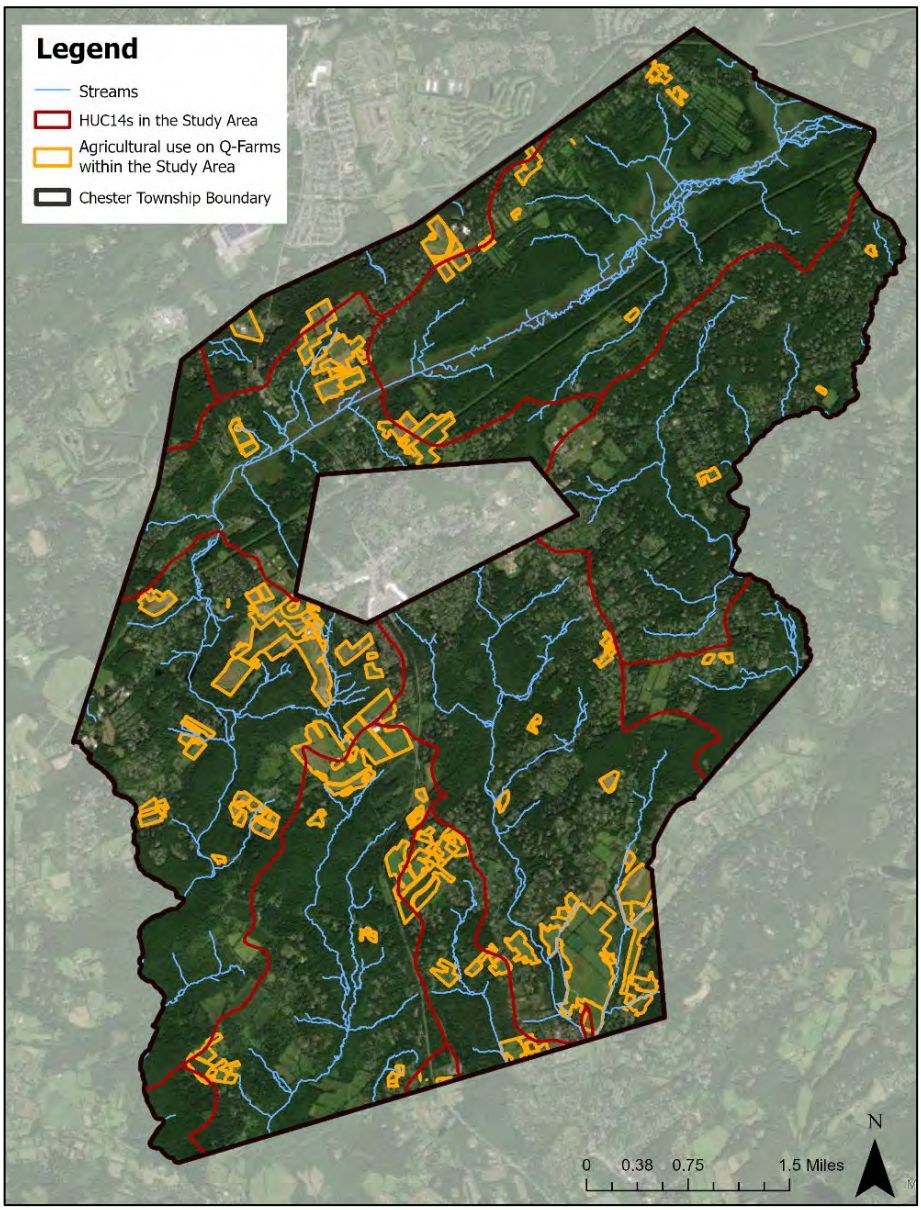


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Chester Township

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

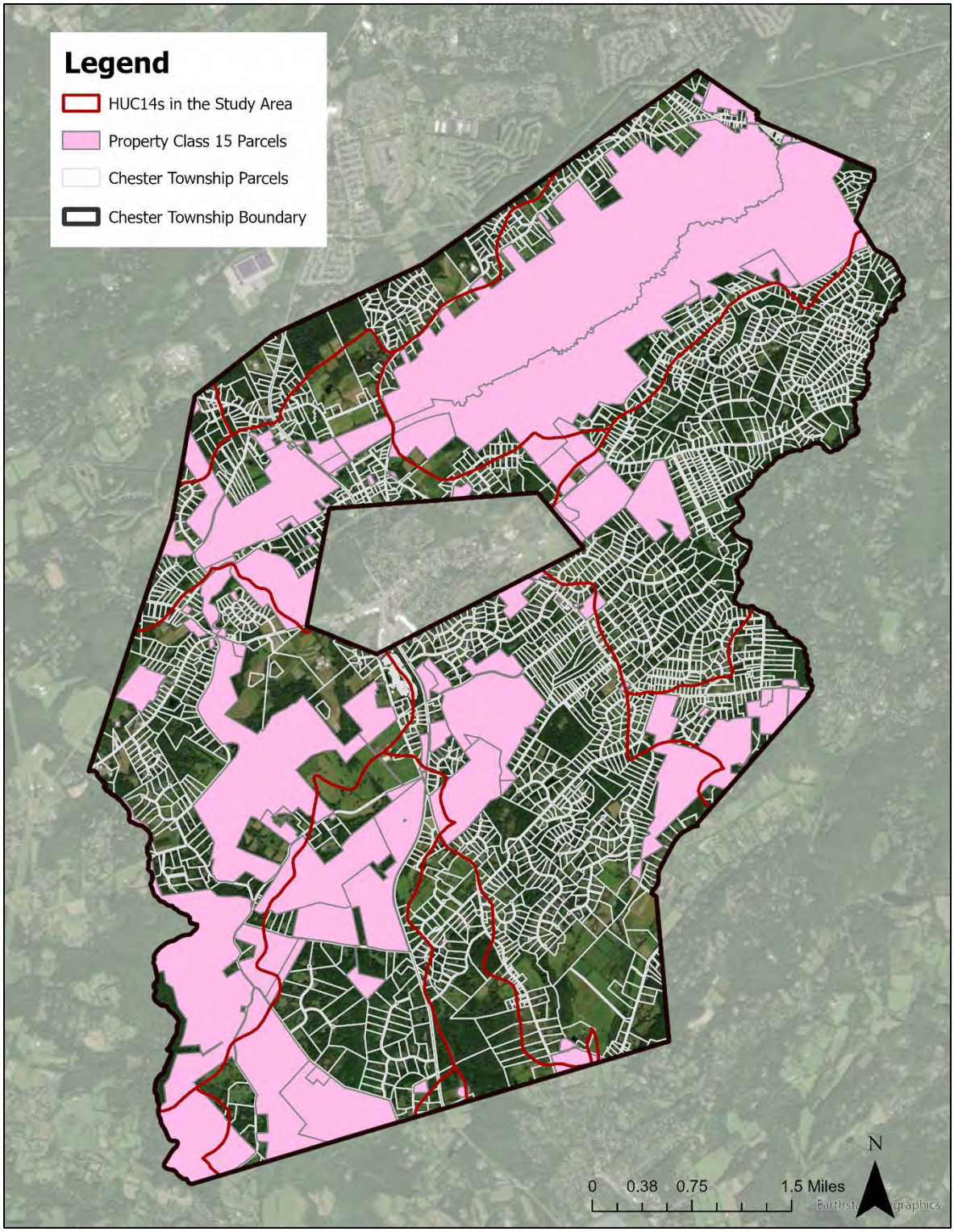


Figure 9: Property Class 15 Parcels in the Study Area of Chester Township

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

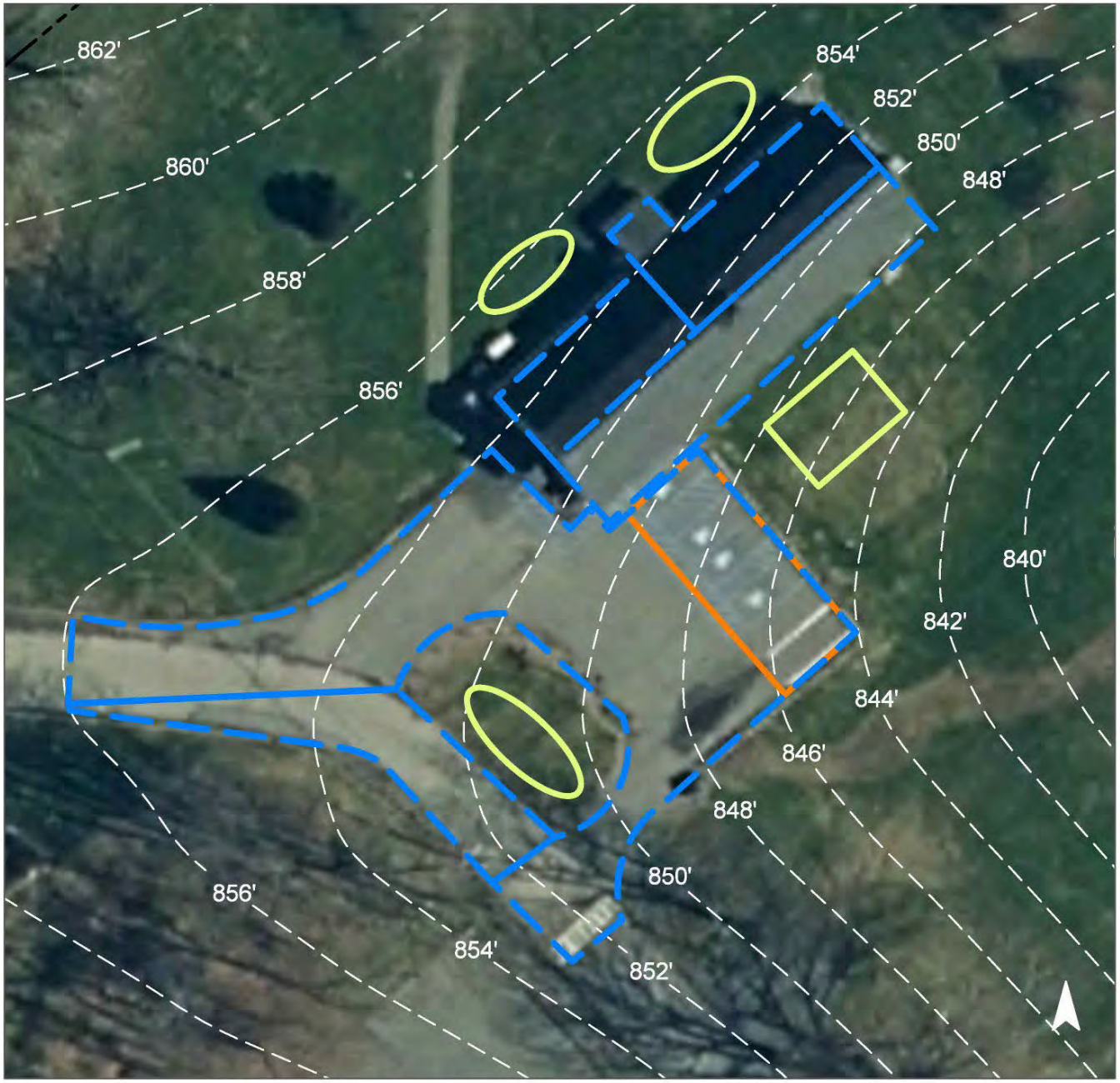
Block and Lot: Block 26, Lot 78.01

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

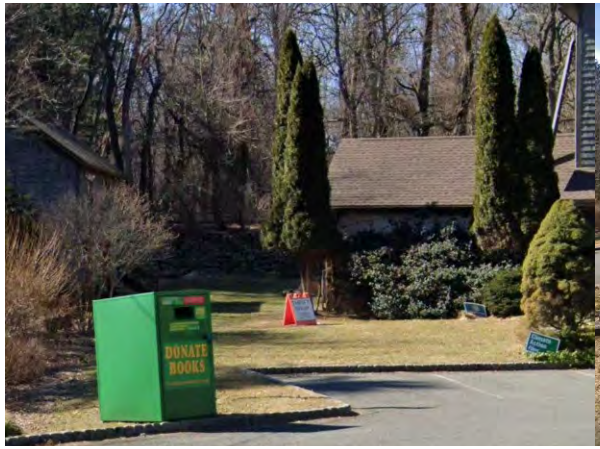
Subwatershed: Lamington River

HUC14 ID 02030105050040

Site Area: 330,558 sq. ft.

Address: 50 County Highway 513
Chester, NJ 07930

Block and Lot: Block 17, Lot 38

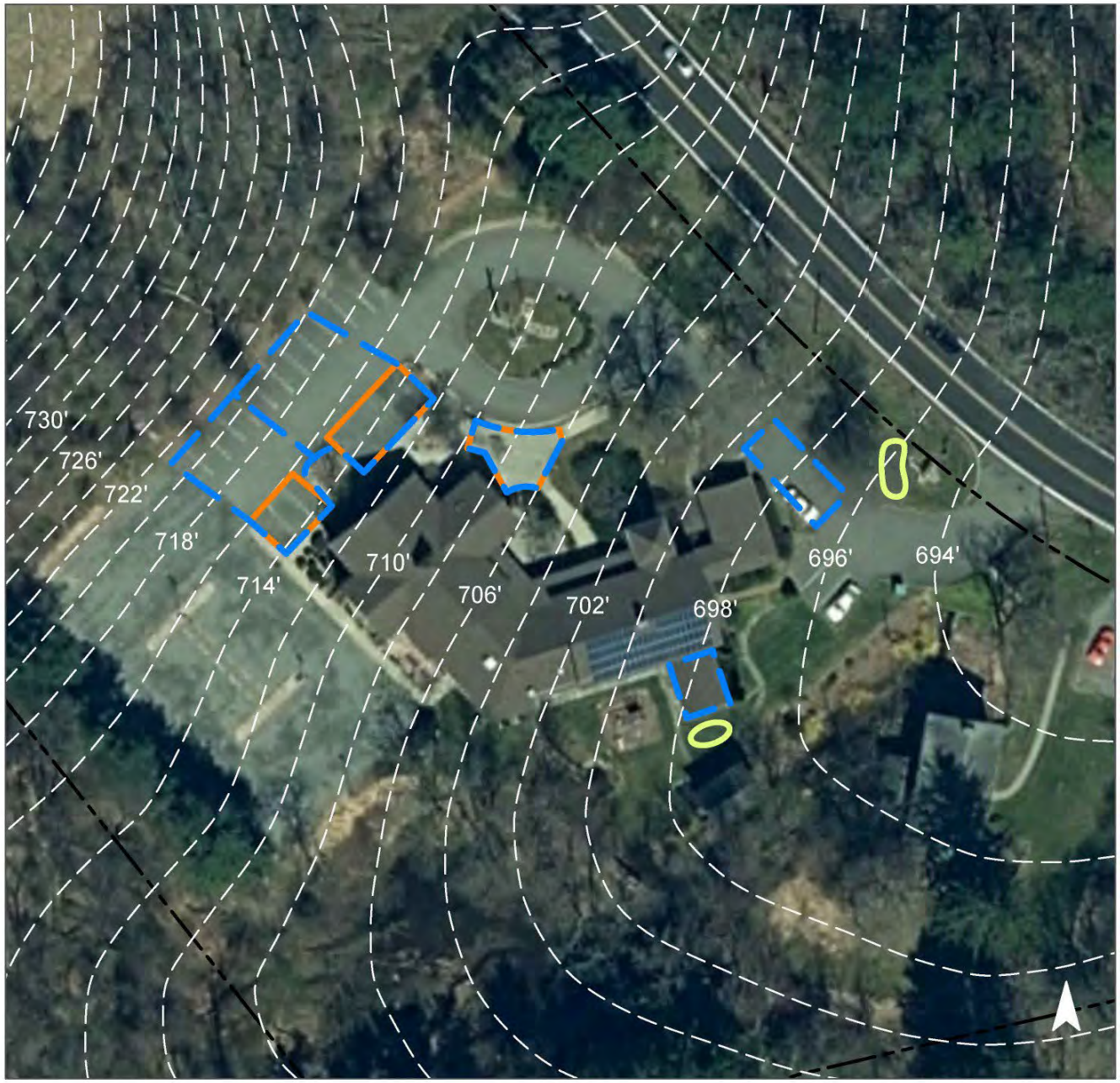


A rain garden can be installed near the south of the building using the disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. Another rain garden can be installed around an existing catch basin near the driveway entrance to capture, treat, and infiltrate the 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

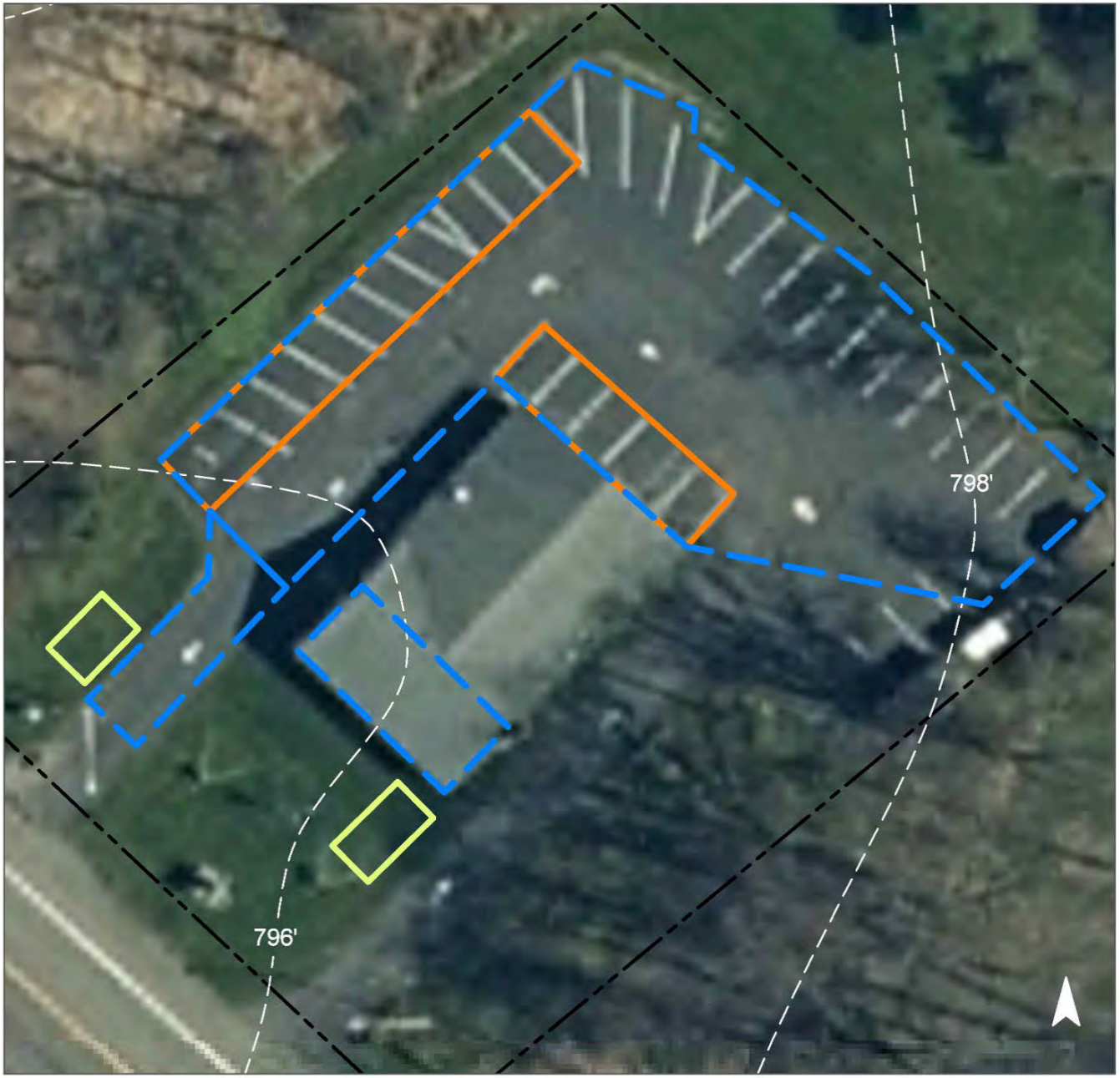
Block and Lot: Block 26.07, Lot 6

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

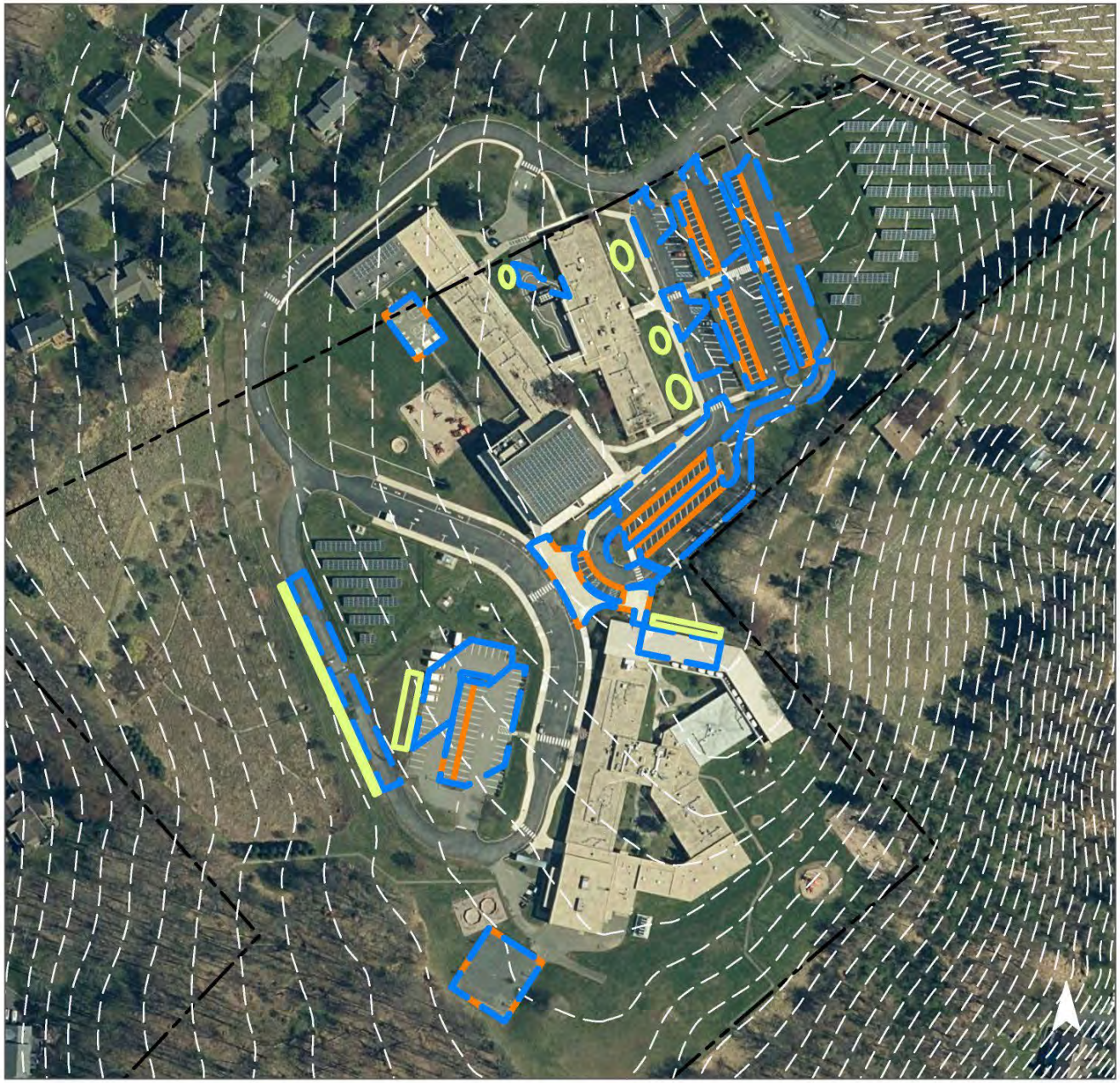
Block and Lot: Block 25.01, Lot 38.01

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

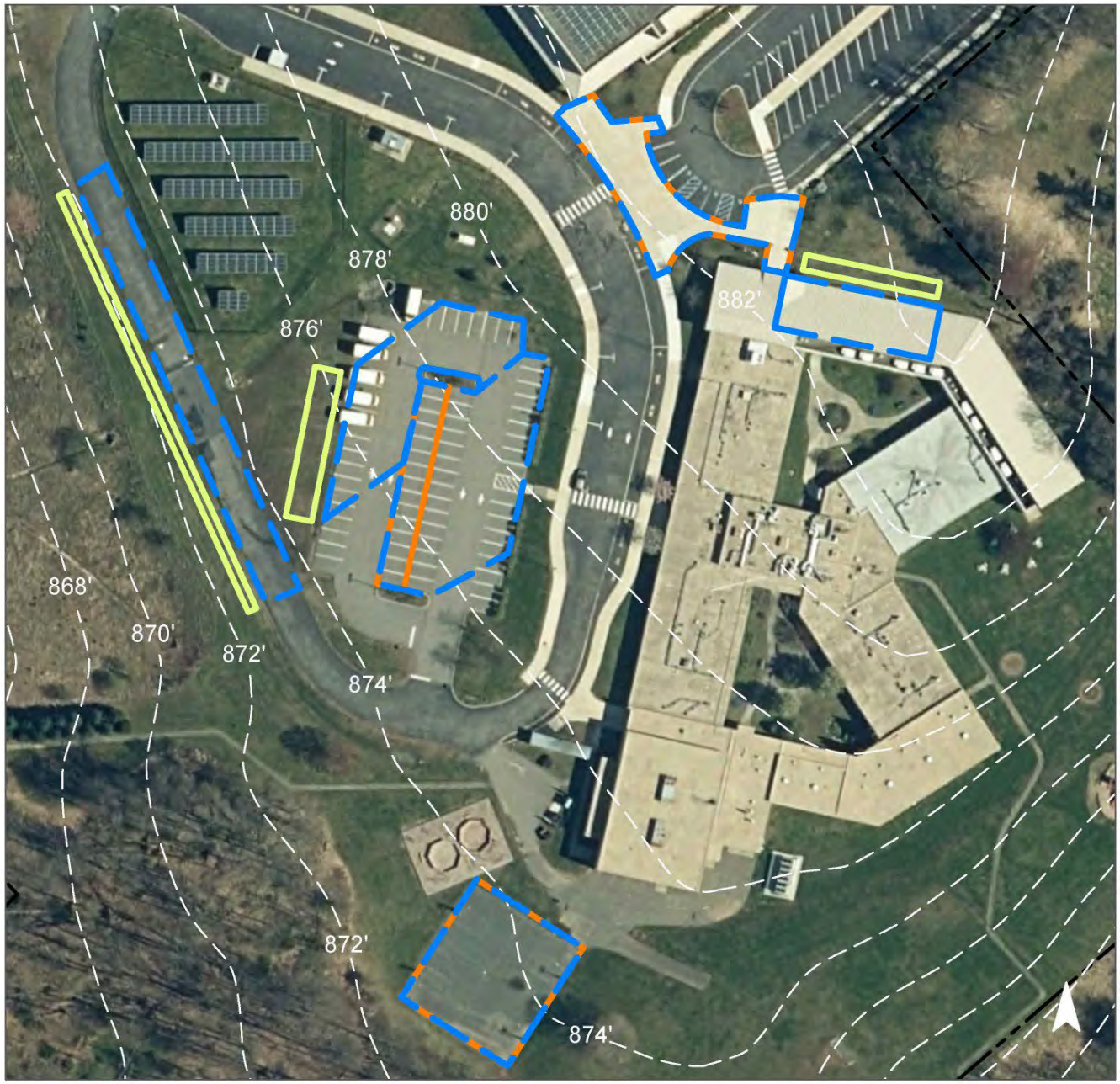


Bragg & Dickerson Schools Overall View

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

0 100' 200'

GREEN INFRASTRUCTURE RECOMMENDATIONS

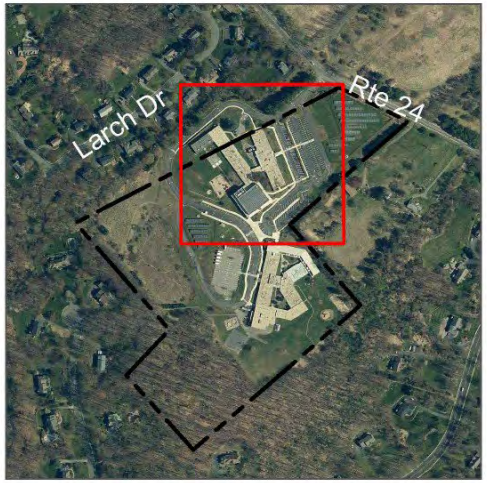


Bragg School

- 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

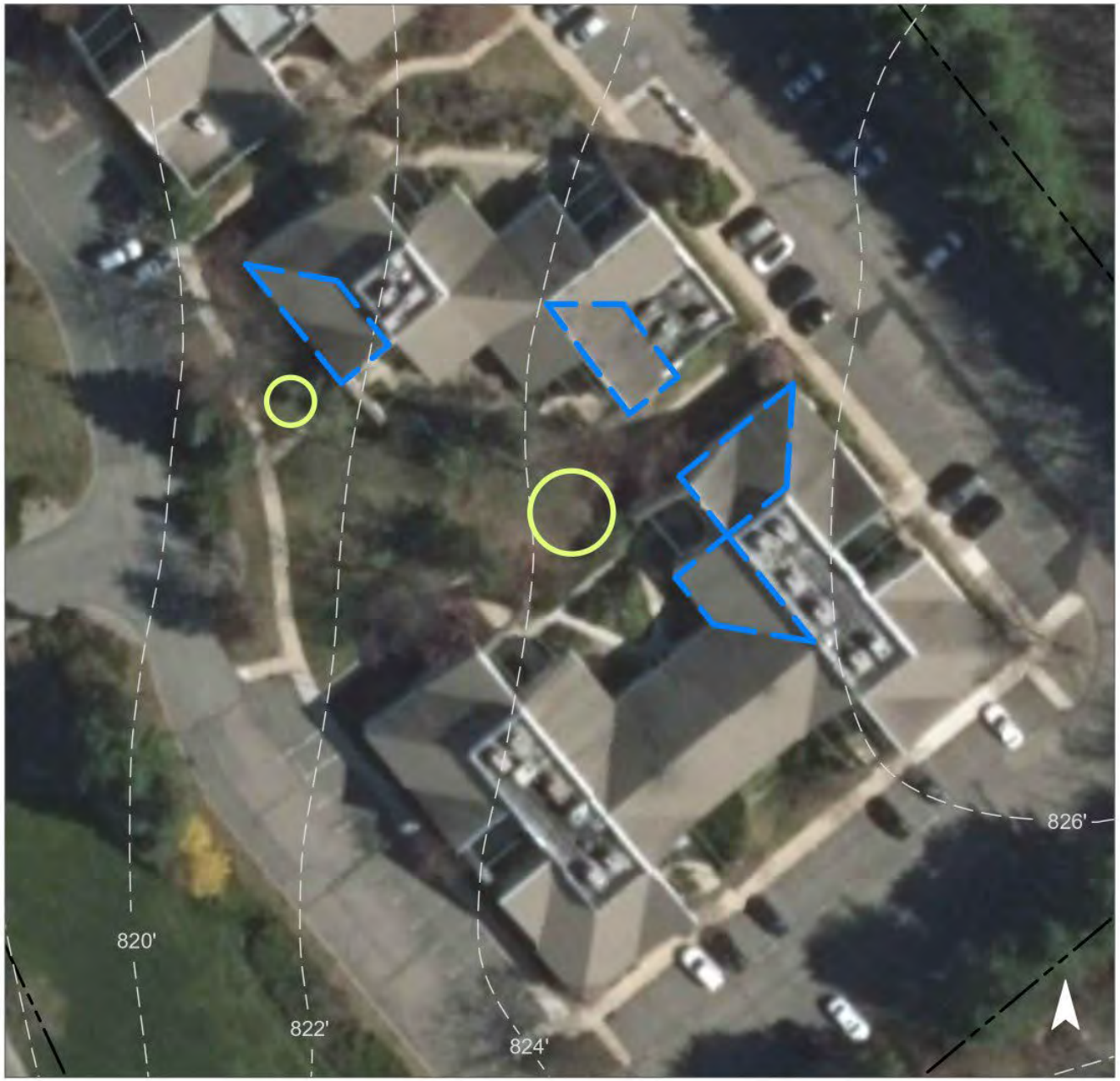
Block and Lot: Block 26.05, Lot 12

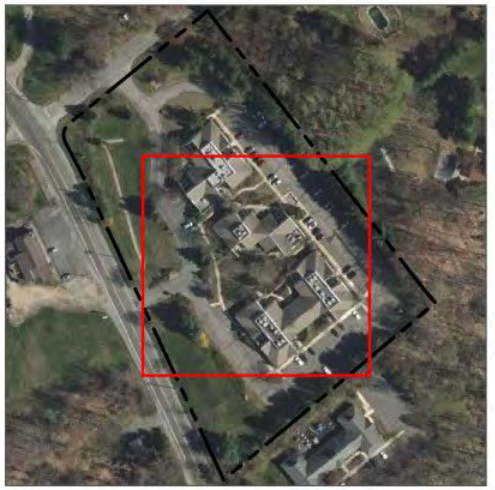
Rain gardens can be installed in the center courtyard and to the west of the building to capture rooftop runoff from multiple buildings. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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

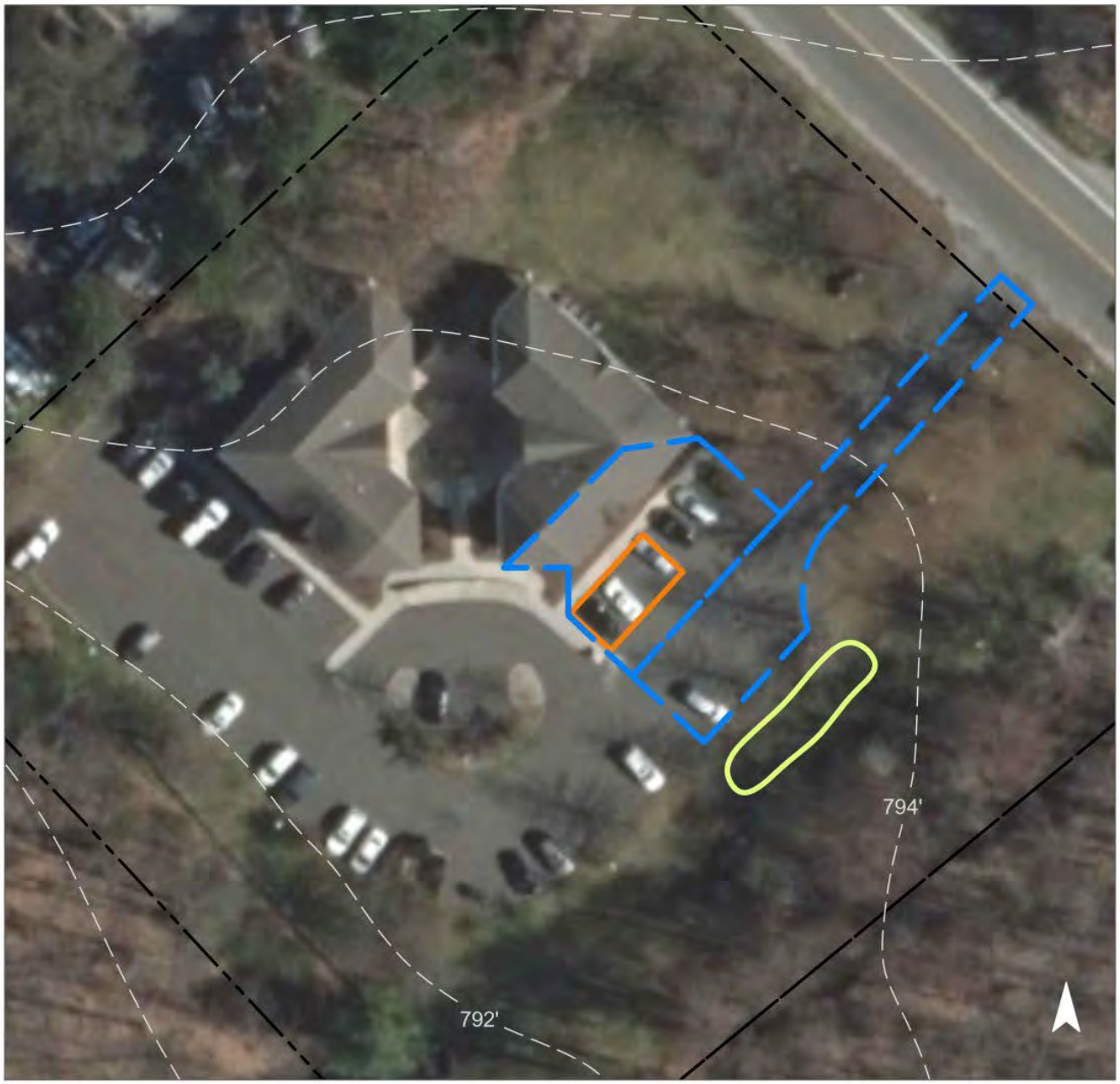
Block and Lot: Block 25, Lot 37.03

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

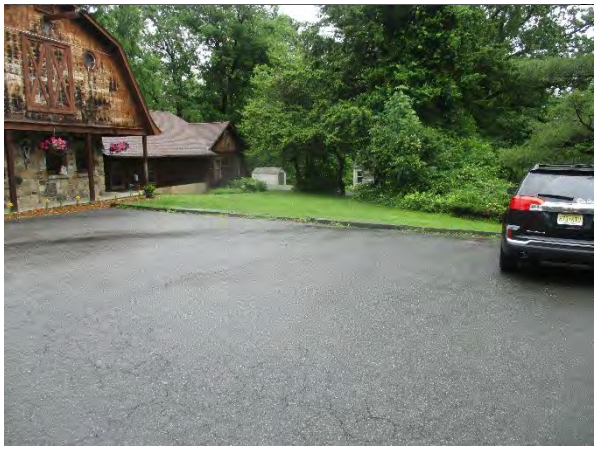
RAP ID: 13

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'

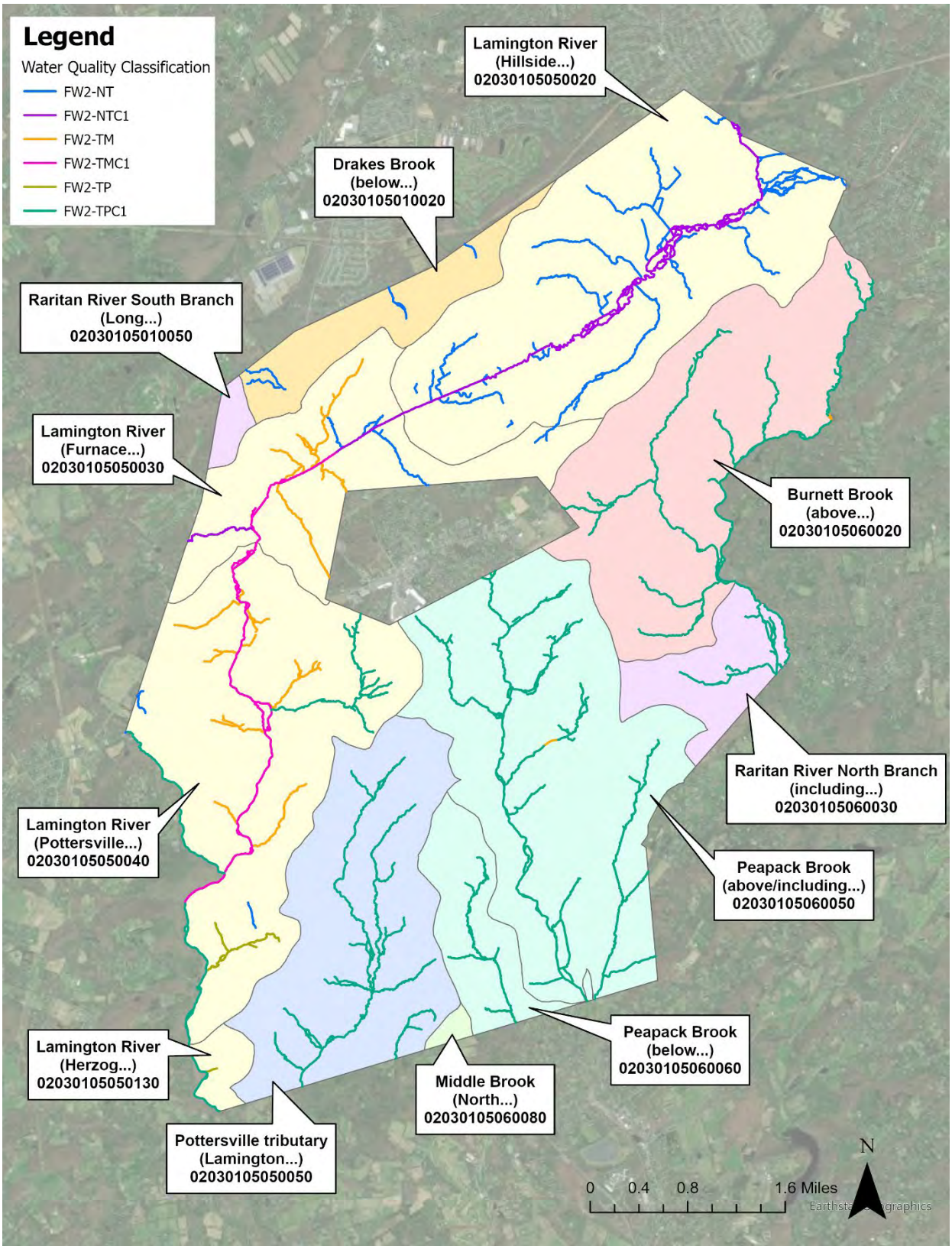


Figure 11. Water Quality Classification of Surface Waters in Chester Township

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%

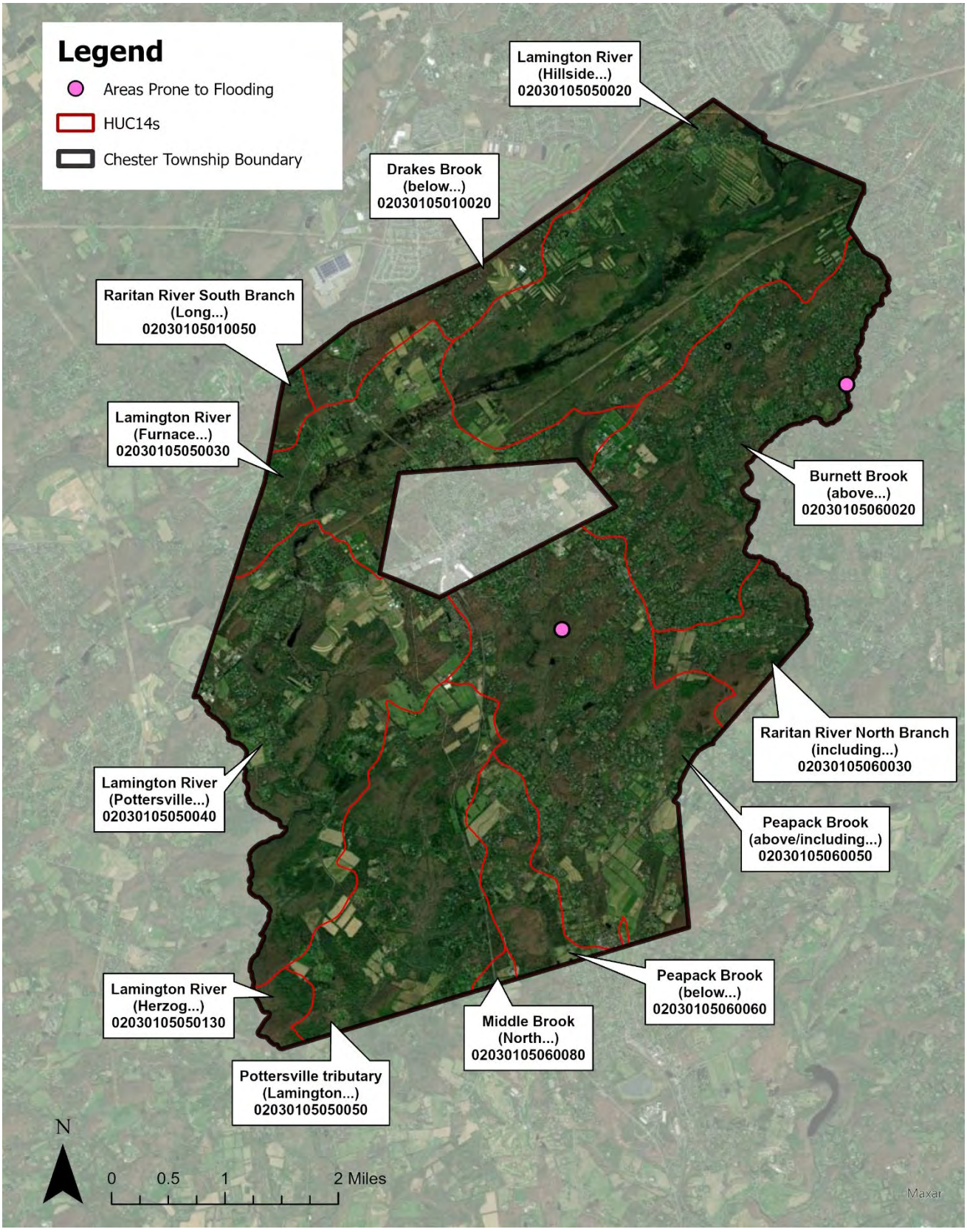


Figure 12. Areas Prone to Flooding in Chester Township

Clinton Town

Introduction

Located in Hunterdon County in New Jersey, Clinton Town covers about 1.4 square miles. With a population of 2,773 (2020 United States Census), Clinton Town consists of 57.9% of urban land uses by area. Of that urban land use, approximately 43.8% 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 29.9% of Clinton Town.

Clinton Town contains portions of four subwatersheds (Table 1). There are approximately 4.5 miles of rivers and streams within the municipality; these include Beaver Brook, South Branch Raritan River and its tributaries, and Spruce Run. Clinton Town is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Clinton Town

Subwatershed	HUC14
Raritan River South Branch (Spruce Run to Stone Mill gage)	02030105010080
Spruce Run Reservoir / Willoughby Brook	02030105020040
Beaver Brook (Clinton)	02030105020050
Raritan River South Branch (River Road to Spruce Run)	02030105020070

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

The Q-Farms in Clinton Town 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 Clinton Town 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 107.3 acres of agricultural land use in Clinton Town, of which, 27.4 acres lie within the study area for this Watershed Restoration and Protection Plan. There is one Q-Farm in the study area portion of Clinton Town, totaling 29.6 acres. Within the one Q-Farm, there are approximately 24.9 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, there are no recommendations for green infrastructure implementation on the agricultural lands in the study area in Clinton Town.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. One HUC14 is included in the study area (02030105010080). Within this HUC14, there are 5.9 acres of buildings and 14.3 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 Clinton Town, approximately 0.4 acres of rooftop runoff would be managed with 0.07 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Clinton Town, approximately 1.4 acres of roadway would be managed, or 0.4 miles of roadway.

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

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

The Property Class 15 parcels for Clinton Town are shown in Figure 10 and presented in Table 8. When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 11). Available information for each parcel in the study area is presented in Table 9. Class 15E parcels were excluded from the assessment. Five of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 9 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 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 Clinton Town. Figure 13 depicts the water quality classifications of surface waters throughout Clinton Town and Table 10 summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

An administrator from Clinton Town has identified that approximately 1/3 of the municipality lies in a flood zone and is therefore particularly susceptible to flooding during heavy rainfall or storm events. Figure 14 shows a flood insurance rate map (FIRM) panel obtained from the Federal Emergency Management Agency (FEMA) that highlights the aforementioned areas of concern.

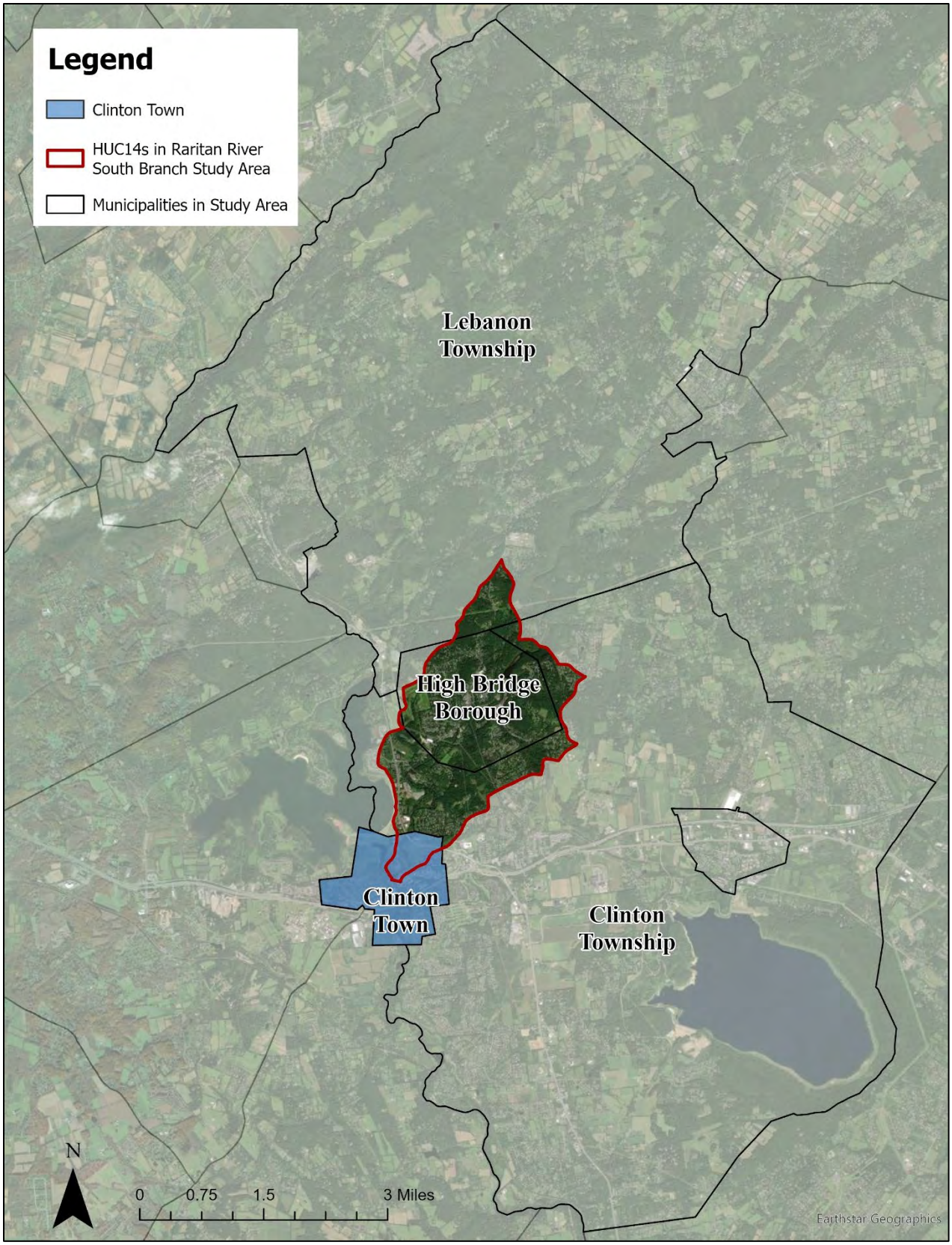


Figure 1: Municipalities in the Study Area

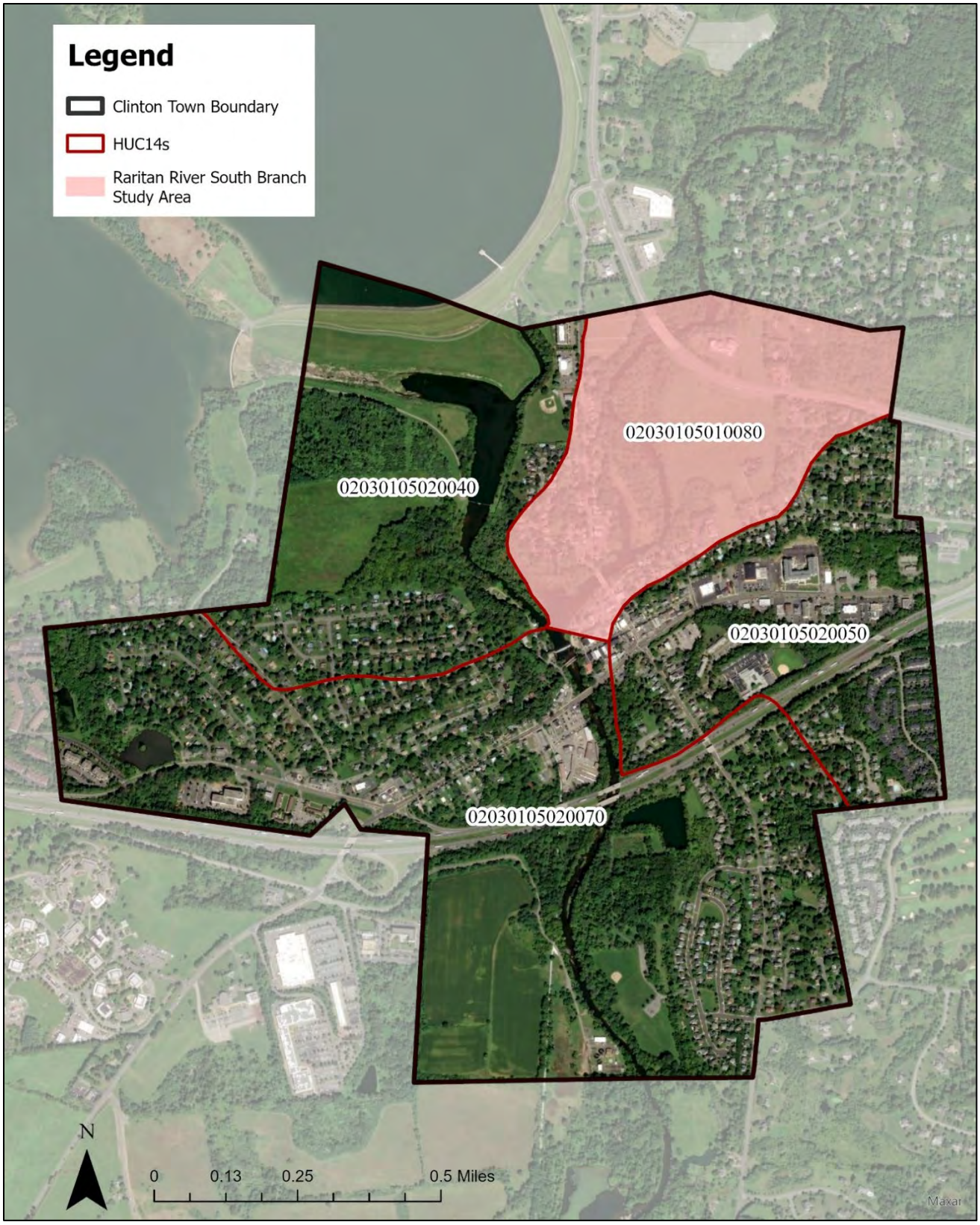


Figure 2: Portions of four HUC14s are in Clinton Town

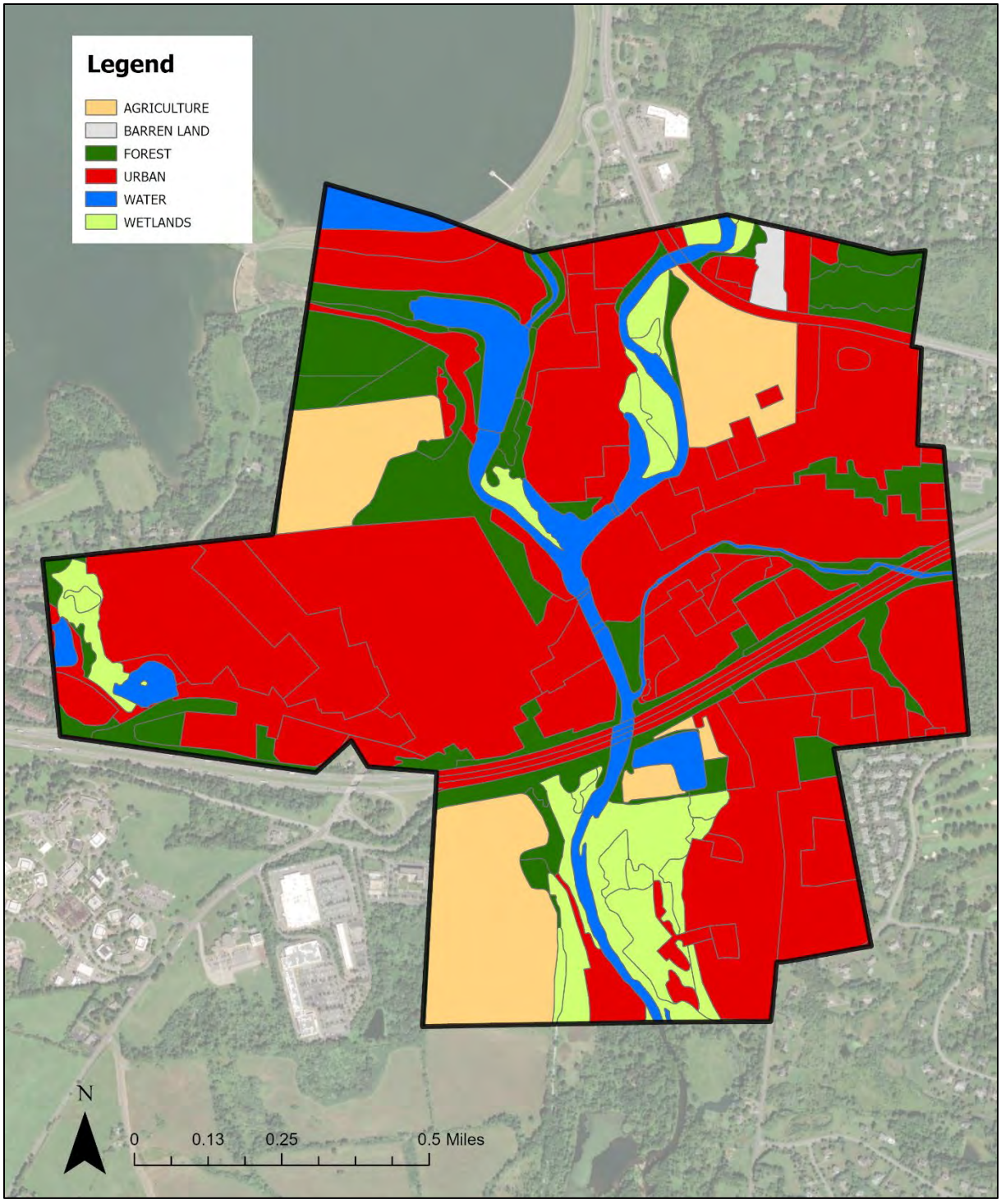


Figure 3: Land Use in Clinton Town

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Clinton Town

Land Use	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010080				
Agriculture	27.4	35.6	273.7	8,209.7
Barren Land	4.4	2.2	22.0	263.7
Forest	20.1	2.0	60.3	803.4
Urban	68.5	95.9	1,028.0	9,594.8
Water	16.0	1.6	47.9	639.0
Wetlands	14.3	1.4	42.8	570.9
TOTAL =	**150.6**	**138.8**	**1,474.6**	**20,081.5**
02030105020040				
Agriculture	26.7	34.7	267.3	8,017.8
Barren Land	0.0	0.0	0.0	0.0
Forest	53.7	5.4	161.0	2,146.9
Urban	88.9	124.5	1,333.5	12,445.8
Water	23.8	2.4	71.4	951.9
Wetlands	2.8	0.3	8.5	112.7
TOTAL =	**195.9**	**167.2**	**1,841.6**	**23,675.2**
02030105020050				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	22.1	2.2	66.4	884.8
Urban	127.2	178.1	1,907.9	17,806.8
Water	2.9	0.3	8.6	114.9
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**152.2**	**180.6**	**1,982.9**	**18,806.5**
02030105020070				
Agriculture	53.2	69.1	531.6	15,948.0
Barren Land	0.0	0.0	0.0	0.0
Forest	43.3	4.3	130.0	1,733.3
Urban	247.3	346.2	3,709.3	34,619.8
Water	22.4	2.2	67.3	896.8
Wetlands	53.0	5.3	159.0	2,119.4
TOTAL =	**419.2**	**427.2**	**4,597.1**	**55,317.3**
All HUCs				
Agriculture	107.3	139.4	1,072.5	32,175.5
Barren Land	4.4	2.2	22.0	263.7
Forest	139.2	13.9	417.6	5,568.4
Urban	531.9	744.7	7,978.6	74,467.2
Water	65.1	6.5	195.2	2,602.7
Wetlands	70.1	7.0	210.2	2,803.0
TOTAL =	**917.9**	**913.7**	**9,896.2**	**117,880.5**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Clinton Town 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 Clinton Town. Based upon the NJDEP impervious surface data, Clinton Town has impervious cover totaling 26.1%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Clinton Town 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, Clinton Town'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.

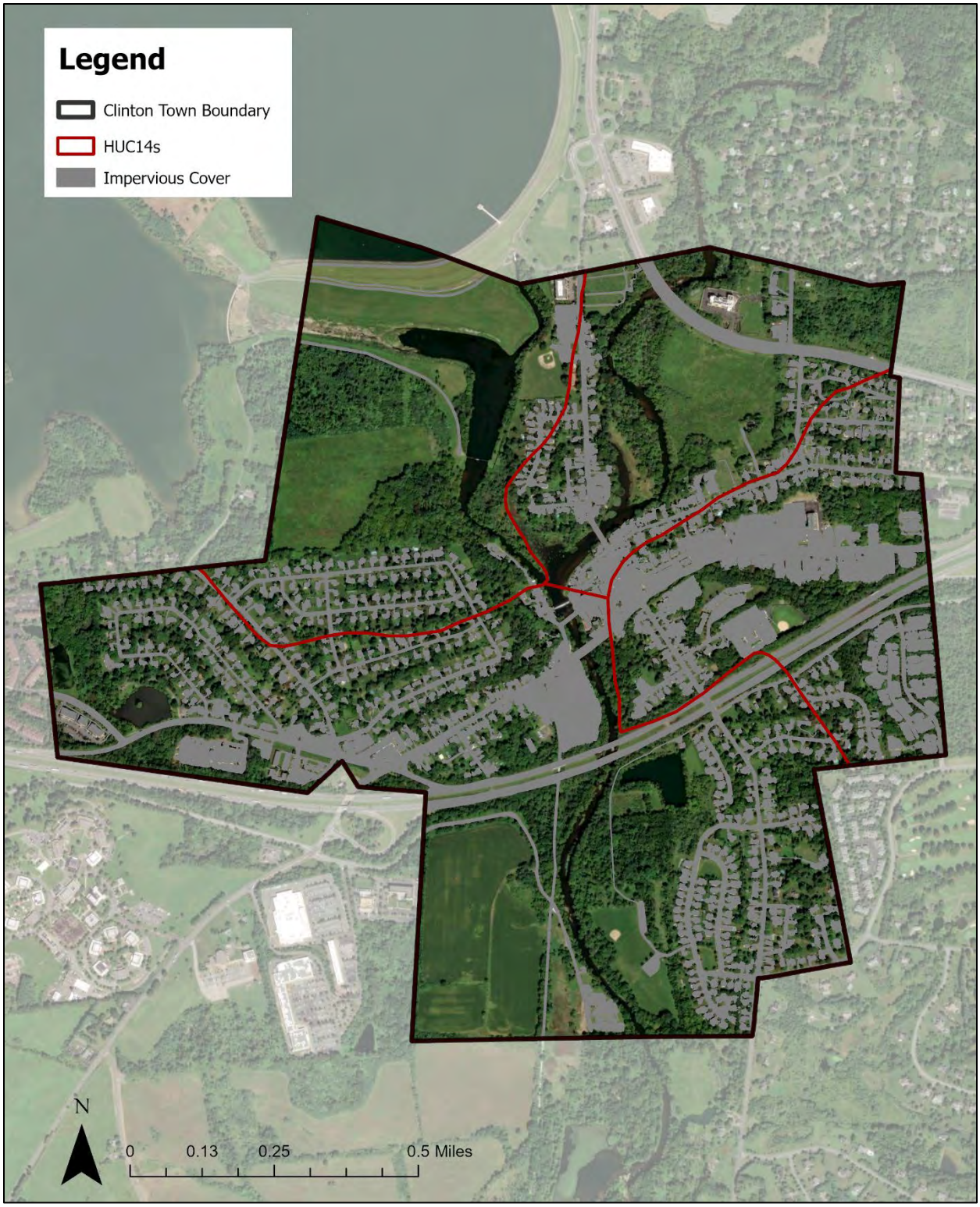


Figure 4: Impervious Cover in Clinton Town

Table 3: Impervious Cover Analysis by HUC14 for Clinton Town

Class	Area (acres)	HUC Impervious Cover (%)
02030105010080		
Building	5.89	
Other	10.50	
Road	14.31	
TOTAL =	**30.7**	**20.4%**
02030105020040		
Building	4.95	
Other	8.22	
Road	8.24	
TOTAL =	**21.4**	**10.9%**
02030105020050		
Building	18.95	
Other	32.00	
Road	23.69	
TOTAL =	**74.6**	**49.0%**
02030105020070		
Building	22.64	
Other	46.37	
Road	43.84	
TOTAL =	**112.9**	**26.9%**
All HUCs		
Building	52.43	
Other	97.10	
Road	90.08	
TOTAL =	**239.6**	**26.1%**

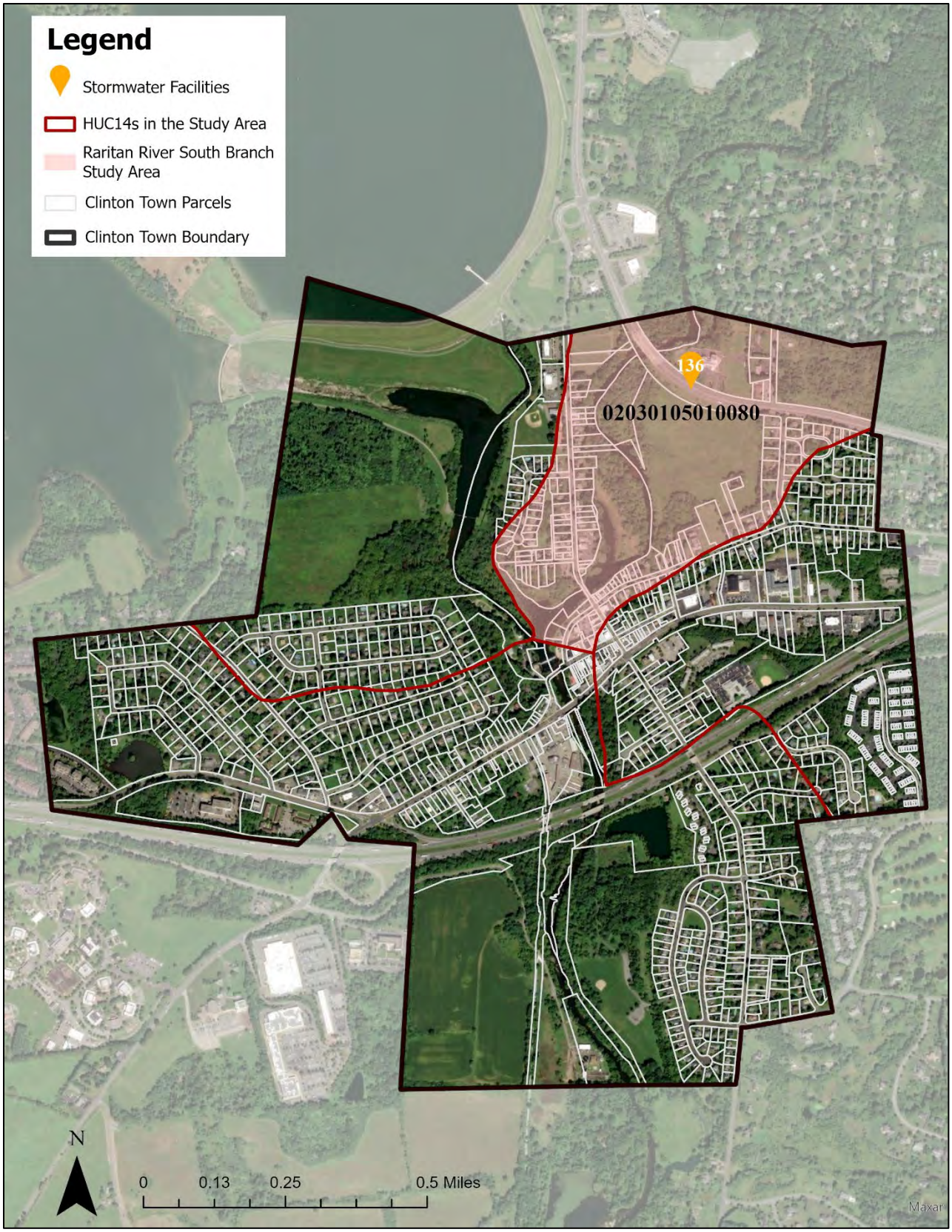


Figure 5: Stormwater Facilities in the Study Area of Clinton Town

Table 4: Location of Stormwater Facilities in the Study Area of Clinton Town

Raritan River South Branch Study Area		
ID	**Address**	**Type**
136	1638 Rt 31 North	N

"N" = Naturalized

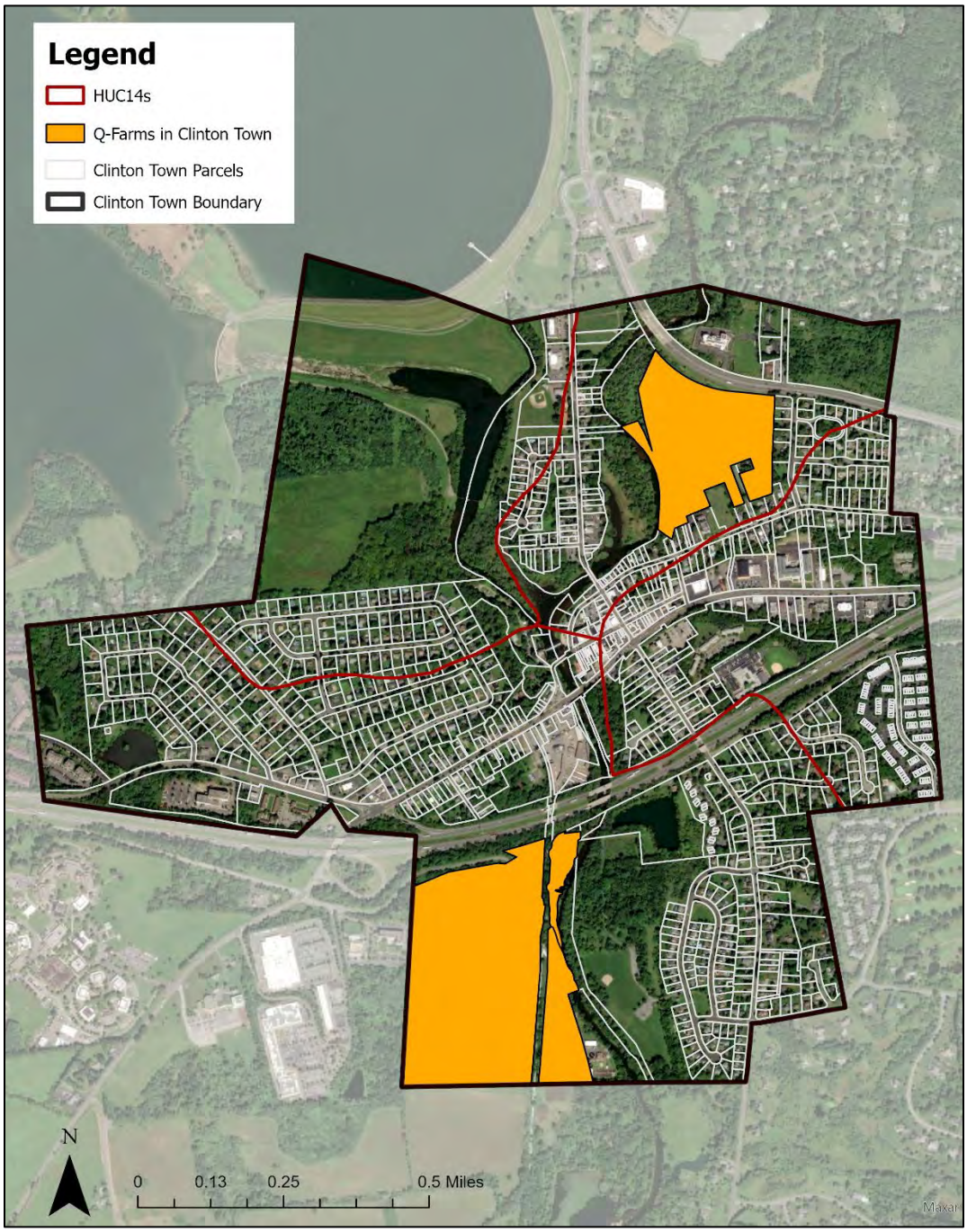


Figure 6: Q-Farm Parcels in Clinton Town

Table 5: Q-Farm Parcels in Clinton Town

Block	Lot	Q-Code	Prop Class	Location
14	32	QFARM	3B	65 1/2 Center St
27	1	QFARM	3B	1 Ramsey Rd
28	1	QFARM	3B	Access Rd Wof Lvrr
30	1	QFARM	3B	Hwy Right of Way-Rar.Riv.

Figure 7: Q-Farm Parcels in the Study Area of Clinton Town

Table 6: Q-Farm Parcels in the Study Area of Clinton Town

Block	Lot	Q-Code	Prop Class	Location
14	32	QFARM	3B	65 1/2 Center St

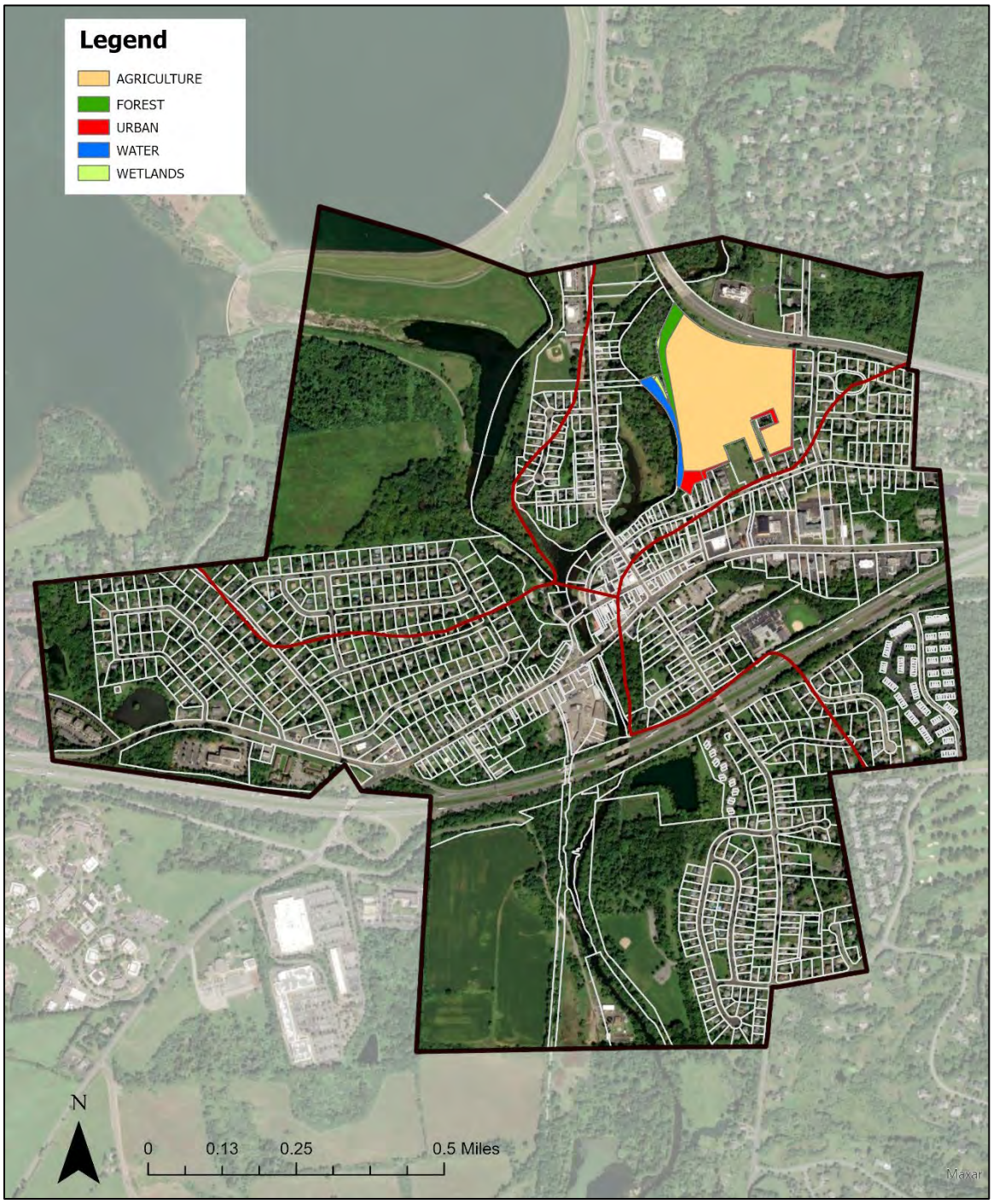


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Clinton Town

Table 7: Land Use on Q-Farms in the Study Area of Clinton Town

Land Use	Area (acres)
Agriculture	24.9
Barren Land	0.0
Forest	1.6
Urban	1.6
Water	1.3
Wetlands	0.2
Total:	**29.6**

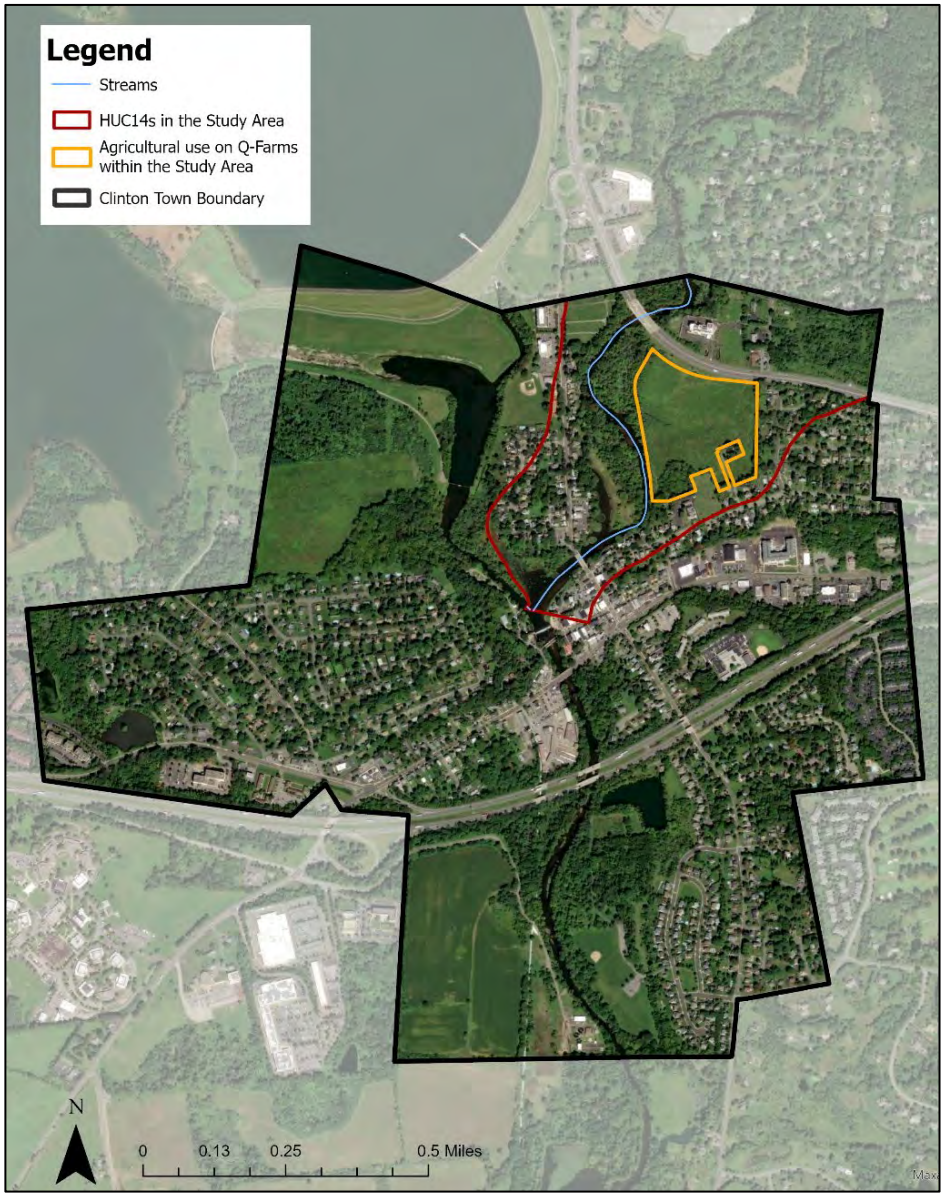


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Clinton Town

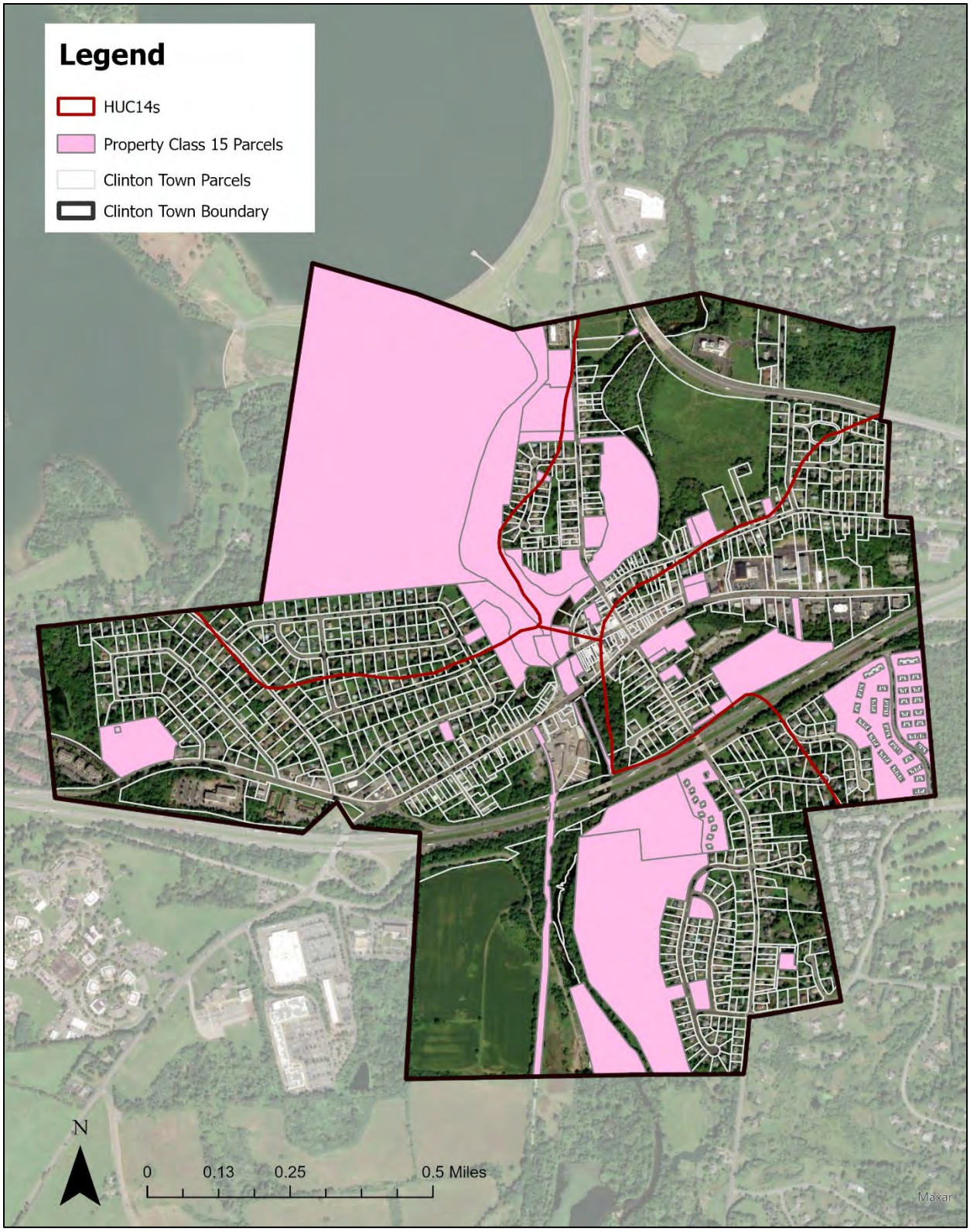


Figure 10: Property Class 15 Parcels in Clinton Town

Table 8: Property Class 15 Parcels in Clinton Town

Block	Lot	Prop Class	Location	Facility Type
22	13	15A	School St	School
22	13.01	15A	Rear Of School St	Vacant Land
22	13.02	15A	Leigh St	Vacant Land
1	59	15C	Well Lot, R Of 10	Well
1	60.01	15C	Demott Pk&Fishing Pd	Park
7	1	15C	W Main St	River
8	1	15C	Quarry Road	Water Supply
10	11	15C	20 Center St	Parking Area
14	1	15C	Center St & Leigh St	Vacant Land
14	1.01	15C	Along River	Vacant Land
14	3.01	15C	Along River	Vacant Land
15	14	15C	Halstead St	Vacant Land
15	31	15C	Route 31	Highway
16	20.01	15C	Water Street	Vacant Land
16	20.32	15C	Rachel Court	Vacant Land
16	21	15C	63 Halstead St	Community House
16	22.01	15C	65 Halstead St	Library
16	23	15C	Spruce Run	Water Supply
22	1	15C	43 Leigh St	Municipal Building
22	2	15C	47 Leigh St	Municipal Annex
23	14	15C	River	Riverbank
24	9	15C	West Main St	Vacant Land
28	2	15C	2 Ramsey Road	Sewage Treatment
29	3	15C	Leigh Street	Vacant Land
29	8	15C	30a Haver Farm Road	Park
29.02	1	15C	Kings Boulevard	Vacant Land
29.02	10	15C	Haver Farm Road	Vacant Land
31	10.01	15C	Leigh Street	Vacant Land
33	1	15C	Country Club Dr	Vacant Land
100	1	15C	Clinton Branch	Park
14	20	15D	75 Center St	Parking Area
14	21	15D	91 Center Street	Church
14	25	15D	105 Center St	Parsonage
15	4	15D	10-12 Halstead St	Church
22	5.01	15D	55 Leigh St	Church Offices
6	35	15F	24 Marudy Drive	Disabled Vet
8	3	15F	54 Main St	Historical Museum
8	3.01	15F	54 Main Street	Historical Museum
8	4	15F	Raritan River	River Museum
8	30	15F	45 Quarry Ridge Rd	Disabled Vet
9	1	15F	7 Center St	Education Center
11	15.01	15F	Off Rt. 22 Rear Of Lot 16	Condo Common Element
11	16	15F	49-51 Main St.	Condo Common Element
16	20.06	15F	7 Rachel Court	Disabled Vet
21	36	15F	29-31 Route 173	Volunteer Fire Co.
21	37	15F	New Street	Parking Area

22	18.01	15F	48 Route 173	Rescue Squad
29	3.03	15F	Pond Ridge Drive	Condo Common Element
29.01	1	15F	34 Goosetown Drive	Disabled Vet
31	7	15F	2 Alexandra Way	Disabled Vet
31	7	15F	Alton Place	Condo Common Element
31	29	15F	6 Olsens Lane	Disabled Vet
31.01	7.01	15F	Common Elements	Condo Common Element

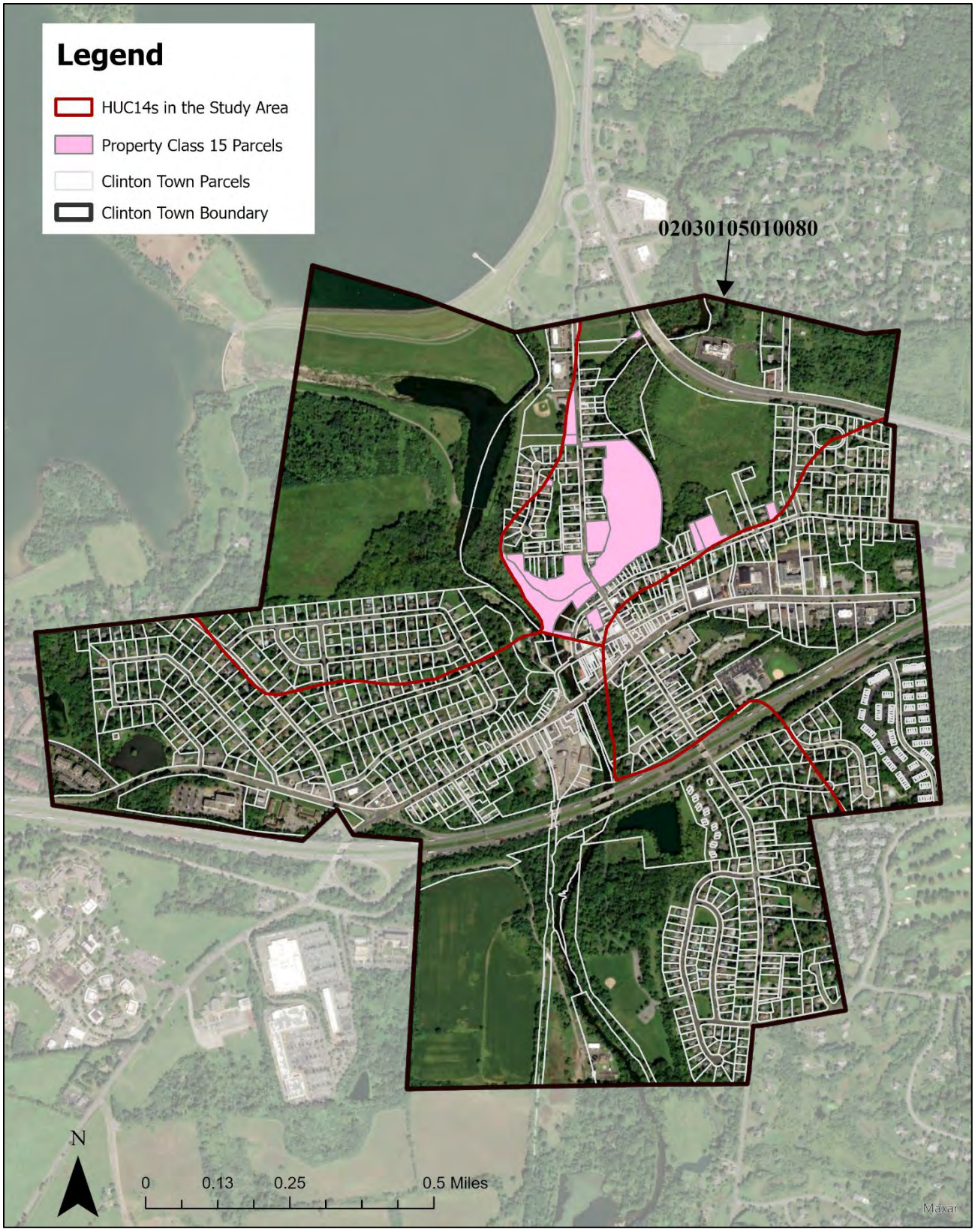


Figure 11: Property Class 15 Parcels in the Study Area of Clinton Town

Table 9: Property Class 15 Parcels in the Study Area of Clinton Town

Block	Lot	Prop Class	Location	Facility Type
10	11	15C	20 Center St	Parking Area
14	1	15C	Center St & Leigh St	Vacant Land
14	1.01	15C	Along River	Vacant Land
14	3.01	15C	Along River	Vacant Land
15	14	15C	Halstead St	Vacant Land
15	31	15C	Route 31	Highway
16	20.01	15C	Water Street	Vacant Land
16[1]	20.32	15C	Rachel Court	Vacant Land
***16[1]**	**21**	**15C**	**63 Halstead St**	**Community House**
***16[1]**	**22.01**	**15C**	**65 Halstead St**	**Library**
16[1]	23	15C	Spruce Run	Water Supply
***14[2]**	**20**	**15D**	**75 Center St**	**Parking Area**
***14[1, 2]**	**21**	**15D**	**91 Center Street**	**Church**
14[1]	25	15D	105 Center St	Parsonage
***15**	**4**	**15D**	**10-12 Halstead St**	**Church**
8[1]	3	15F	54 Main St	Historical Museum
***9[1]**	**1**	**15F**	**7 Center St**	**Education Center**
16[1]	20.06	15F	7 Rachel Court	Disabled Vet

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

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

Figure 12: Sites with Green Infrastructure Opportunities in Clinton Town

BASIL BANDWAGON

RAP ID: 1

Subwatershed: Beaver Brook

Site Area: 44,236 sq. ft.

Address: 38 Old Highway 22
Clinton, NJ 08809

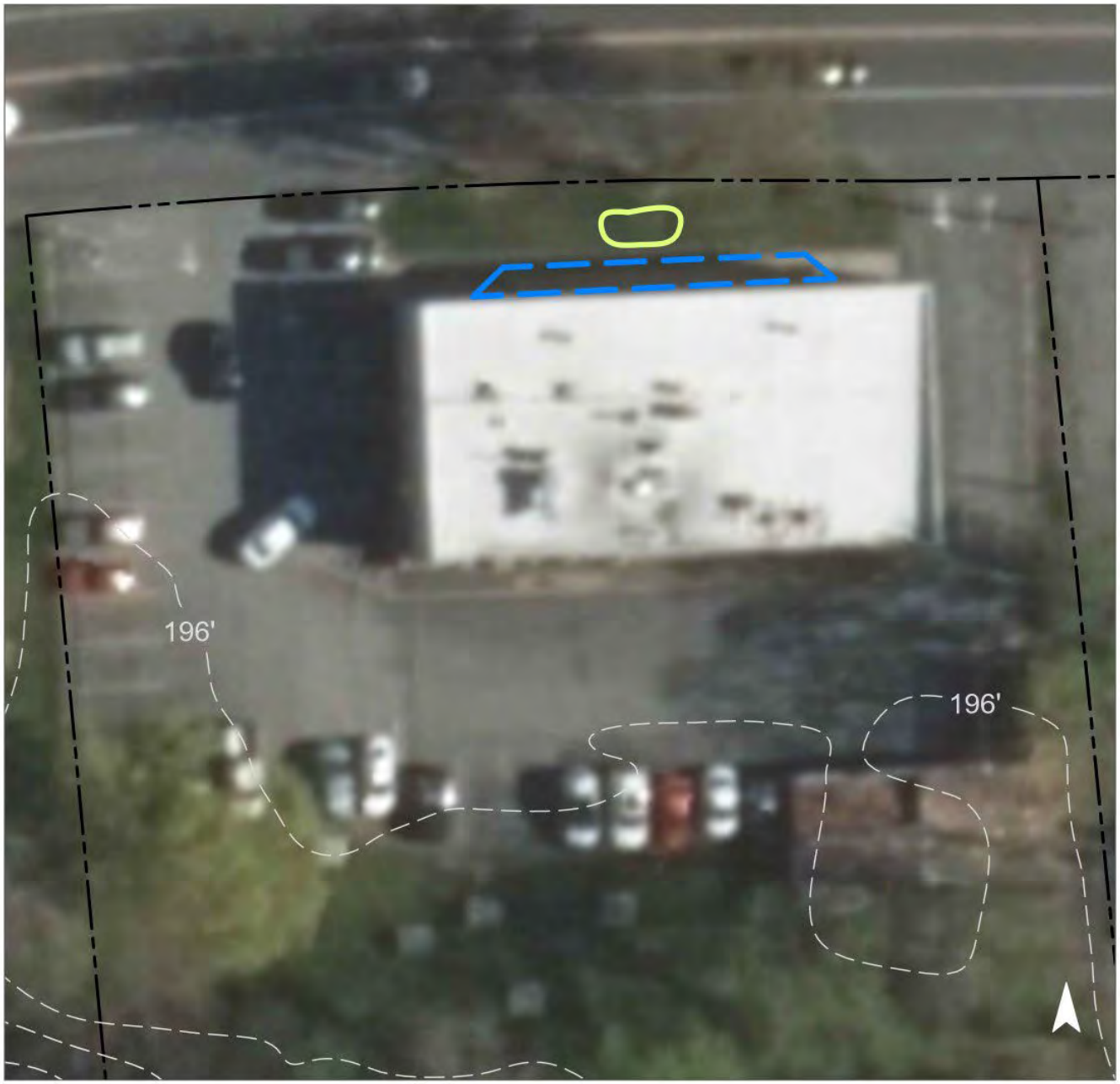
Block and Lot: Block 22, Lot 16

A rain garden can be installed in front of the building to capture the stormwater from the rooftop awning of the building. 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"
37	136,325	6.6	68.9	625.9	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	0.009	2	680	0.03	90	$450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Basil Bandwagon

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

0 15' 30'

CLINTON ELEMENTARY SCHOOL

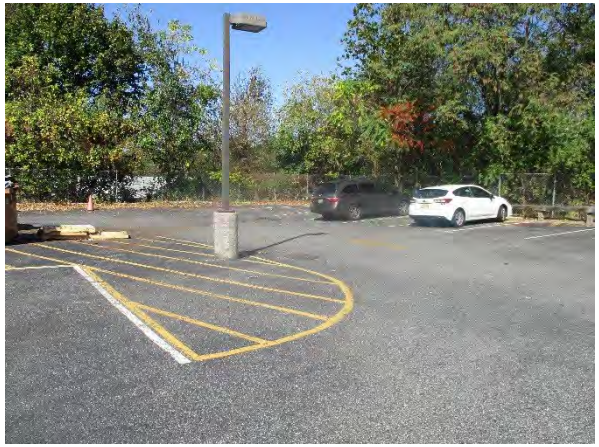
RAP ID: 2

Subwatershed: Beaver Brook

Site Area: 369,275 sq. ft.

Address: 10 School Street
Clinton, NJ 08809

Block and Lot: Block 22, Lot 13

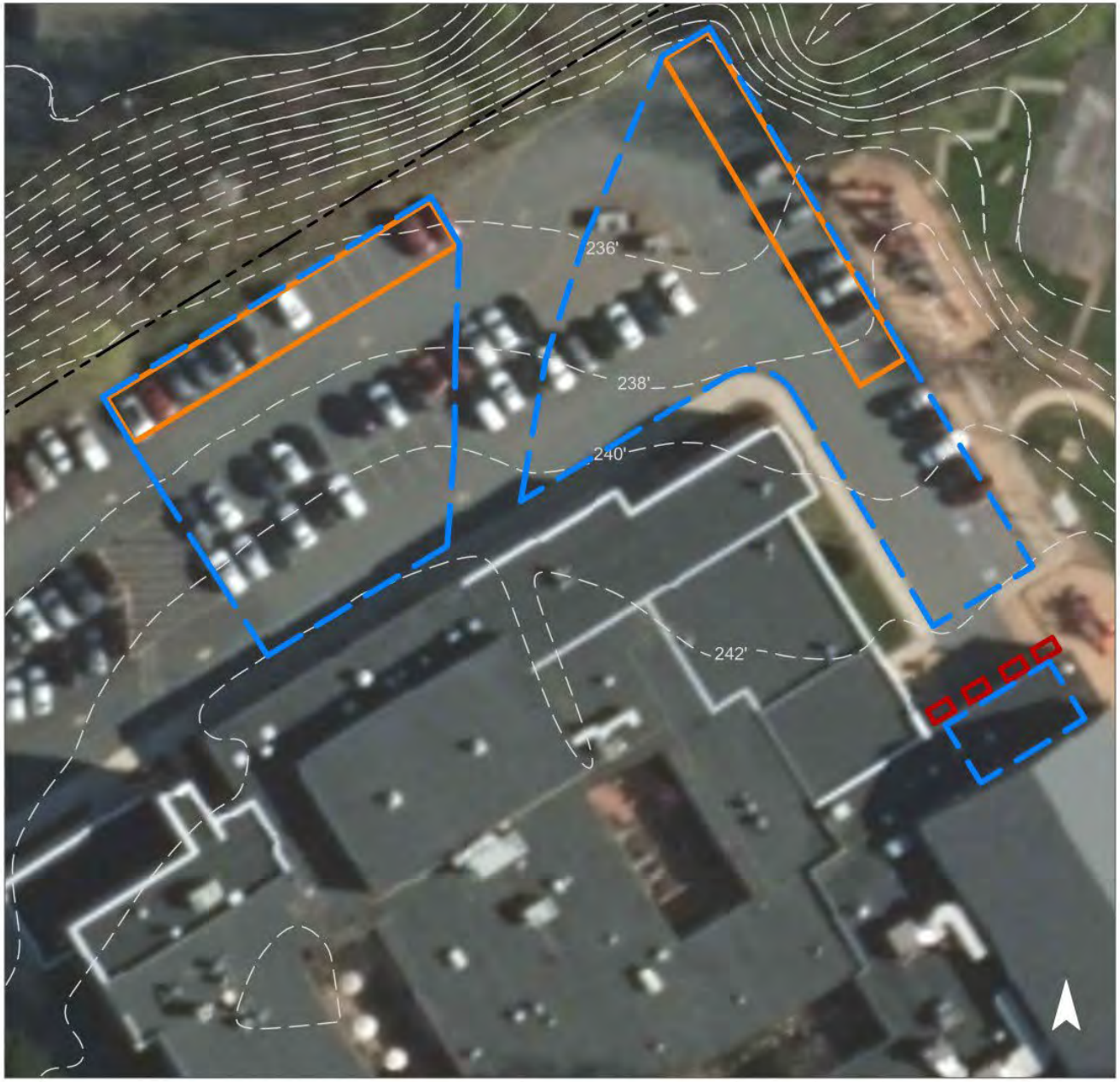


Porous pavement can be installed on the northern and eastern parking strips to capture stormwater from the parking lot. Downspout planter boxes can be constructed along the northeastern edge of the building to allow roof runoff to be reused. A preliminary soil assessment suggests that more soil testing 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"
37	136,325	6.6	68.9	625.9	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
Pervious pavement	0.589	99	44,630	1.68	4,535	$113,375
Planter boxes	n/a	6	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Clinton Elementary School

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

0 25' 50'

CLINTON FIRE DEPARTMENT

RAP ID: 3

Subwatershed: Beaver Brook

Site Area: 51,009 sq. ft.

Address: 1 New Street
Clinton, NJ 08809

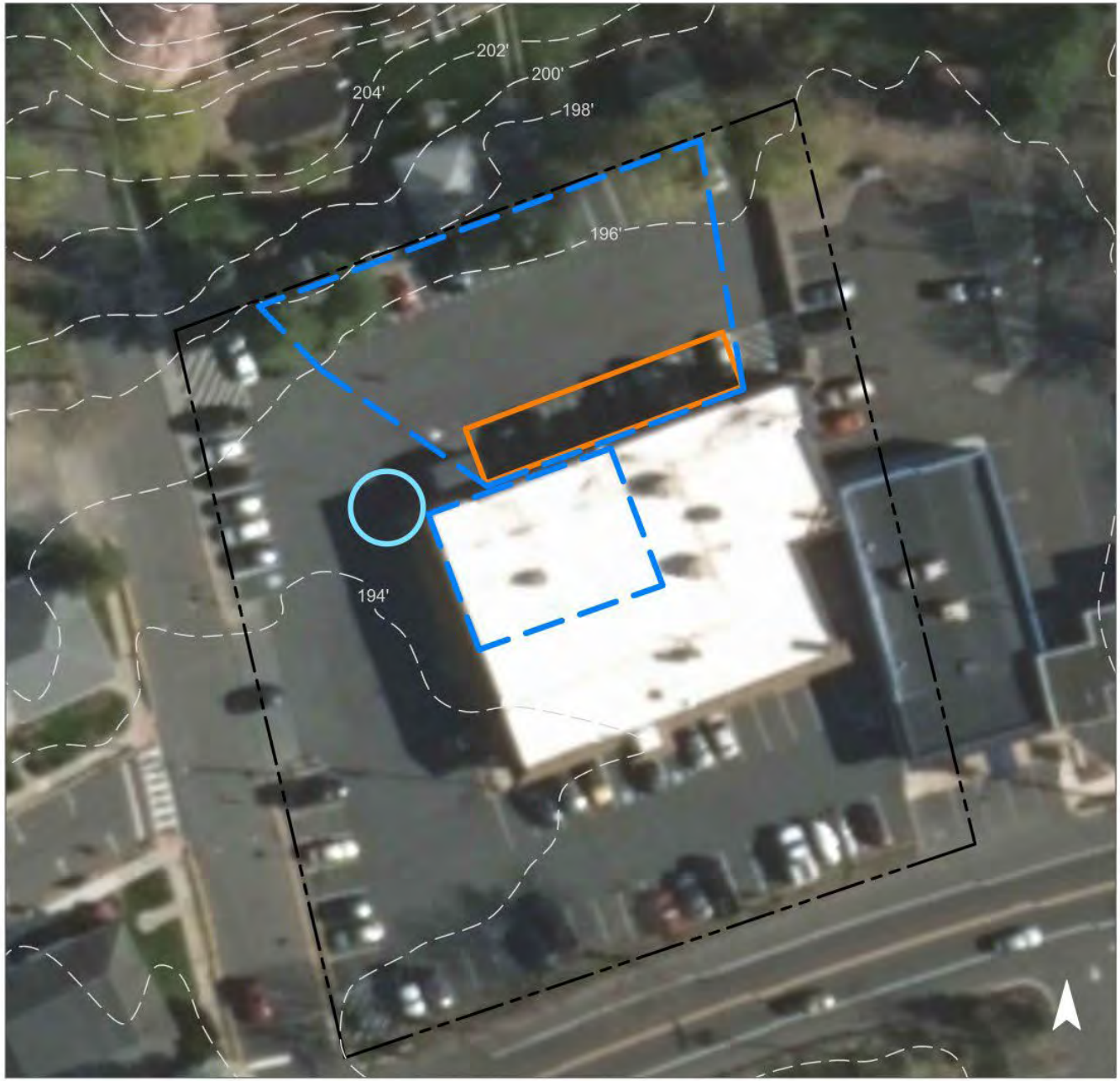
Block and Lot: Block 21, Lots 36 & 37

A rainwater harvesting system can be installed near the west corner of the building to capture rainwater and be reused for activities such as washing vehicles. The parking strip north of the building can be converted to pervious pavement to aid in the infiltration of stormwater from the large 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"
80	40,925	2.0	20.7	187.9	0.032	1.12

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.264	44	19,990	0.75	2,120	$53,000
Rainwater harvesting	0.079	13	2,500	0.09	2,500 (gal)	$5,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Clinton Fire Department

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

0 25' 50'

CLINTON MUNICIPAL OFFICES

RAP ID: 4

Subwatershed: Beaver Brook

HUC14 ID: 02030105020050

Site Area: 98,757 sq. ft.

Address: 43 Leigh Street
Clinton, NJ 08809

Block and Lot: Block 22, Lot 1

Rain gardens can be installed to the north and south of the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require downspout redirection and disconnections. Existing parking spaces to the northwest of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the parking lot and from the northern garage rooftop, which already has disconnected downspouts directing runoff to the asphalt. Trench drains will be needed to intercept and redirect some of the parking lot runoff 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 49.4"
75	74,018	3.6	37.4	339.8	0.058	2.28

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	2,210	0.065	10	4,430	0.17	555	$5,550
Pervious pavement	24,910	0.729	108	49,940	1.88	6,480	$162,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Clinton Municipal Offices

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

0 30' 60'

EVANGEL CHAPEL

RAP ID: 5

Subwatershed: Beaver Brook

Site Area: 21,907 sq. ft.

Address: 55 Leigh Street
Clinton, NJ 08809

Block and Lot: Block 22, Lot 5.01

Porous pavement can be installed to capture stormwater from the rear end of the building as well as the parking lot. A downspout planter box can be installed along the building's eastern wall to capture some of the rooftop drainage. 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	13,302	0.6	6.7	61.1	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	0.065	11	4,940	0.19	1,000	$25,000
Planter box	n/a	<1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Evangel Chapel

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

0 20' 40'

NEO SUSHI

RAP ID: 6

Subwatershed: Beaver Brook

Site Area: 27,206 sq. ft.

Address: 42 Old Highway 22
Clinton, NJ 08809

Block and Lot: Block 22, Lot 17

Porous pavement can be installed in front of the building to aid in the infiltration of stormwater from the large pavement and rooftop areas if the gutter is reversed in direction into the lot instead of alongside the building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
78	21,200	1.0	10.7	97.3	0.017	0.58

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
Pervious pavement	0.121	20	9,200	0.35	975	$24,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

Neo Sushi

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

0 15' 30'

TIRPOK CLEANERS

RAP ID: 7

Subwatershed: Beaver Brook

Site Area: 17,758 sq. ft.

Address: 36 Old Highway 22
Clinton, NJ 08809

Block and Lot: Block 22, Lot 15

Porous pavement can be installed in the parking lot to capture stormwater from the building and parking lot to alleviate flooding issues as seen in the image above. 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"
82	14,477	0.7	7.3	66.5	0.011	0.40

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
Pervious pavement	0.098	16	7,420	0.28	970	$24,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Tirpok Cleaners

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

0 15' 30'

UNITED STATES POSTAL SERVICE

RAP ID: 8

Subwatershed: Beaver Brook

Site Area: 10,638 sq. ft.

Address: 24 East Main Street
Clinton, NJ 08809

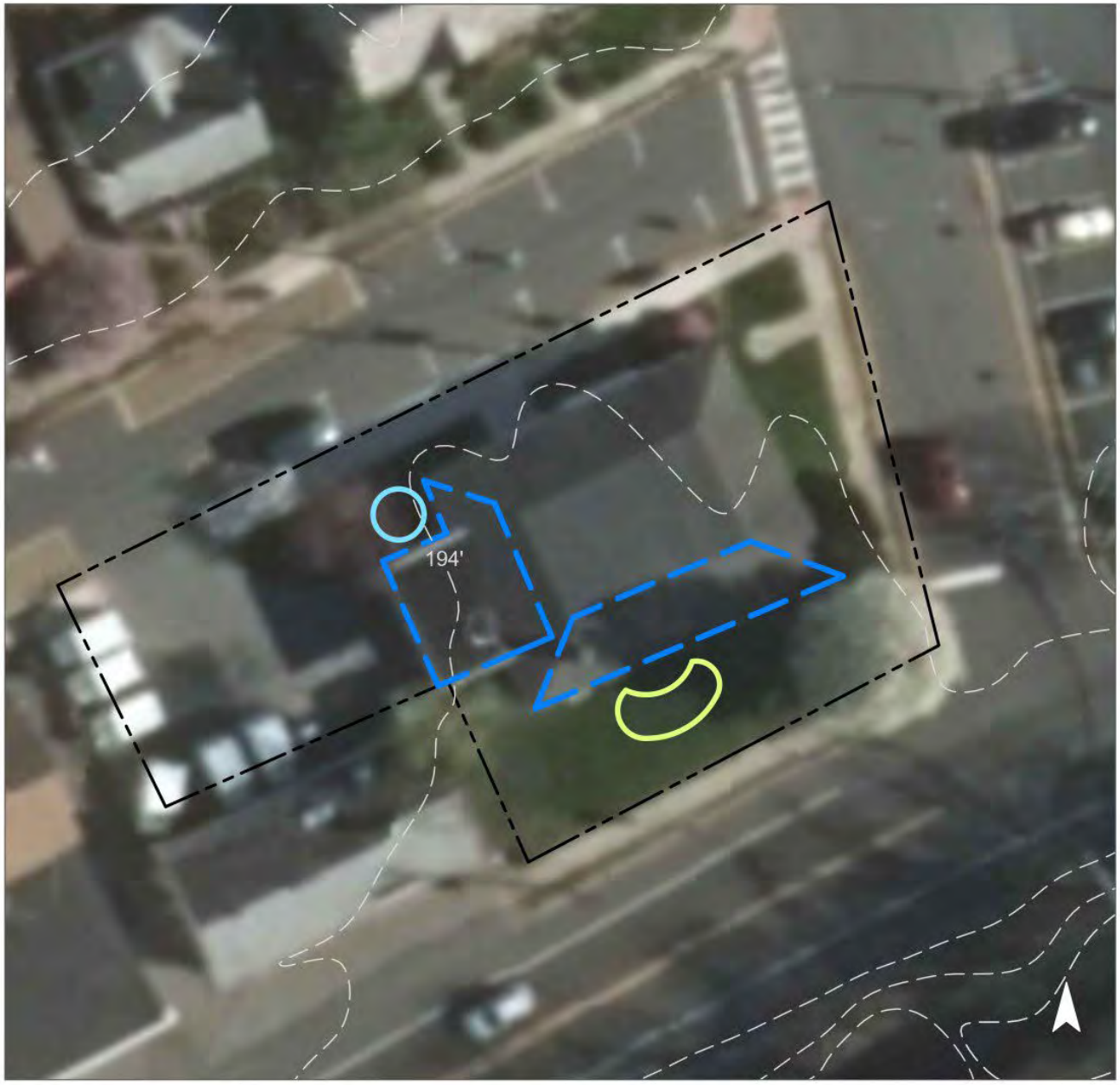
Block and Lot: Block 12, Lot 8

A rain garden can be installed next to the post office to capture stormwater from the roof of the building. A cistern can be installed in the northwestern corner of the building to reuse rainwater for activities such as car washing or watering plants. 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"
82	8,672	0.4	4.4	39.8	0.007	0.24

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.018	3	1,380	0.05	175	$875
Rainwater harvesting	0.019	3	600	0.02	600 (gal)	$1,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



United States Postal Service

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

0 15' 30'

CLINTON PRESBYTERIAN CHURCH

RAP ID: 9

Subwatershed: Raritan South River Branch

Site Area: 71,446 sq. ft.

Address: 91 Center Street
Clinton, NJ 08809

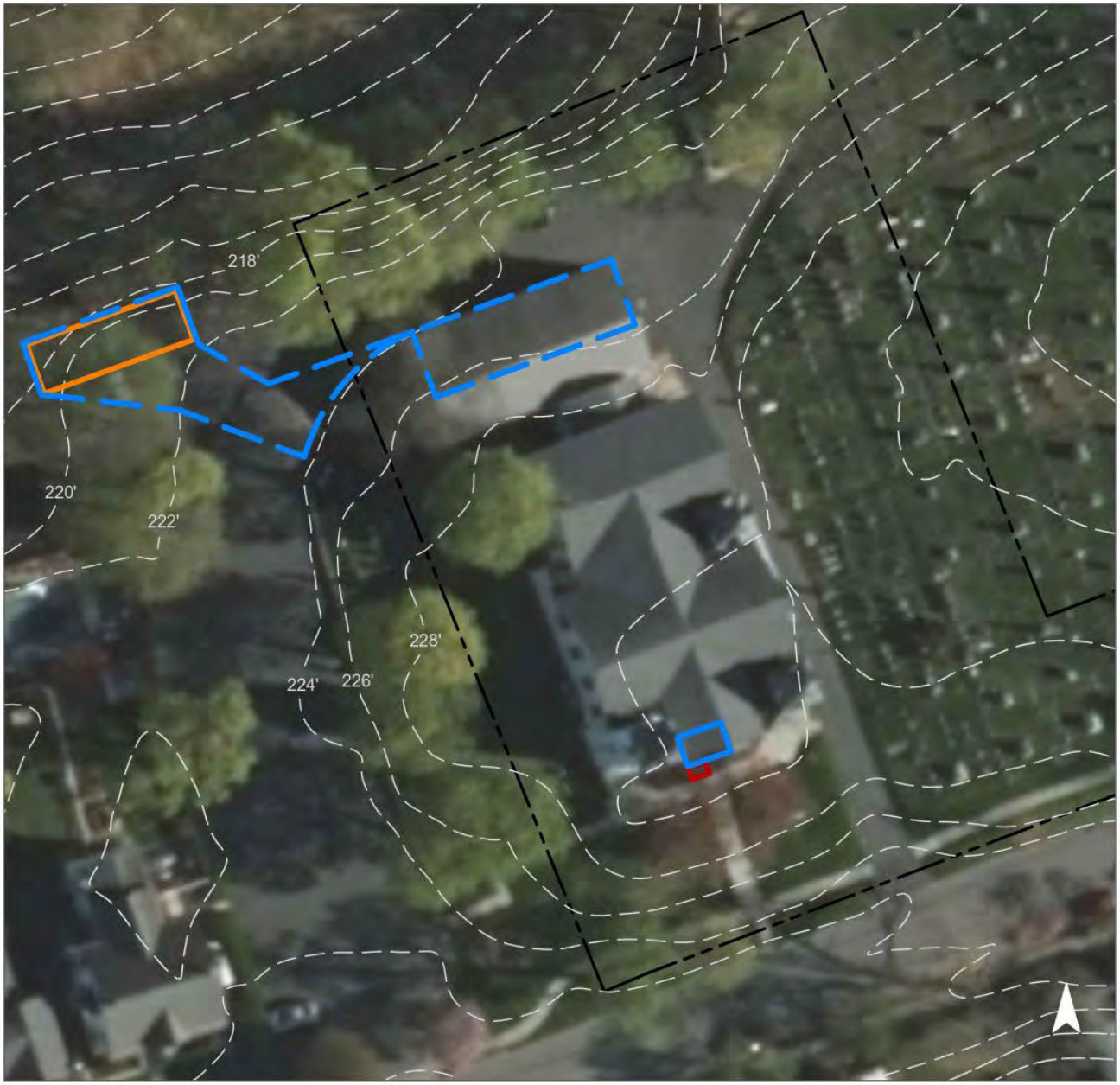
Block and Lot: Block 14, Lots 20 & 21

Porous pavement can be installed in the northwestern corner of the parking lot to capture stormwater from the parking lot as well as the nearby building's disconnected downspouts. A downspout planter box can be installed next to the south entrance of the building to capture and treat 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"
44	31,409	1.5	15.9	144.2	0.024	0.86

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	0.117	20	8,890	0.33	970	$24,250
Planter box	n/a	<1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Clinton Presbyterian Church

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

0 25' 50'

CLINTON UNITED METHODIST CHURCH

RAP ID: 10

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010080

Site Area: 56,694 sq. ft.

Address: 12 Halstead Street
Clinton, NJ 08809

Block and Lot: Block 15, Lot 4

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the asphalt and rooftops. This will require downspout disconnections, trench drains, and curb cuts. Existing parking spaces in the east and south of the lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The pervious pavement will also manage some rooftop runoff, as the connected downspouts on the east of the church building direct runoff to the parking lot. Trench drains will be needed to intercept and redirect some of the parking lot runoff to the 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 49.4"
79	45,045	2.2	22.7	206.8	0.035	1.39

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	1,605	0.047	8	3,220	0.12	405	$4,050
Pervious pavement	33,220	0.972	144	66,610	2.50	6,965	$174,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

Clinton United Methodist Church

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

0 25' 50'

HUNTERDON ART MUSEUM

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 41,440 sq. ft.

Address: 7 Lower Center Street
Clinton, NJ 08809

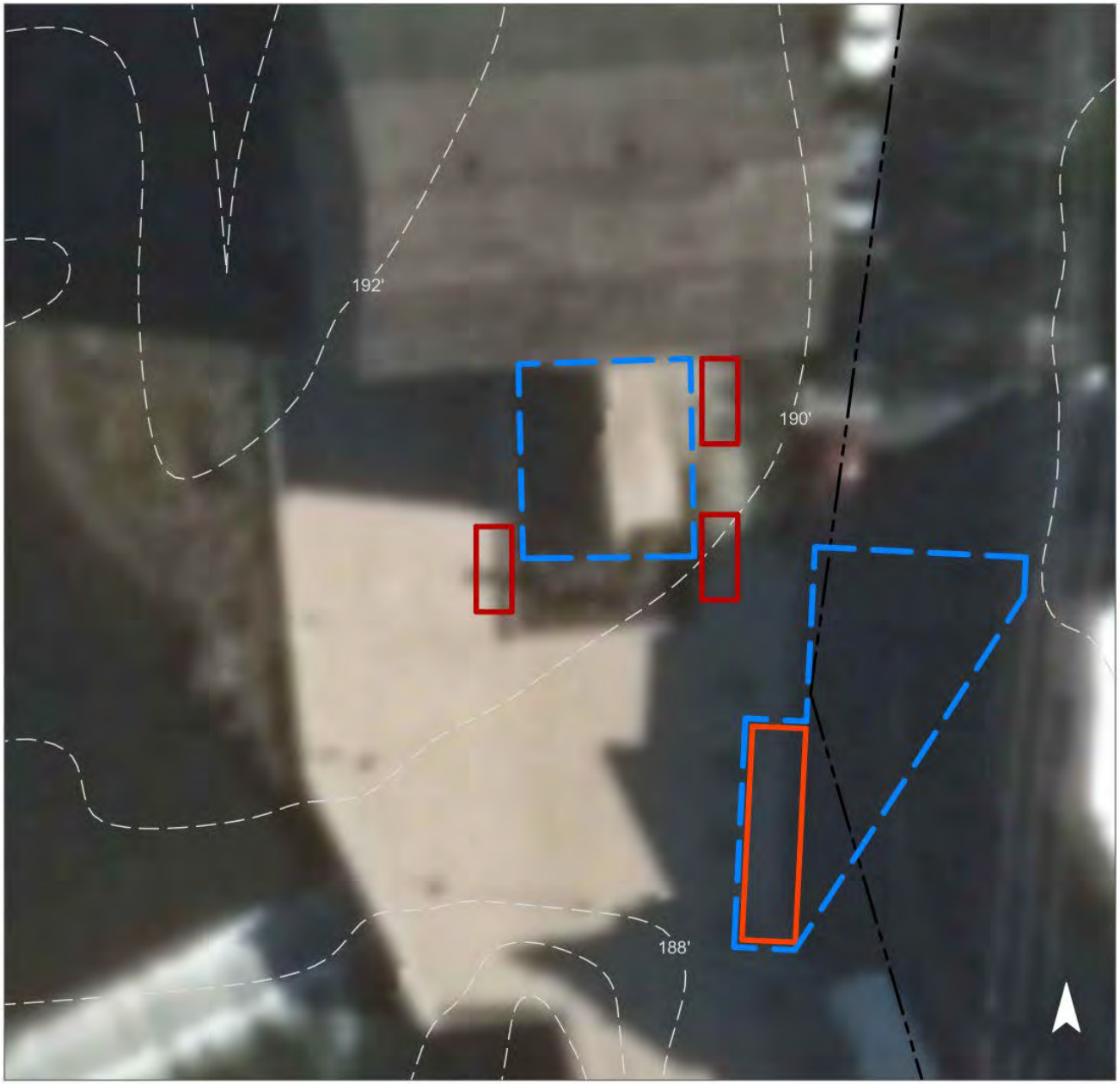
Block and Lot: Block 9, Lot 1

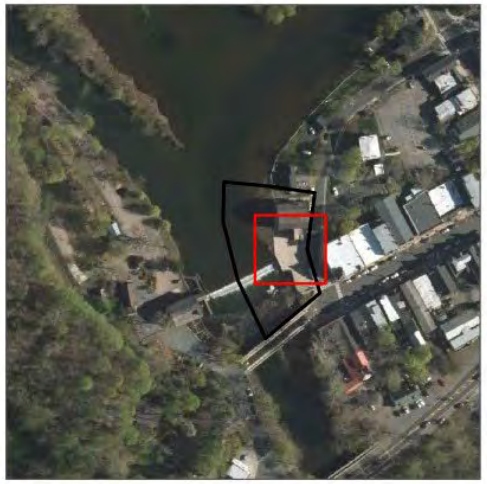
A stormwater planter can be installed in the sidewalk to intercept stormwater runoff from the roadway or sidewalk to allow the stormwater to infiltrate into the ground. Downspout planter boxes can be constructed along the building to allow roof runoff to be reused. A preliminary soil assessment suggests 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"
28	11,704	0.6	5.9	53.7	0.009	0.32

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
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000
Stormwater planter	0.025	4	1,890	0.07	240	$90,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Hunterdon Art Museum

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

0 10' 20'

HUNTS MILLS PARK

RAP ID: 12

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105020070

Site Area: 1,587,929 sq. ft.

Address: 32 Haver Farm Road
Clinton, NJ 08809

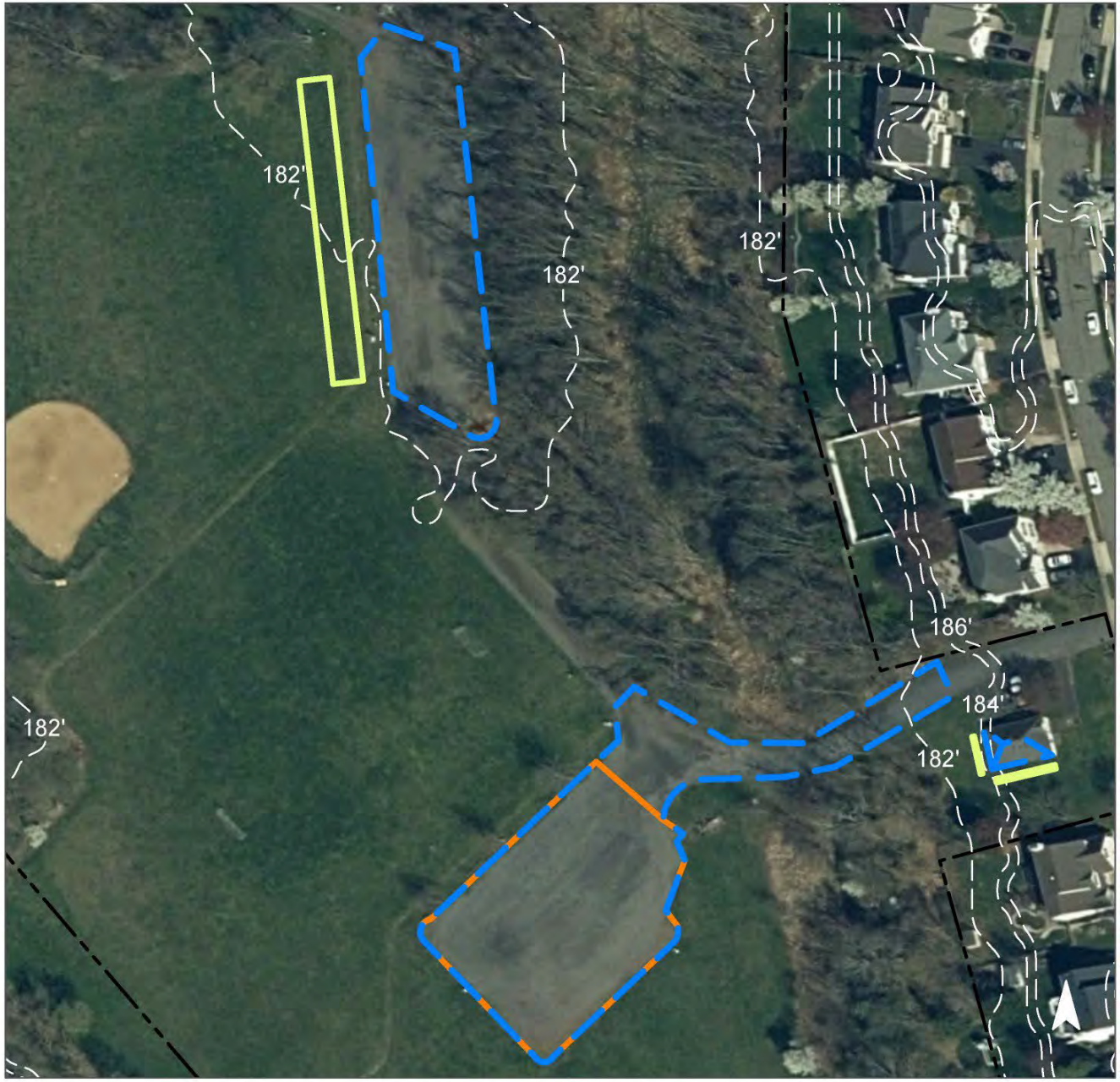
Block and Lot: Block 29, Lot 8

A rain garden can be installed to the west of the northern parking area to capture, treat, and infiltrate the stormwater runoff from the lot. Two rain gardens can be installed near the park building to capture, treat, and infiltrate the stormwater runoff from the rooftop using the disconnected downspouts. The southern parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot and driveway. 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"
4	69,084	3.3	34.9	317.2	0.054	2.13

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	16,465	0.482	72	33,010	1.24	4,115	$41,150
Pervious pavement	26,635	0.779	116	53,410	2.01	18,990	$474,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hunts Mills Park

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

0 50' 100'

NORTH COUNTY BRANCH LIBRARY

RAP ID: 13

Subwatershed: Spruce Run Reservoir / Willoughby Brook

HUC14 ID: 02030105020040

Site Area: 76,533 sq. ft.

Address: 65 Halstead Street
Clinton, NJ 08809

Block and Lot: Block 16, Lot 22.01

A rain garden can be installed to the west of the building near the existing outfall to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require downspout redirection and disconnections. The parking spaces to the north, east, and south of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot and from the road. Trench drains will be needed to intercept and redirect some of the runoff to the 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 49.4"
90	68,697	3.3	34.7	315.4	0.054	2.12

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	1,555	0.045	8	3,120	0.12	595	$5,950
Pervious pavement	37,930	1.110	165	76,050	2.86	10,205	$255,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

North County Branch Library

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

0 30' 60'

PODIATRIC SURGICAL ASSOCIATES

RAP ID: 14

Subwatershed: Spruce Run Reservoir/Willoughby Brook

Site Area: 27,148 sq. ft.

Address: 122 West Main Street
Clinton, NJ 08809

Block and Lot: Block 1, Lot 1

A proposed rain garden can be installed in the front of the building to aid in infiltration of stormwater from the roof top. A downspout planter box can be installed at the northwestern corner of the building to prevent rooftop stormwater from flowing across 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"
69	18,661	0.9	9.4	85.7	0.015	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	0.016	3	1,200	0.05	155	$775
Planter box	n/a	1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Podiatric Surgical Associates

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

0 20' 40'

TOWN OF CLINTON COMMUNITY CENTER

RAP ID: 15

Subwatershed: Spruce Run Reservoir / Willoughby Brook

HUC14 ID: 02030105020040

Site Area: 180,581 sq. ft.

Address: 63 Halstead Street
Clinton, NJ 08809

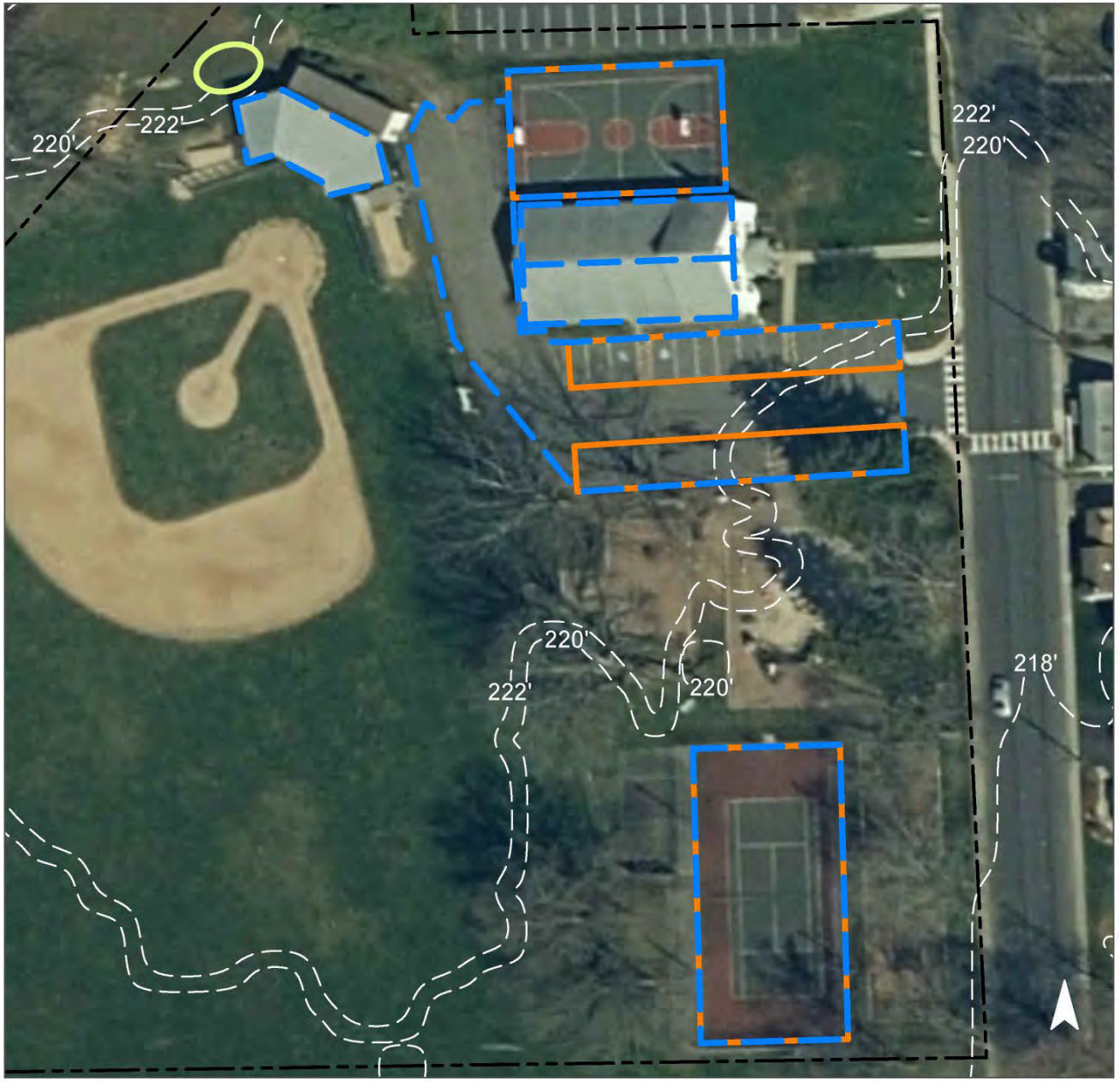
Block and Lot: Block 16, Lot 21

A rain garden can be installed to the west of the bleachers to capture, treat, and infiltrate the stormwater runoff from the rooftop. A gutter system will have to be installed. The basketball court can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the court and from the building rooftop. The disconnected downspouts on the north of the building already direct runoff towards the court, though trench drains or downspout redirection may be needed. The tennis court can also be converted into pervious pavement to capture and infiltrate the stormwater runoff from the court. The parking spaces to the south of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the driveway, the lot, and the rooftop. The disconnected downspouts on the south of the building already direct runoff to the parking lot. Trench drains will be needed to intercept and redirect some of the parking lot runoff to the 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 49.4"
18	32,140	1.5	16.2	147.6	0.025	0.99

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	1,433	0.042	6	2,870	0.11	360	$3,600
Pervious pavement	26,950	0.788	118	54,040	2.03	15,610	$390,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Town of Clinton Community Center

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

0 30' 60'

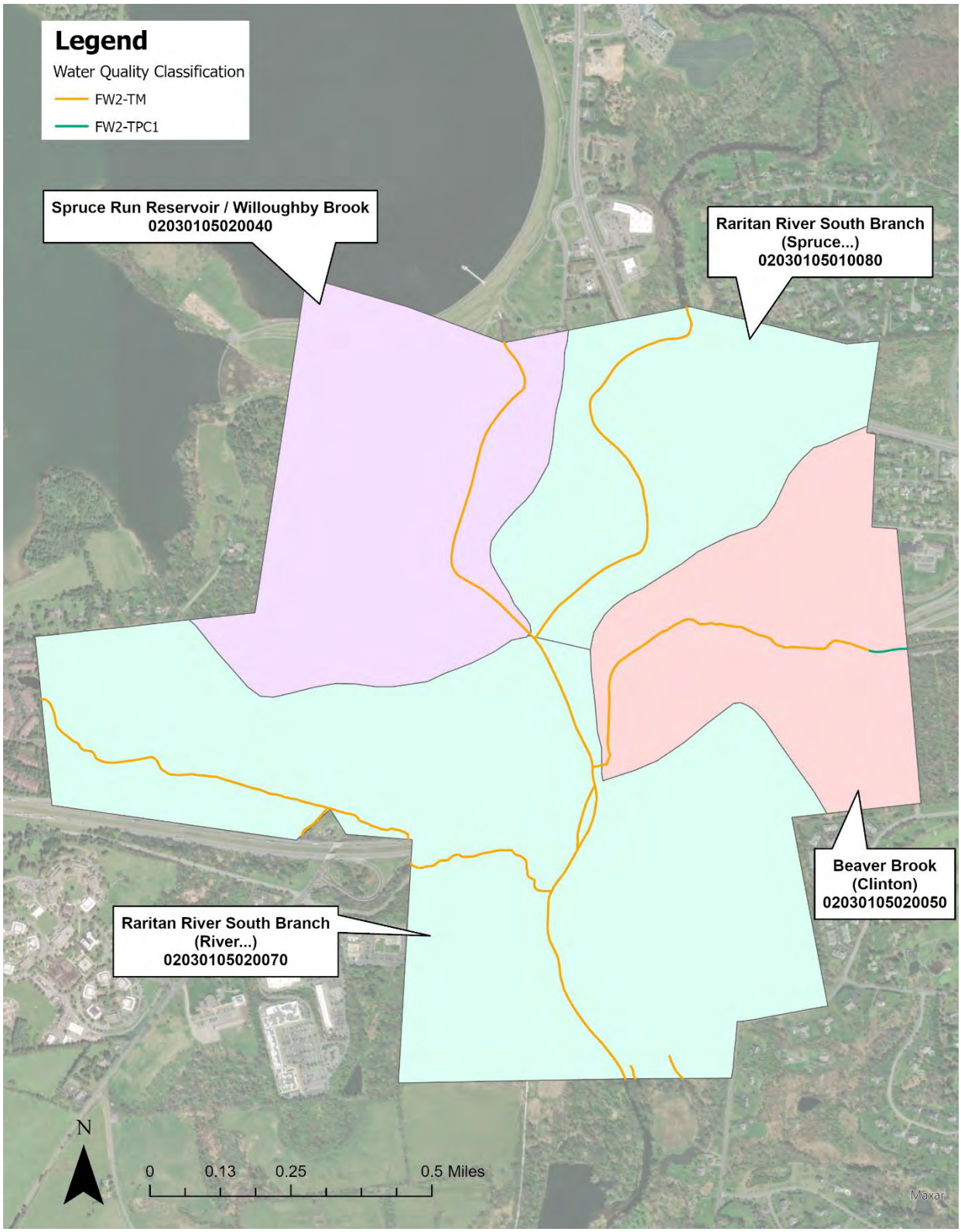


Figure 13. Water Quality Classification of Surface Waters in Clinton Town

Table 10. Water Quality Classification of Surface Waters in Clinton Town

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, trout production, Category One	FW2-TPC1	0.1	2.2%
Freshwater 2, trout maintenance	FW2-TM	4.4	97.8%

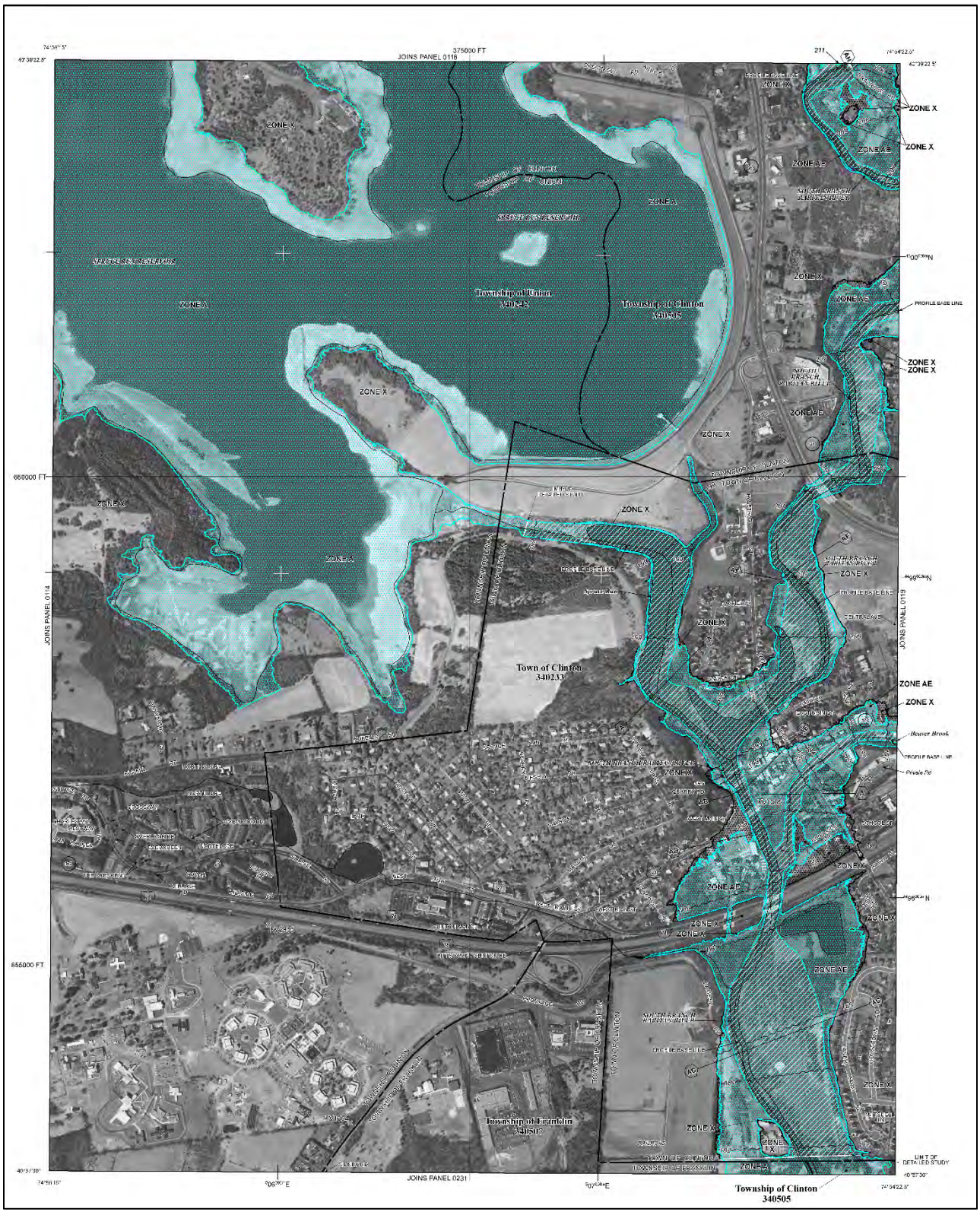


Figure 14. Flood Zones of Clinton Town (FIRM Panel from FEMA)

Clinton Township

Introduction

Located in Hunterdon County in New Jersey, Clinton Township covers about 33.9 square miles. With a population of 13,505 (2020 United States Census), Clinton Township consists of 32.0% of urban land uses by area. Of that urban land use, approximately 52.4% 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 50.7% of Clinton Township.

Clinton Township contains portions of eleven subwatersheds (Table 1). There are approximately 99.2 miles of rivers and streams within the municipality; these include Allerton Creek and its tributaries, Beaver Brook and its tributaries, Cramers Creek and its tributaries, tributaries to the North Branch Rockaway Creek, Prescott Brook and its tributaries, South Branch Raritan River and its tributaries, South Branch Rockaway Creek and its tributaries, Spruce Run, and several uncoded tributaries. Clinton 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 Clinton Township

Subwatershed	HUC14
Raritan River South Branch (Stone Mill gage to Califon)	02030105010070
Raritan River South Branch (Spruce Run-Stone Mill gage)	02030105010080
Spruce Run Reservoir / Willoughby Brook	02030105020040
Beaver Brook (Clinton)	02030105020050
Raritan River South Branch (River Road to Spruce Run)	02030105020070
Raritan River South Branch (Prescott Brook to River Road)	02030105020080
Prescott Brook / Round Valley Reservoir	02030105020090
Pleasant Run	02030105040020
Rockaway Creek (above McCrea Mills)	02030105050080
Rockaway Creek (below McCrea Mills)	02030105050090

Rockaway Creek South Branch	02030105050100

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

The Q-Farms in Clinton 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 Clinton 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 3,636.5 acres of agricultural land use in Clinton Township, of which, 66.2 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 17 Q-Farms and a portion of one Q-Farm parcel in the study area portion of Clinton Township, totaling 212.2 acres. Within the 17 Q-Farms and portion of one Q-Farm, there are approximately 45.9 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, there are no recommendations for green infrastructure implementation on the agricultural lands in the study area in Clinton Township.

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 (02030105010070, 02030105010080). Within these two HUC14s, there are 34.2 acres of buildings and 75.6 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 Clinton Township, approximately 2.1 acres of rooftop runoff would be managed with 0.43 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Clinton Township, approximately 7.6 acres of roadway would be managed, or 2.1 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 Clinton Township are shown in Figure 10 and presented in Table 8. When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 11). Available information for each parcel in the study area is presented in Table 9. Class 15E parcels were excluded from the assessment. Two of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 9 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 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 four classifications that apply to the streams in Clinton Township. Figure 13 depicts the water quality classifications of surface waters throughout Clinton Township and Table 10 summarizes the total miles and percentage of each surface water quality classification in the municipality.

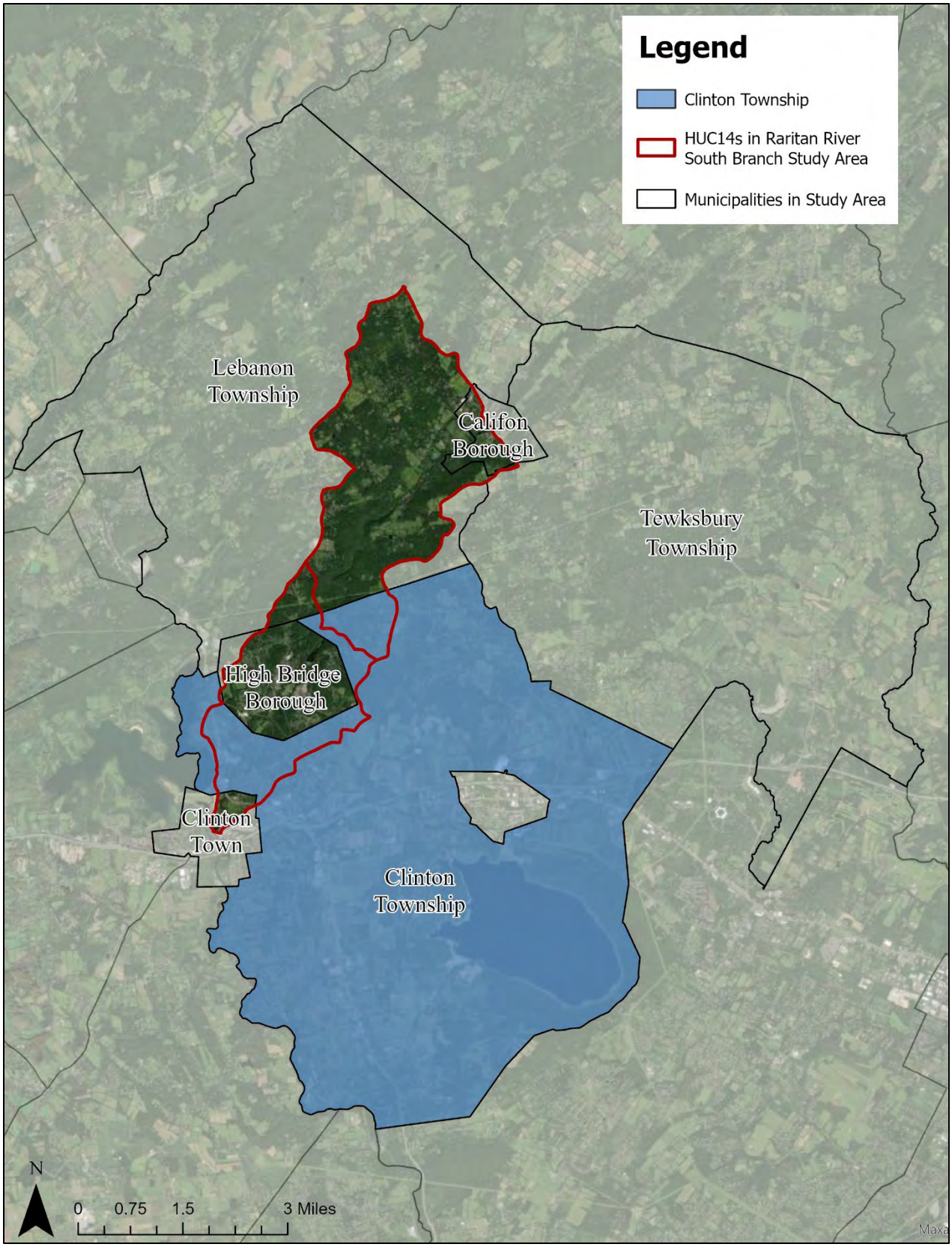


Figure 1: Municipalities in the Study Area

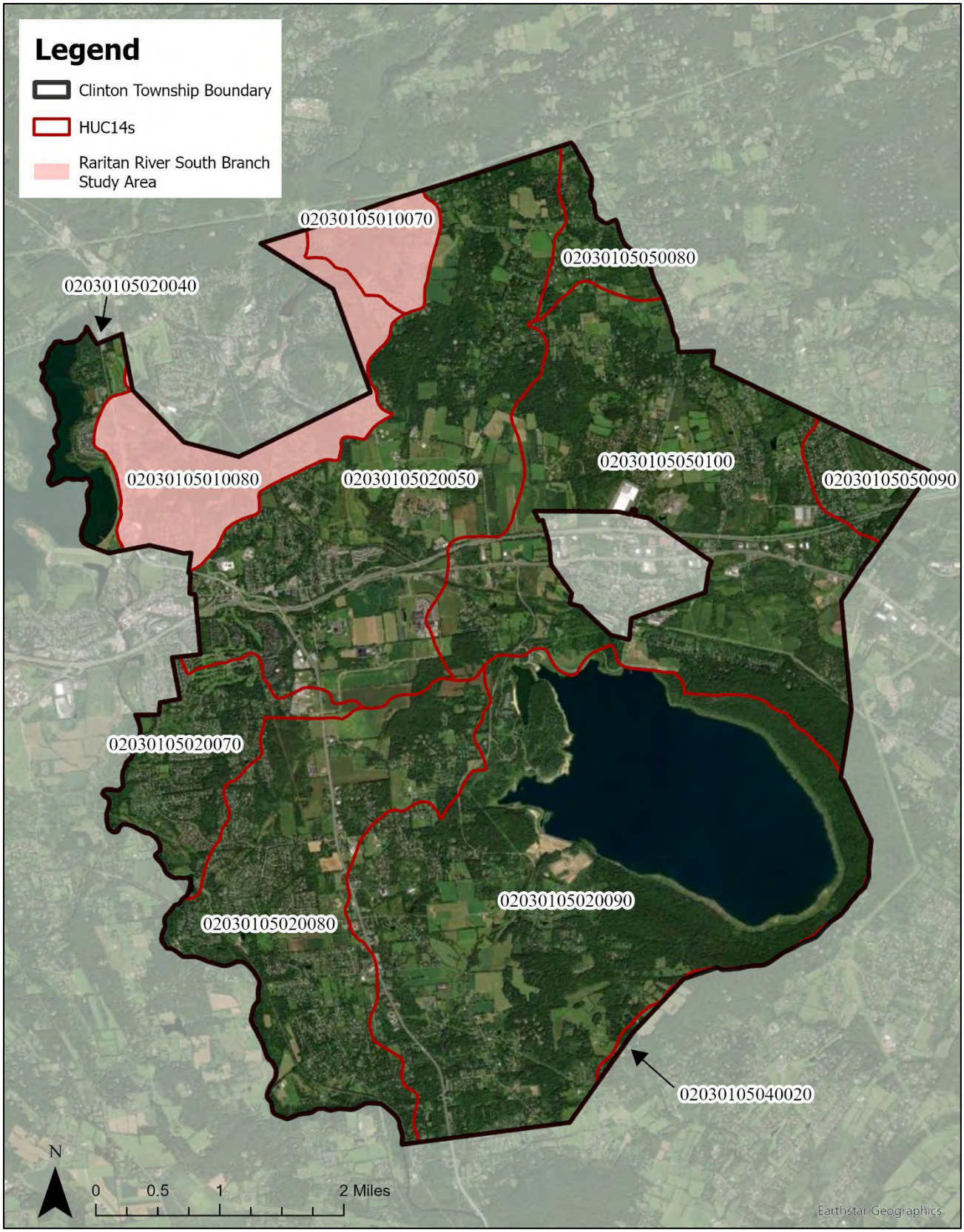


Figure 2: Portions of eleven HUC14s are in Clinton Township

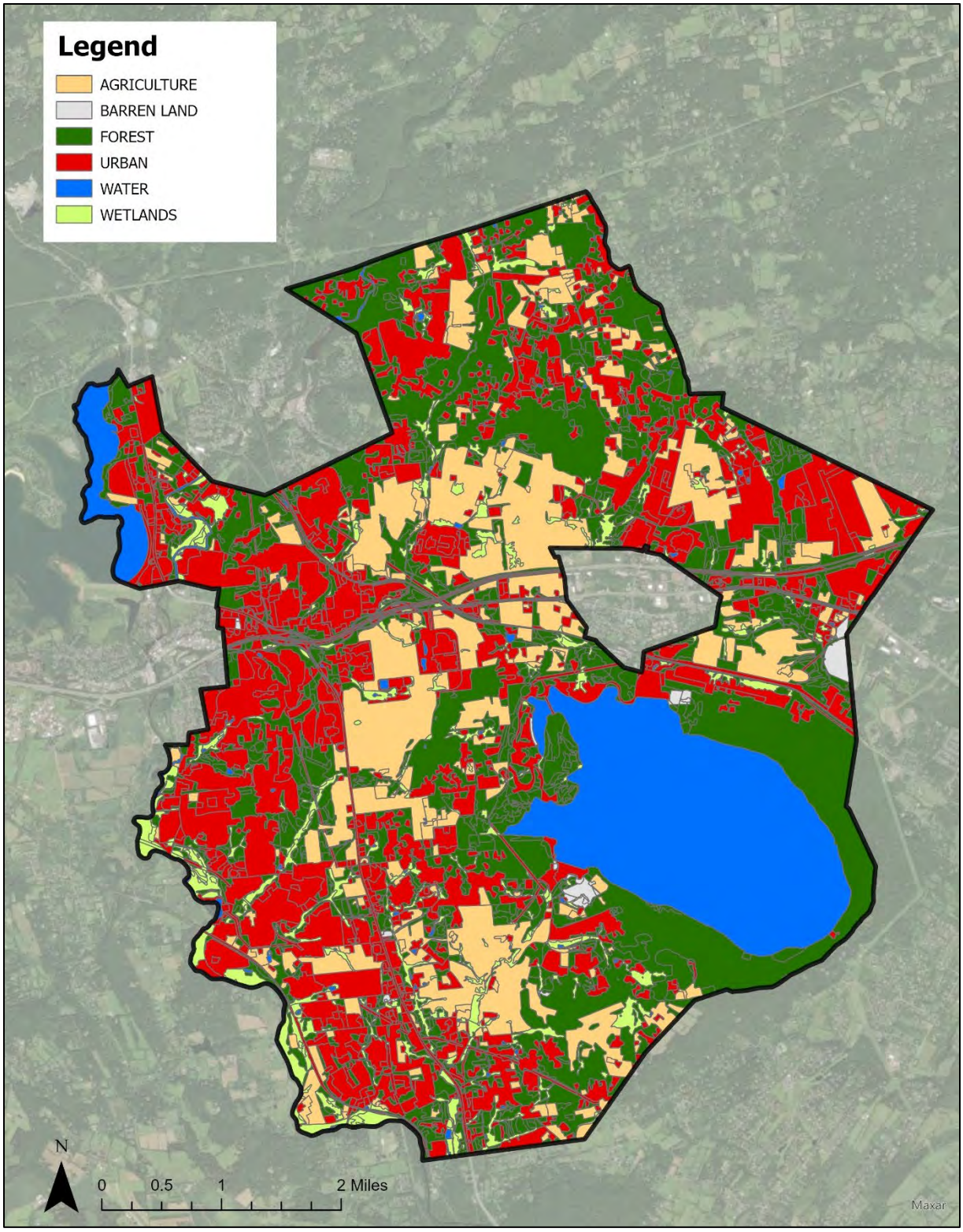


Figure 3: Land Use in Clinton Township

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010070				
Agriculture	25.8	33.5	258.0	7,739.3
Barren Land	0.0	0.0	0.0	0.0
Forest	198.1	19.8	594.3	7,924.4
Urban	167.8	234.9	2,516.7	23,489.1
Water	6.6	0.7	19.8	264.1
Wetlands	18.9	1.9	56.8	756.8
TOTAL =	**417.2**	**290.8**	**3,445.6**	**40,173.8**
02030105010080				
Agriculture	40.4	52.5	404.2	12,125.8
Barren Land	0.0	0.0	0.0	0.5
Forest	444.9	44.5	1,334.7	17,796.6
Urban	568.5	795.9	8,527.8	79,592.8
Water	19.5	1.9	58.4	778.0
Wetlands	61.8	6.2	185.5	2,473.2
TOTAL =	**1,135.1**	**901.1**	**10,510.6**	**112,766.9**
02030105020040				
Agriculture	9.7	12.5	96.5	2,895.7
Barren Land	0.0	0.0	0.0	0.0
Forest	71.9	7.2	215.6	2,874.1
Urban	134.1	187.7	2,011.2	18,770.9
Water	242.1	24.2	726.4	9,685.7
Wetlands	1.0	0.1	3.1	41.7
TOTAL =	**458.8**	**231.8**	**3,052.8**	**34,268.1**
02030105020050				
Agriculture	1,153.7	1,499.8	11,536.7	346,101.7
Barren Land	2.3	1.1	11.4	137.3
Forest	1,245.7	124.6	3,737.1	49,827.8
Urban	1,433.2	2,006.5	21,498.3	200,650.8
Water	32.0	3.2	96.1	1,281.5
Wetlands	162.9	16.3	488.6	6,515.0
TOTAL =	**4,029.8**	**3,651.5**	**37,368.3**	**604,514.1**
02030105020070				
Agriculture	38.9	50.6	389.0	11,670.9
Barren Land	0.0	0.0	0.0	0.0
Forest	208.5	20.8	625.4	8,338.6
Urban	600.3	840.4	9,004.4	84,041.0
Water	25.4	2.5	76.3	1,017.0
Wetlands	112.6	11.3	337.7	4,503.3

TOTAL =	**985.7**	**925.6**	**10,432.8**	**109,570.8**
02030105020080				
Agriculture	555.7	722.4	5,557.1	166,712.2
Barren Land	3.0	1.5	15.0	180.6
Forest	776.8	77.7	2,330.3	31,070.7
Urban	1,213.0	1,698.2	18,194.8	169,818.0
Water	32.3	3.2	96.9	1,292.2
Wetlands	262.1	26.2	786.2	10,482.1
TOTAL =	**2,842.8**	**2,529.2**	**26,980.3**	**379,555.8**
02030105020090				
Agriculture	731.2	950.5	7,311.9	219,356.6
Barren Land	42.4	21.2	212.0	2,543.6
Forest	2,290.9	229.1	6,872.8	91,637.1
Urban	1,031.6	1,444.3	15,474.3	144,427.1
Water	2,314.7	231.5	6,944.2	92,589.8
Wetlands	265.8	26.6	797.5	10,632.9
TOTAL =	**6,676.7**	**2,903.2**	**37,612.7**	**561,187.0**
02030105040020				
Agriculture	8.1	10.5	80.9	2,428.1
Barren Land	0.0	0.0	0.0	0.0
Forest	14.5	1.5	43.5	580.5
Urban	8.8	12.3	131.3	1,225.6
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**31.4**	**24.2**	**255.8**	**4,234.2**
02030105050080				
Agriculture	43.9	57.0	438.8	13,163.2
Barren Land	0.0	0.0	0.0	0.0
Forest	202.7	20.3	608.0	8,106.2
Urban	113.5	158.9	1,702.7	15,891.7
Water	1.0	0.1	3.0	39.4
Wetlands	0.5	0.1	1.6	21.1
TOTAL =	**361.6**	**236.4**	**2,754.0**	**37,221.6**
02030105050090				
Agriculture	77.6	100.8	775.6	23,266.6
Barren Land	0.0	0.0	0.0	0.0
Forest	40.5	4.0	121.4	1,618.7
Urban	248.1	347.3	3,721.5	34,734.2
Water	0.4	0.0	1.1	14.6
Wetlands	5.8	0.6	17.3	231.1
TOTAL =	**372.3**	**452.8**	**4,636.9**	**59,865.2**
02030105050100				
Agriculture	951.7	1,237.2	9,516.7	285,500.1

Barren Land	58.8	29.4	294.2	3,529.9
Forest	1,784.4	178.4	5,353.1	71,374.0
Urban	1,432.3	2,005.2	21,484.5	200,522.4
Water	26.4	2.6	79.3	1,057.9
Wetlands	134.2	13.4	402.7	5,369.8
TOTAL =	**4,387.8**	**3,466.3**	**37,130.5**	**567,354.2**
All HUCs				
Agriculture	3,636.5	4,727.5	36,365.3	1,090,960.2
Barren Land	106.5	53.3	532.7	6,392.0
Forest	7,278.7	727.9	21,836.1	291,148.6
Urban	6,951.2	9,731.6	104,267.5	973,163.7
Water	2,700.5	270.1	8,101.5	108,020.2
Wetlands	1,025.7	102.6	3,077.0	41,027.1
TOTAL =	**21,699.1**	**15,612.9**	**174,180.2**	**2,510,711.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Clinton 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 Clinton Township. Based upon the NJDEP impervious surface data, Clinton Township has impervious cover totaling 9.7%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Clinton 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, Clinton 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.

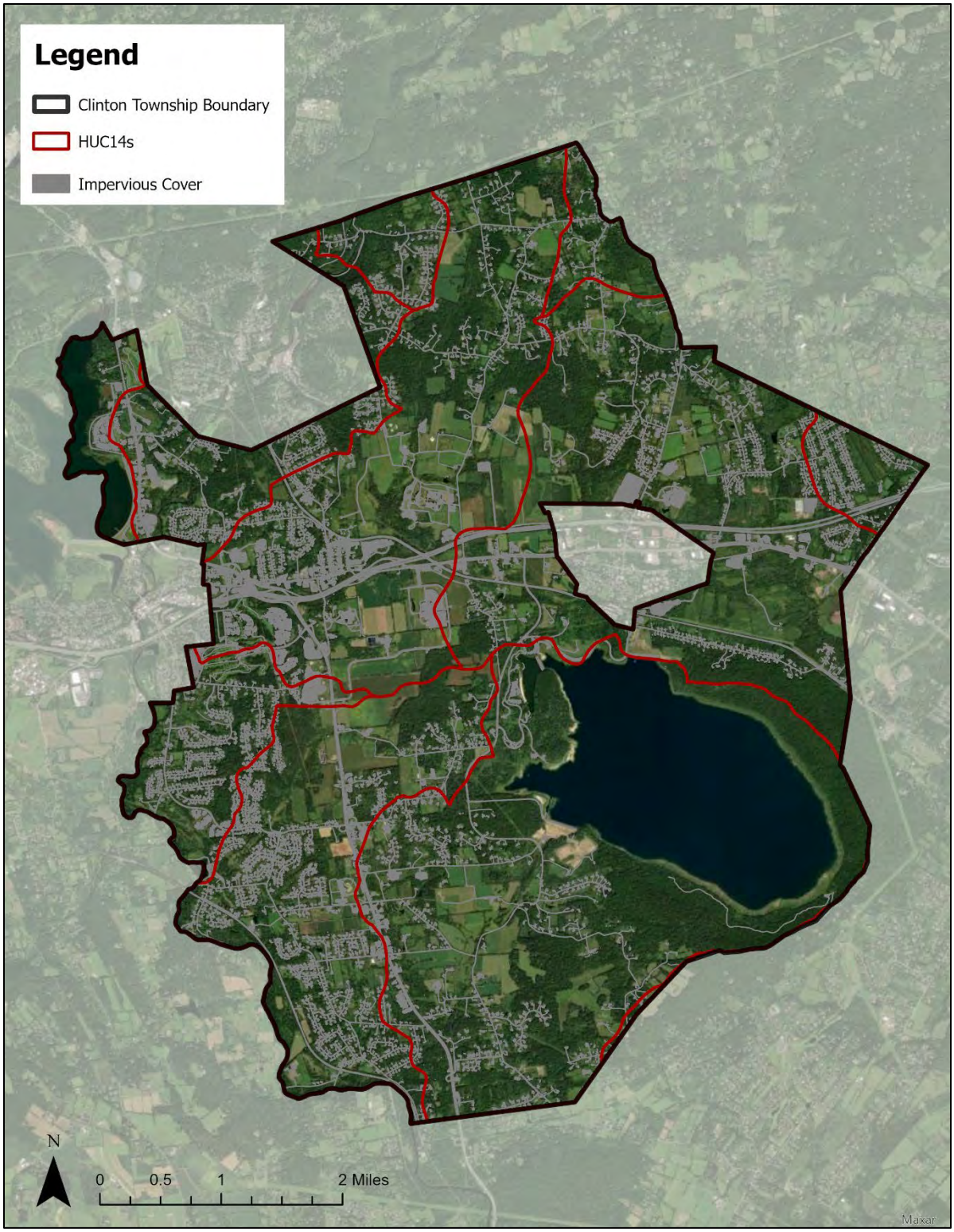


Figure 4: Impervious Cover in Clinton Township

Table 3: Impervious Cover Analysis by HUC14 for Clinton Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010070		
Building	6.96	
Other	17.61	
Road	15.87	
TOTAL =	**40.4**	**9.7%**
02030105010080		
Building	27.22	
Other	79.65	
Road	59.76	
TOTAL =	**166.6**	**14.7%**
02030105020040		
Building	6.00	
Other	12.14	
Road	13.50	
TOTAL =	**31.6**	**6.9%**
02030105020050		
Building	89.25	
Other	234.28	
Road	210.00	
TOTAL =	**533.5**	**13.2%**
02030105020070		
Building	35.84	
Other	73.77	
Road	53.82	
TOTAL =	**163.4**	**16.6%**
02030105020080		
Building	62.28	
Other	182.61	
Road	121.41	
TOTAL =	**366.3**	**12.9%**
02030105020090		
Building	40.20	
Other	139.71	
Road	112.19	
TOTAL =	**292.1**	**4.4%**
02030105040020		
Building	0.54	
Other	1.29	
Road	1.09	
TOTAL =	**2.9**	**9.3%**
02030105050080		
Building	4.77	
Other	9.89	
Road	8.91	
TOTAL =	**23.6**	**6.5%**

02030105050090		
Building	11.92	
Other	22.78	
Road	25.33	
TOTAL =	**60.0**	**16.1%**
02030105050100		
Building	76.30	
Other	191.72	
Road	153.10	
TOTAL =	**421.1**	**9.6%**
All HUCs		
Building	361.30	
Other	965.46	
Road	774.97	
TOTAL =	**2,101.7**	**9.7%**

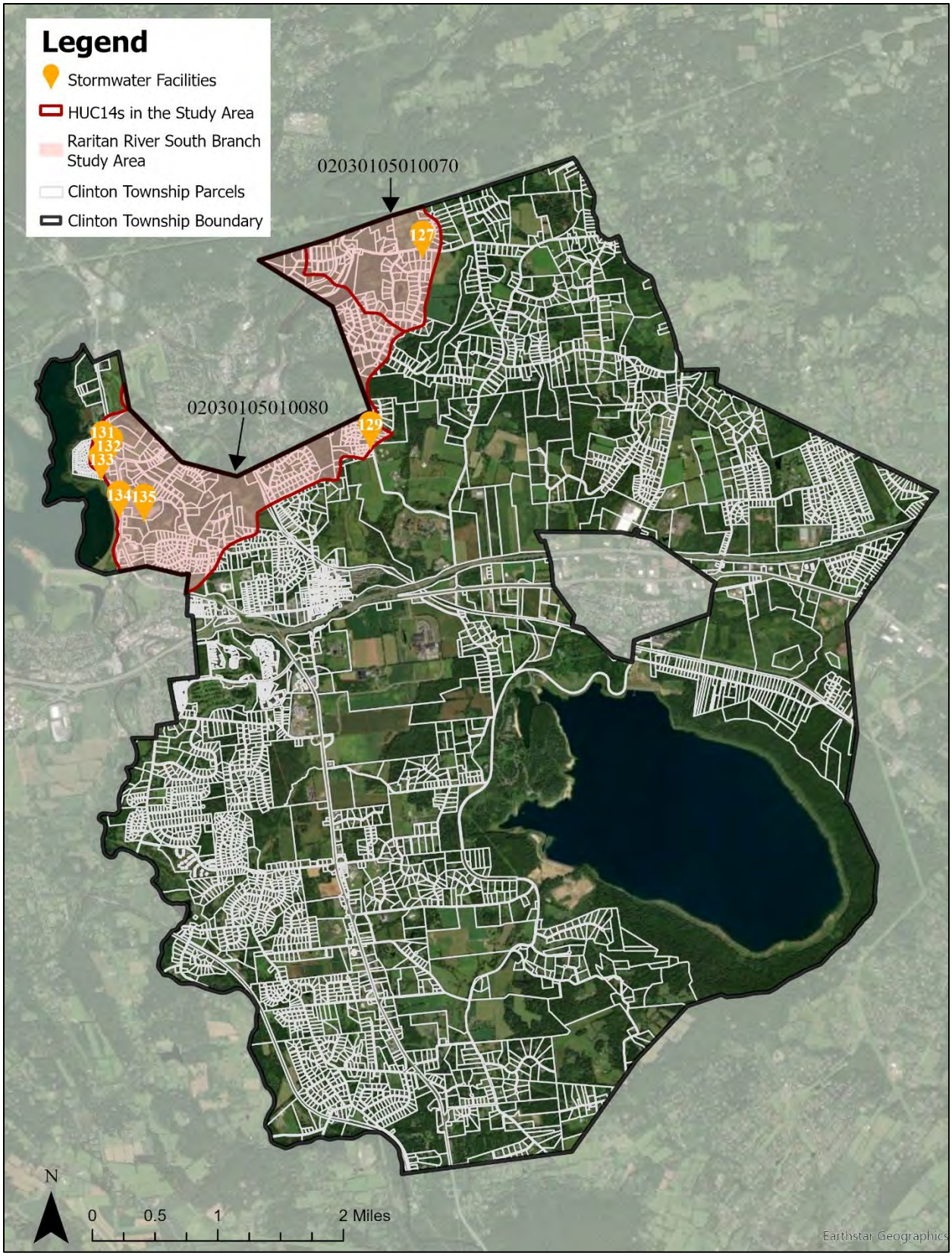


Figure 5: Stormwater Facilities in the Study Area of Clinton Township

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

Raritan River South Branch Study Area		
ID	**Address**	**Type**
127	1 Perry Road	N
129	170 East Main Street	N
131	12 Elm Drive	D
132	1801 Route 31	N
133	7 Arbor Court	D
134	1747 Route 31	D
135	1738 Route 31	D

"D" = Detention, "N" = Naturalized

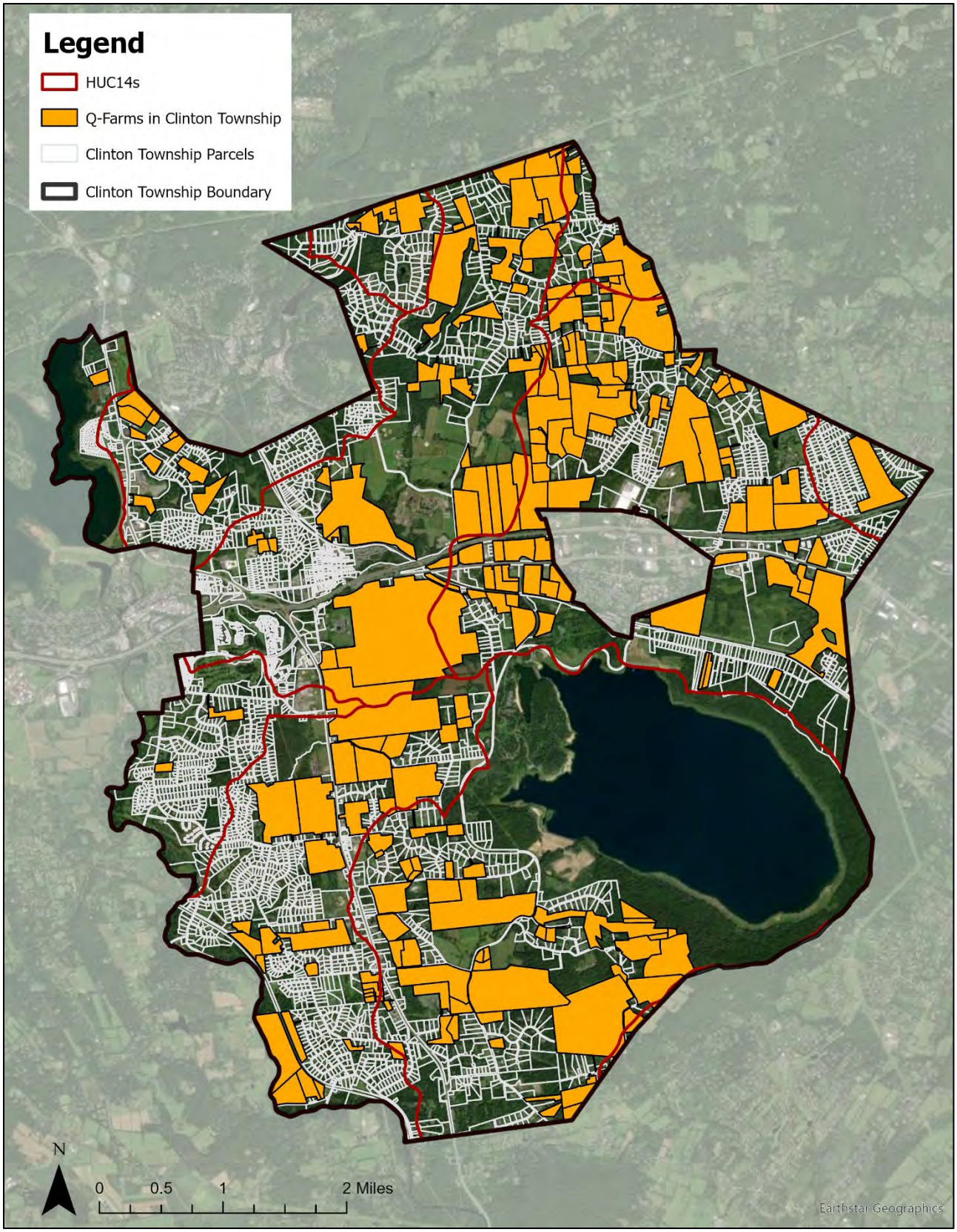


Figure 6: Q-Farm Parcels in Clinton Township

Table 5: Q-Farm Parcels in Clinton Township

Block	Lot	Q-Code	Prop Class	Location
1	25	Q0001	3B	3 Frontage Road
29	4.01	Q0002	3B	63 Valley Crest Road
30	15	Q0002	3B	80 Valley Crest Road
3	1	Q0003		Cokesbury Rd
3	4	Q0004	3B	1 Burlinghoff Lane
3	6	Q0005		Burlinghoff Ln
3	8	Q0005		Burlinghoff Ln
3	7	Q0006	3B	17 Burlinghoff Lane
3	11	Q0007	3B	27 Sheridan Road
3	16	Q0009	3B	7 Old Blossom Hill Road
3	18	Q0010	3B	150 Cokesbury Road
4	20	Q0012	3B	5 Muirfield Lane
4	22	Q0012	3B	72 Blossom Hill Road
7	3	Q0015	3B	1011 Route 22
7	33	Q0019	3B	1 Kullman Corporate Campus
10	2	Q0020	3B	46 Haytown Road
12	15.01	Q0021	3B	54 Haytown Road
9	8	Q0022	3B	10 Haytown Road
9	8.04	Q0022	3B	159 Cokesbury Road
10	1	Q0023	3B	191 Cokesbury Road
10	9.01	Q0023	3B	211 Cokesbury Road
10	4	Q0025	3B	6 Mccatharn Road
10	4.02	Q0026	3B	12 Mccatharn Road
10	4.03	Q0026	3B	14 Mccatharn Road
10	6	Q0027	3B	18 Mccatharn Road
11	7	Q0028	3B	17 Cokesbury-Califon Road
11	8	Q0029	3B	324 Cokesbury Road
11	10	Q0030	3B	352 Cokesbury Road
11	19.02	Q0031		Cokesbury Califon Rd
11	19	Q0034	3B	41 Cokesbury-Califon Road
11	20	Q0035	3B	45 Cokesbury-Califon Road
11	21	Q0036	3B	33 Cokesbury-Califon Road
12	10.01	Q0038	3B	25 Mccatharn Road
12	10.07	Q0038	3B	23 Mccatharn Road
12	12	Q0040	3B	15 Mccatharn Road
4.03	31	Q0041		Us Hwy 22
12	17.05	Q0042	3B	62 Haytown Road
12	24	Q0045	3B	150 Petticoat Lane
12	25	Q0046	3B	327 Cokesbury Road
13	1	Q0047	3B	20 Petticoat Lane
13	3	Q0048	3B	11 Spencer Lane

13	4	Q0049	3B	15 Spencer Lane
13	8	Q0050	3B	Route 78/Voegthen Lane
13	7.08	Q0051	3B	34 Chalfonte Drive
13	7.04	Q0054	3B	35 Chalfonte Drive
13	7.05	Q0055	3B	41 Chalfonte Drive
13	7.10	Q0056	3B	32 Chalfonte Drive
13	5	Q0057	3B	58 Petticoat Lane
9	11	Q0059	3B	18 Haytown Road
13	24.03	Q0059	3B	19 Haytown Road
13	25	Q0059	3B	21 Haytown Road
13	25.01	Q0059	3B	27 Haytown Road
13	26	Q0060	3B	39 Haytown Road
13	26.04	Q0061	3B	35 Haytown Road
13	31.05	Q0063	3B	71 Haytown Road
13	7.06	Q0065	3B	43 Chalfonte Drive
13	7.07	Q0065	3B	44 Chalfonte Drive
13	32	Q0065	3B	Off Haytown Road
13	33	Q0065	3B	85 Haytown Road
13	33.01	Q0065	3B	91 Haytown Road
13	33.02	Q0066	3B	93 Haytown Road
13	34.01	Q0066	3B	97 Haytown Road
13	34	Q0067	3B	103 Haytown Road
13.01	7	Q0069	3B	1450 Route 22
*13.01	8	Q0070	3B	1400 Voegtlens Lane
14	3	Q0071	3B	1401 Route 22
14	4	Q0072	3B	1421 Route 22
13.01	8.02	Q0073	3B	1410 Route 22
14	7	Q0074	3B	1461 Route 22
14	5	Q0075	3B	1431 Route 22
15	4	Q0077	3B	32 Sand Hill Road
15	4.02	Q0078		Us Hwy 22
15	5	Q0079	3B	5 Davis Farm Road
15	7	Q0079	3B	Off Sand Hill Road
15	9.01	Q0080	3B	56 Sand Hill Road
16	16	Q0081	3B	84 Old Mountain Road
16	51	Q0083	3B	1116 Stanton-Lebanon Road
16	51.02	Q0084	3B	4 Bass Lane
16	51.03	Q0084	3B	6 Bass Lane
16	59	Q0087	3B	1114 Stanton-Lebanon Road
16	62	Q0087	3B	234 Stanton Mountain Road
16	63	Q0087	3B	236 Stanton Mountain Road
16	64	Q0089	3B	220 Stanton Mountain Road
19	35	Q0089	3B	221 Stanton Mountain Road
16	73	Q0092	3B	182 Stanton Mountain Road

16	74	Q0094	3B	154 Stanton Mountain Road
19	11	Q0098		Stanton Mountain Rd
19	13	Q0098	3B	101 Stanton Mountain Road
19	14	Q0099	3B	99 Stanton Mountain Road
19	16	Q0100	3B	1002 Stanton-Lebanon Road
19	18.01	Q0101	3B	1010 Stanton-Lebanon Rd
19	23	Q0104		Stanton Lebanon Rd
19	26	Q0106	3B	1040 Stanton-Lebanon Road
19	27	Q0107	3B	1060 Stanton-Lebanon Road
23	5	Q0107	3B	15 Payne Road
19	37	Q0109	3B	149 Stanton Mountain Road
19	38	Q0109	3B	149 Stanton Mountain Road
21	2	Q0112	3B	21 Cratetown Road
21	3.04	Q0112	3B	9 Cratetown Road
23	6	Q0118	3B	14 Cratetown Road
24	18.01	Q0119		Payne Rd
23	9	Q0120	3B	2 Cratetown Road
24	10	Q0121	3B	25 Tine Road
24	18	Q0122	3B	26 Payne Road
25	7	Q0123	3B	1101 Stanton-Lebanon Road
25	11	Q0124	3B	31 Molasses Hill Road
25	16	Q0125	3B	42 Tine Road
28	4	Q0127	3B	1151 Stanton-Lebanon Road
29	4	Q0128	3B	65 Valley Crest Road
29	20	Q0129		Allerton Rd & Blue Cliff Dr
29	31	Q0130	3B	1310 Route 31
28	29	Q0131	3B	28 Molasses Hill Road
30	12	Q0132	3B	6 Pine Tree Drive
30	12.03	Q0133		Galloping Hill Rd & Valley Crest Rd
30	13.01	Q0135		Stone Gate Ln
30	17	Q0136	3B	1380 Route 31
30	30	Q0136	3B	1545 Route 22
30	41	Q0136	3B	304 Old Allerton Road
31	1	Q0136	3B	80 Sand Hill Road
33	6	Q0141	3B	31 Herman Thau Road
33	6.01	Q0142		Beaver Brook Rd & Herman Thau Rd
34	1	Q0145	3B	405 Cokesbury Road
36	6	Q0145	3B	404 Cokesbury Road
34	5	Q0148		David Post Rd & Petticoat Ln
35	1	Q0148		Petticoat Ln
34	6.18	Q0149		Beaver Brook Rd
35	21	Q0152	3B	147 Petticoat Lane
36	5	Q0153	3B	51 Mount Grove Road

36	19	Q0155	3B	440 Cokesbury Road
36	21	Q0155	3B	6 Stone Mill Road
46	33	Q0158	3B	106 Annandale-Hb Road
46	33.01	Q0158	3B	2 Main Street
47.02	1	Q0161	3B	1 Petticoat Lane
60	59.03	Q0165		Studer Rd & Sunrise Cir
63	8	Q0170	3B	58 Grayrock Road
64	1	Q0171		Old Jericho Rd
65	2	Q0171		W Main St
66	7	Q0172		W Main St
70	6	Q0180		State Hwy 31
82	3	Q0185		State Hwy 31
82	54	Q0187	3B	23 Windy Hill Road
82.02	15	Q0191	3B	223 Hamden Road
87	4.02	Q0197	3B	526 Hamden Road
87	6	Q0197	3B	128 Lilac Drive
87	19	Q0201	3B	23 Victoria Drive
88	3	Q0202	3B	111 Allerton Road
89	10	Q0203	3B	17 Red Schoolhouse Road
89	10.09	Q0203	3B	21 Red Schoolhouse Road
89	19.02	Q0208	3B	105 Lilac Drive
95	2	Q0209	3B	29 Victoria Drive
90	2.05	Q0210		Bohem Dr
90	2.06	Q0210		Bohem Dr
90	2.07	Q0210		Bohem Dr
90	2.08	Q0210		Bohem Dr
90	2.09	Q0210		Bohem Dr
90	2.15	Q0210		Payne Rd
91	6	Q0215	3B	15 Hibbler Road
95	4	Q0219	3B	24 Kiceniuk Road
95	4.01	Q0219	3B	40 Kiceniuk Road
95	4.05	Q0219	3B	22 Kiceniuk Road
28	6	Q0230	3B	33 Allerton Road
13	31	Q0242	3B	73 Haytown Road
13	31.09	Q0242	3B	75 Haytown Road
28.01	13	Q0252	3B	49 Allerton Road
28.01	13.01	Q0252	3B	9 Saddle Ridge Drive
34	8.02	Q0260	3B	30 Herman Thau Road
63	9	Q0277	3B	68 Grayrock Road
66	13	Q0285	3B	1826 Route 31
4	23	Q0290	3B	30 Blossom Hill Road
4.03	28	Q0295	3B	1030 Route 22
2	10	Q0302	3B	74 Deer Hill Road
28.01	27.01	Q0303		Molasses Hill Rd

28.01	27.02	Q0303		Molasses Hill Rd
28.01	27.03	Q0303		Molasses Hill Rd
12	23	Q0304	3B	144 Petticoat Lane
5	1	Q0311	3B	1121 Route 22
46	49	Q0312		Possum Hollow Run
1.03	32	Q0314	3B	14 Welsh Road
36	15	Q0315		Cokesbury Rd
36	16	Q0315		Cokesbury Rd
66	14	Q0316	3B	1834 Route 31
87	4.04	Q0318		Bristol Ct & Huntington Dr
33	11.04	Q0319	3B	85 Petticoat Lane
3	9.14	Q0320	3B	16 Wonderview Way
12	10.02	Q0323	3B	17 Mccatharn Road
14	9	Q0324	3B	1473 Route 22
16	32	Q0325		Old Mountain Rd
16	33	Q0325		Old Mountain Rd
18	3	Q0326		Stanton Mountain Rd
3	15.09	Q0327	3B	13 Ramsey Road
13.01	1	Q0328	3B	1480 Route 22
3	15	Q0331	3B	11 Old Blossom Hill Road
82.17	28	Q0334	3B	61 Regional Road
19	28.01	Q0340	3B	1084 Stanton-Lebanon Road
19	28.03	Q0340	3B	Stanton-Lebanon Road
19	28.02	Q0341	3B	1076 Stanton-Lebanon Road
28	30	Q0342	3B	3 Fawn Ridge Road
33	1.01	Q0344	3B	6 Craig Road
71	9	Q0345		Grayrock Rd
13	6	Q0346	3B	17 Spencer Lane
13	7.01	Q0346	3B	21 Spencer Lane
36	8.12	Q0351	3B	7 Perry Road
9	4	Q0352		Hunters Path
91	1.01	Q0353	3B	67 Lilac Drive
87	12	Q0360	3B	25 Twin Oaks Lane
16	70	Q0361	3B	186 Stanton Mountain Road
16	71	Q0361	3B	190 Stanton Mountain Road
16	72	Q0361	3B	188 Stanton Mountain Road
7	19	Q0362	3B	1061 Route 22
7	20	Q0362	3B	1041 Route 22
60	62	Q0365		Foxfire Ln
60	62.01	Q0365		Highfields Rd
17	1	Q0366	3B	116 Stanton Mtn Road
66	12	Q0368	3B	156 West Main Street
14	6	Q0381	3B	1457 Route 22
29	3	Q0392	3B	14 Allerton Road

30	15.01	Q0392	3B	70 Valley Crest Road
68	6	Q0396		State Hwy 31
4	21	Q0398	3B	78 Blossom Hill Road
11	18.06	Q0401	3B	11 Northstar Drive
12	22.02	Q0402	3B	130 Petticoat Lane
4	14	QFARM	3B	605 Cokesbury Rd

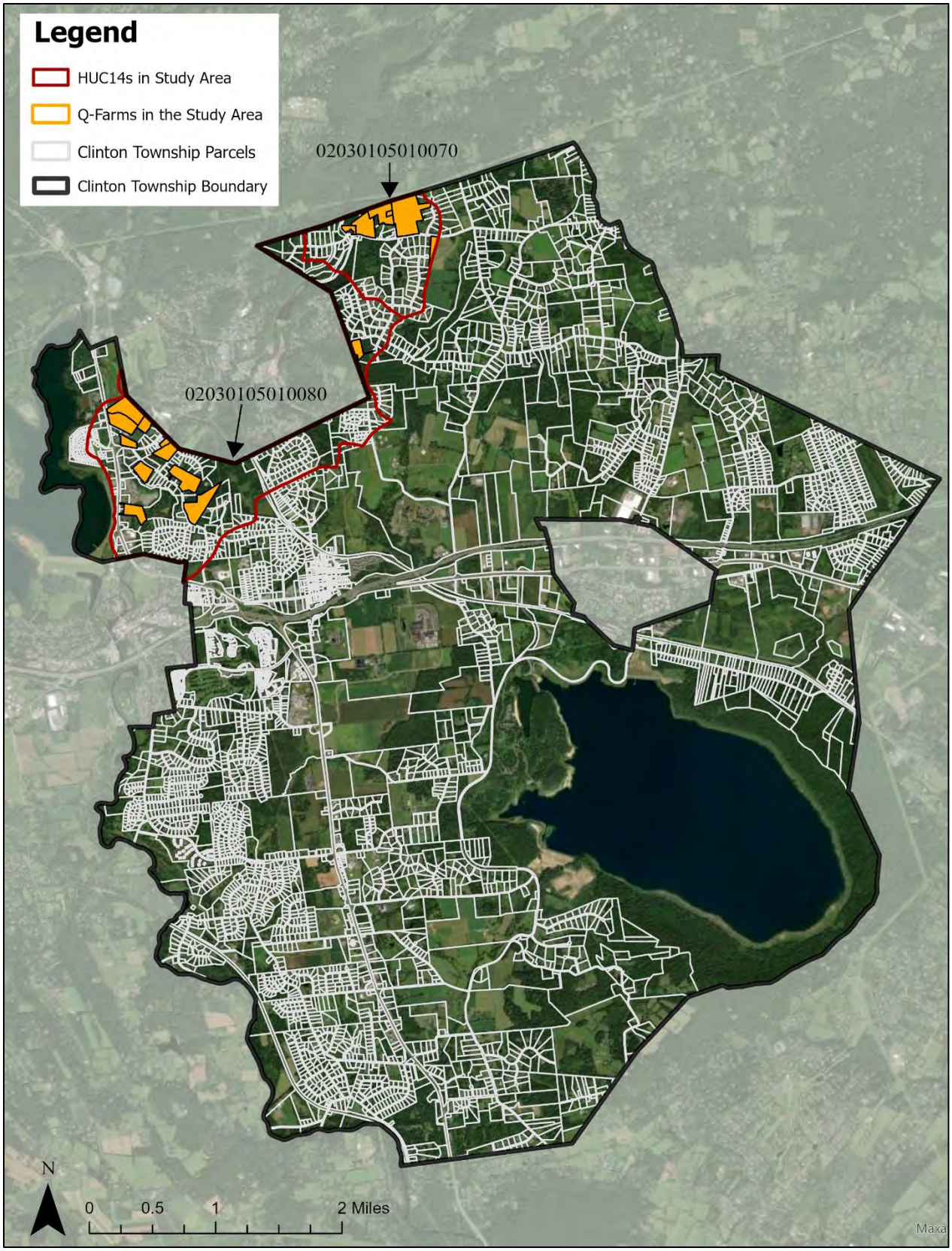


Figure 7: Q-Farm Parcels in the Study Area of Clinton Township

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

Block	Lot	Q-Code	Prop Class	Location
34	1	Q0145	3B	405 Cokesbury Road
36	19	Q0155	3B	440 Cokesbury Road
36	21	Q0155	3B	6 Stone Mill Road
63	8	Q0170	3B	58 Grayrock Road
64	1	Q0171		Old Jericho Rd
65	2	Q0171		W Main St
66	7	Q0172		W Main St
70	6	Q0180		State Hwy 31
63	9	Q0277	3B	68 Grayrock Road
66	13	Q0285	3B	1826 Route 31
36	15	Q0315		Cokesbury Rd
36	16	Q0315		Cokesbury Rd
66	14	Q0316	3B	1834 Route 31
33	1.01	Q0344	3B	6 Craig Road
71	9	Q0345		Grayrock Rd
36	8.12	Q0351	3B	7 Perry Road
66	12	Q0368	3B	156 West Main Street
*4	14	QFARM	3B	605 Cokesbury Rd

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

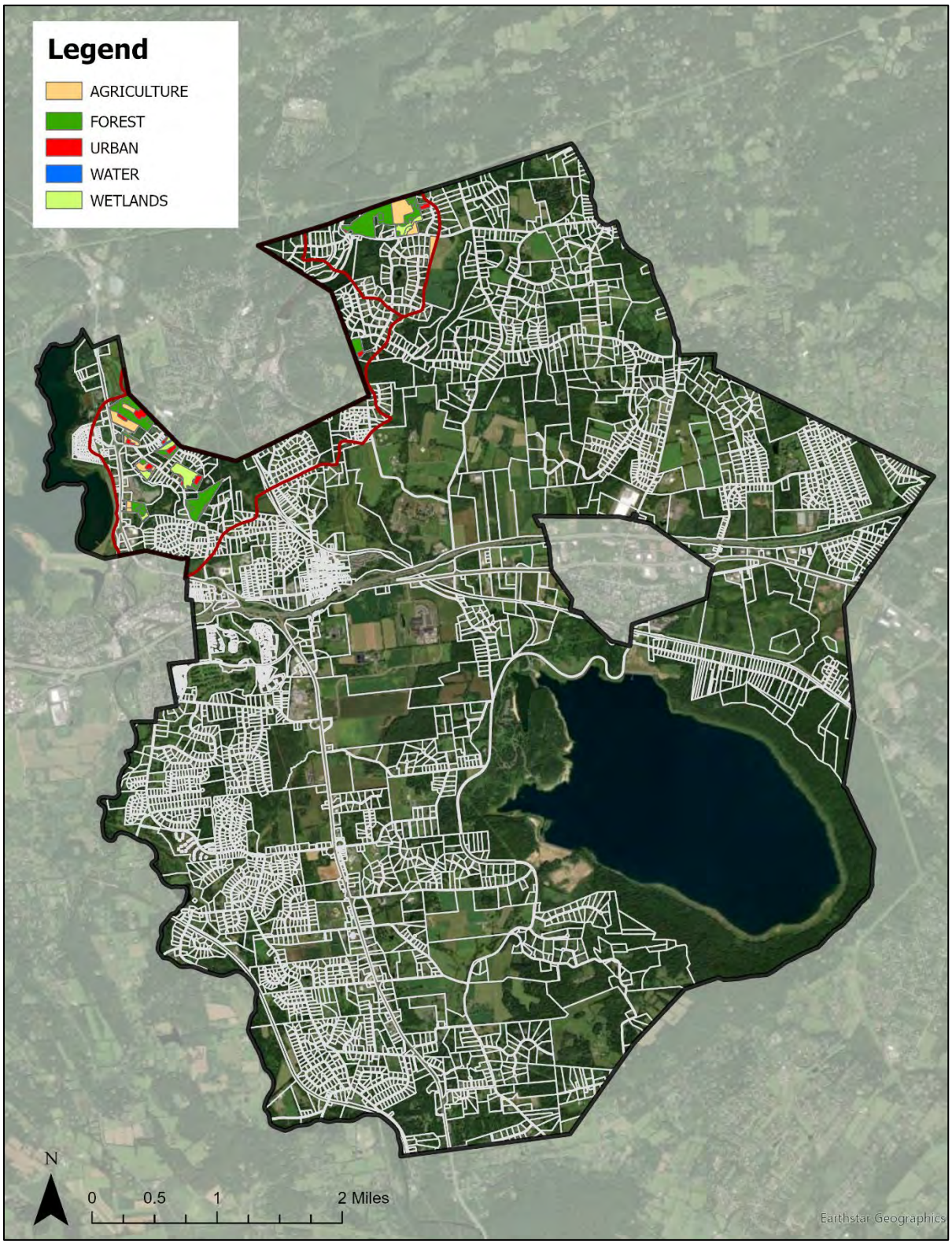


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Clinton Township

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

Land Use	Area (acres)
Agriculture	45.9
Barren Land	0.0
Forest	115.4
Urban	20.5
Water	1.7
Wetlands	28.7
Total:	**212.2**

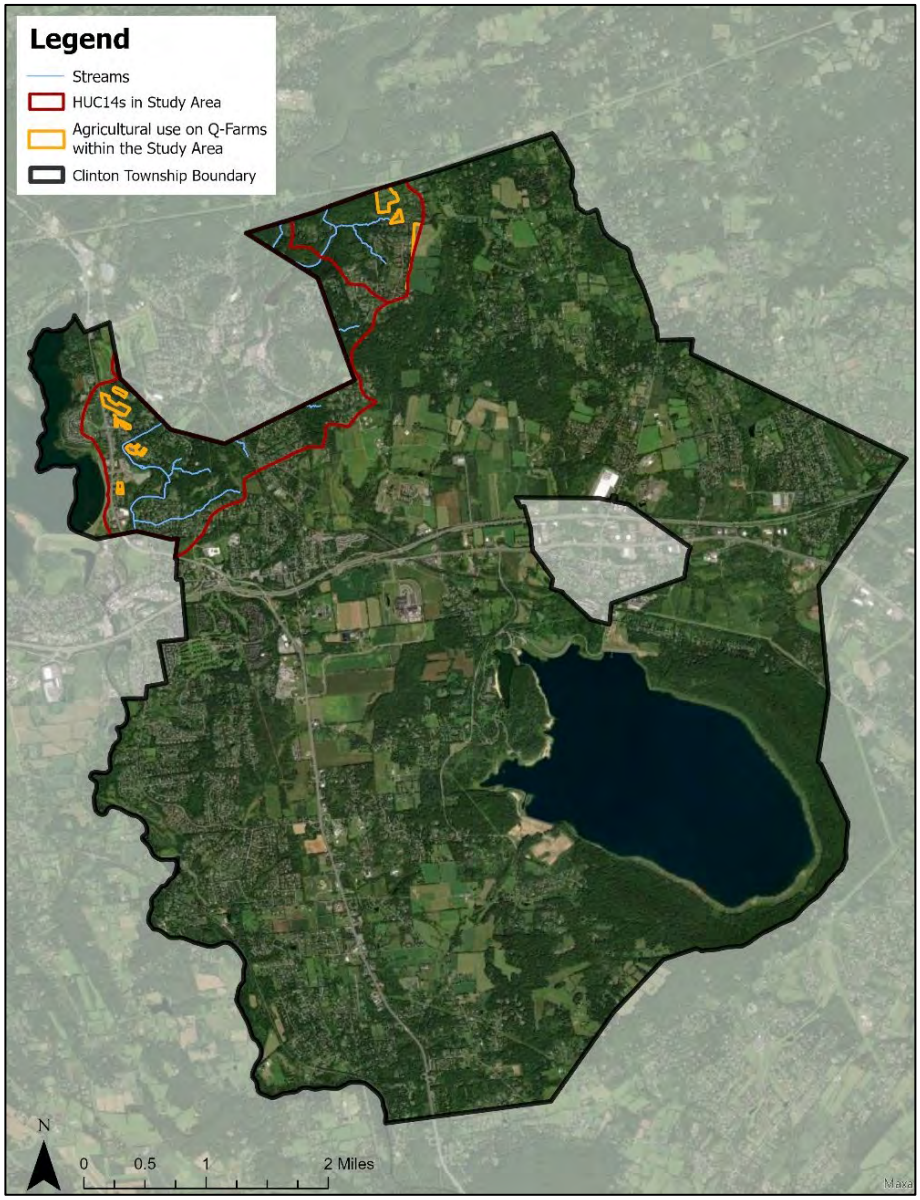


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Clinton Township

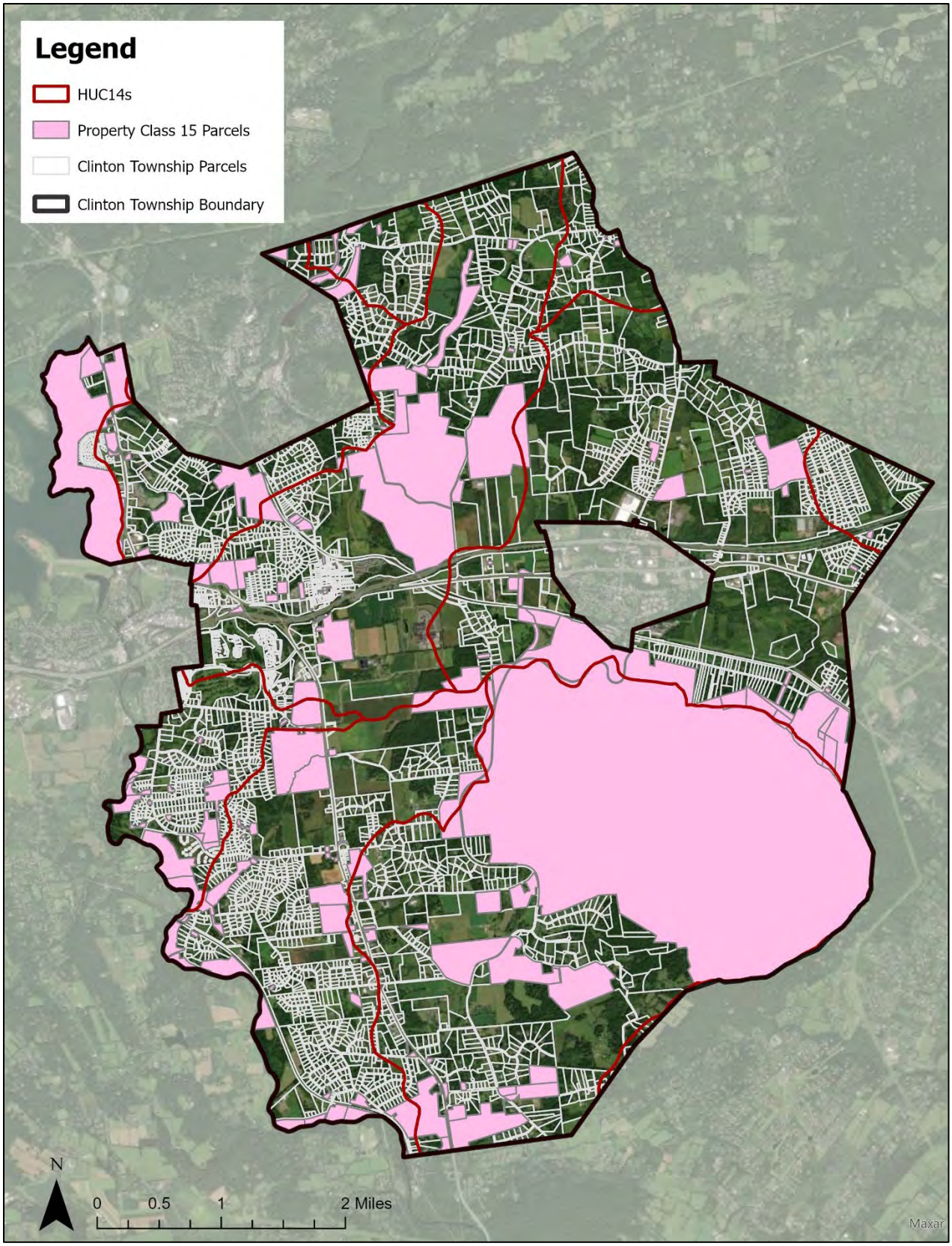


Figure 10: Property Class 15 Parcels in Clinton Township

Table 8: Property Class 15 Parcels in Clinton Township

Block	Lot	Prop Class	Location	Facility Type
3	19	15A	128 Cokesbury Road	Schools
28.01	12.04	15A	63 Allerton Road	School
60	51	15A	27 Belvidere Avenue	Schools
60	56	15A	34 Grayrock Road	Schools
71.04	1	15A	35 Grayrock Road	Vacant Lands
79	1	15A	1445 Route 31	High School
7	4.03	15C	101 Old Mountain Road	Water Supply
8	5	15C	85 Old Mountain Road	Park
13	2	15C	52 Petticoat Lane	Vacant Land
13	28	15C	53 Haytown Road	Vacant Land
13	38	15C	66 Petticoat Lane	Vacant Land
13.01	8.01	15C	Route 22	Jug Handle
14	5.01	15C	Route 22	Admin Office
14	7.02	15C	1451 Route 22	Admin Office
15	1	15C	County Road 629	Round Valley Reserv
15	3	15C	1427 Route 22	Round Valley Reserv
15	3.01	15C	Round Valley Access Rd	Roads
15	4.01	15C	Route 22	Round Valley Reserv
16	1	15C	County Road 629	Park
16	3	15C	106 Old Mountain Road	Park
16	4	15C	106 Old Mountain Road-Rea	Park
16	6	15C	104 Old Mountain Road-Rea	Park
16	7	15C	104 Old Mountain Road	Park
16	10	15C	88 Old Mountain Road-Rear	Park
16	11	15C	88 Old Mountain Road-Rear	Park
16	15	15C	88 Old Mountain Road	Park
16	17	15C	88 Old Mountain Road-Rear	Park
16	19	15C	66 Old Mountain Road	Park
16	69	15C	196 Stanton Mountain Road	Vacant Land
19	20	15C	1020 Stanton-Lebanon Road	Forest
19	20.01	15C	1018 Stanton-Lebanon Road	Vacant Land
19	21.09	15C	Acorn Lane Rear	Vacant Land
19	28	15C	1080 Stanton-Lebanon Road	Camp
20	2.01	15C	1030 Route 31	Park
20	4	15C	1020 Route 31	Arboretum
20	5	15C	1000 Route 31	Vacant Land
20	6	15C	1002 Route 31	Vacant Land
21	4	15C	1 Old Clinton Road	Storage Bldg
22	2	15C	16 Old Clinton Road	Vacant Land
24	1	15C	1230 Route 31	Vacant Land
25	3	15C	7 Molasses Hill Road	Reservoir
25	10	15C	1081 Stanton-Lebanon Road	Open Space
27.01	10	15C	Route 31	Vacant Land
28	34	15C	County Road 629	Round Valley Reserv
29	32	15C	Route 31	Jughandle
30	1	15C	County Road 629	Reservoir

30	16	15C	1370 Route 31	Court & Police St
30	19	15C	1 Sand Hill Road	Vacant Land
30	23	15C	25 Sand Hill Road	Vacant Land
30	39	15C	330 Old Allerton Road	Vacant Land
30.01	39.01	15C	Allerton Road	Vacant Land
33	2	15C	47 Herman Thau Road	Vacant Land
33	4	15C	37 Herman Thau Road	Vacant Land
33	9	15C	172 East Main Street	Vacant Land
33	10	15C	59 Petticoat Lane	Emergency Services
34	2	15C	19 David Post Road	Vacant Land
*34.06	16	15C	459 County Road 639	Park
36	17	15C	438 Cokesbury Road	Vacant Land
36	20	15C	8 Stone Mill Road	Vacant Land
36	24	15C	10 Stone Mill Road	Vacant Land
39	1	15C	Route 513	Park
39	7	15C	Route 513	Footpath
46	14.01	15C	29 Round Top Drive	Vacant Land
46	32	15C	31 Petticoat Lane	Disabled Veteran Ss
53	3	15C	6 West Street	Municipal Bldg.
54	1	15C	Beaver Avenue	Vacant Land
56	4	15C	10 Humphrey Road	Vacant Land
58	1	15C	Humphrey Road	Vacant Land
60	27	15C	84 Beaver Avenue	Garage
60.02	23	15C	16 Austin Hill Road	Garage
60.03	26.08	15C	68 Beaver Avenue	Volunteer Fire Co.
61	4	15C	111 Annandale-Hb Road	Residence
61	4.01	15C	115 Annandale-Hb Road	Residence
61	5	15C	117 Annandale-Hb Road	Bunkhouse
61	15	15C	139 Annandale-Hb Road	Dedicated Open Spacee
63	2	15C	153 Annandale-Hb Road	Open Space
63	3.14	15C	16 Sunrise Circle	Open Space
68	2	15C	1871 Route 31	Vacant Land
68	9.01	15C	1801 Route 31	Vacant Land
68	9.04	15C	1763 Route 31	Vacant Land
68	15	15C	1851 Route 31	Vacant Land
70	2.01	15C	1704 Route 31	Vacant Land
70	8	15C	1740 Route 31	Park
70	20	15C	1764 Route 31	Vacant Land
76	3	15C	194 Center Street	Parking Area
81	1	15C	200 Hamden Road	Vacant Land
81	3	15C	260 Hamden Road	Park
81	5.01	15C	262 Hamden Road	Park
81	6.01	15C	264 Hamden Road	Park
81	8	15C	244 Hamden Road	Park
81	40	15C	Wales Court	Park
82	4	15C	1375 Route 31	Marookian
82	4.03	15C	1355 Route 31	Marookian
82.06	40	15C	Andreann Drive	Vacant Land
82.11	12	15C	Wellington Drive	Vacant Land

82.13	57.01	15C	245 Hamden Road	Park
82.13	58	15C	512 River Road	Open Space
82.19	29	15C	Southgate Drive	Open Space
83	4	15C	Hamden Road rear of Llock	Vacant Land
86	2	15C	502 Hamden Road	Park
86	2.01	15C	off Lilac Drive	Park
87	60	15C	Allerton Road off-of	Water Supply
88	2	15C	1291 Route 31	Vacant Land
88	3.02	15C	1251 Route 31	Dedicated Open Space
89	6.01	15C	1215 Route 31	Fire House
90	15	15C	1101 Route 31	Vacant Land
90.02	1	15C	Route 31	Vacant Land
91.01	9.01	15C	Route 31	Jug Handle
91.01	11	15C	1001 Route 31	Vacant Land
91.01	13	15C	41 Lilac Drive	Jug Handle
93	1	15C	29 Kiceniuk Road	Park
93	1.02	15C	Lilac Drive	Park
93	2	15C	27 Kiceniuk Road	Park
94	1	15C	37 Kiceniuk Road	Park
94	2	15C	47 Kiceniuk Road	Park
95	1	15C	Lilac Drive	Park
300	1	15C	Railroad	Park
400	1	15C	Railroad Track	Camp
400	2	15C	Stone Mill Road	Footpath
3	13	15D	79 Blossom Hill Road	Camp
4	21.01	15D	78 Blossom Hill Road	Camp
7	34	15D	40 Cherry Street	Vacant Land
10	12	15D	245 Cokesbury Road	Vacant Land
10	18	15D	259 Cokesbury Road	Parsonage
13.02	23.01	15D	3 Haytown Road	Parsonage
19	31	15D	267 Stanton Mountain Road	Camp
19	32	15D	245 Stanton Mountain Road	Camp
30	35	15D	316 Old Allerton Road	Church-School
53	1	15D	2 West Street	Municipal Bldg.
82	1	15D	104 Allerton Road	Church
82.15	1	15D	4 Andreann Drive	Parsonage
88	1.01	15D	107 Allerton Road	Parking Areas
89	10.03	15D	9 Red Schoolhouse Road	Religious Fac
90	2.03	15D	3 Springhouse Ct	Parsonage
1.01	2	15F	8 South Deer Hill Road	Disabled Veteran
3.02	8	15F	12 Ramsey Road	Disabled Veteran
4.03	23	15F	17 Wayside Lane	Disabled Veteran
7	28	15F	228 Main Street	Disabled Veteran
12	10.11	15F	5 Fieldstone Drive	Disabled Veteran
12	18.03	15F	5 Colonial Court	Disabled Veteran
13.01	5	15F	1464 Route 22	Unknown
21	10	15F	16 Stanton Grange Road	Grange Hall
24	6	15F	1222 Route 31	Vacant Land
25	8	15F	15 Molasses Hill Road	Vacant Land

25	17	15F	Tine Road	Vacant Land
26	4	15F	1232 Route 31	Vacant Land
35	19	15F	355 Cokesbury Road	Disabled Veteran
35	20	15F	353 Cokesbury Road	Disabled Veteran
39	4.03	15F	530 Cokesbury Road	Vacant Land
41	3.01	15F	509 Cokesbury Road	Camp
41	4	15F	511 Cokesbury Road	Camp
46	27.01	15F	15 Possum Hollow Run	Disabled Veteran Ss
48	3	15F	24 Main Street	Disabled Veteran
52	7	15F	5 West Street	Disabled Vet
61	19	15F	28 Michael Lane	Vacant Land
66	15	15F	1860 Route 31	Golf Course
81	7	15F	Kent Court	Park
81	35	15F	10 Wales Court	Disabled Veteran
82	7	15F	19 Regional Road	Disabled Veteran
82.02	9	15F	5 Amherst Court	Open Space
82.04	16	15F	18 Lexington Road	Open Space
82.06	6	15F	30 Bennington Road	Vacant Land
82.07	25	15F	Dartmouth Road	Open Space
82.07	28	15F	6 Dartmouth Road	Disabled Veteran
82.07	43	15F	2 Wellington Drive	Open Space
82.08	8	15F	Cambridge Drive	Open Space
82.12	11	15F	7 Wellington Drive	Open Space
82.13	61.34	15F	Brighton Court	Open Space
82.18	49.13	15F	33 Southgate Drive	Disabled Veteran
83	1	15F	521 River Road	Vacant Land
83	5	15F	Hamden Road rear of Llock	Vacant Land
84	3	15F	2 Camp Buck Road	Administrative Bldg.
85	1	15F	1 Camp Buck Road	Residence
86	1.01	15F	524 Hamden Road	Ss Disabled Veteran
87	11.21	15F	11 Twin Oaks Lane	Disabled Veteran Ss
87	47	15F	44 Whispering Hills Drive	Dedicated Open Spacee
88	3.03	15F	8 Red Schoolhouse Road	Dedicated Open Space
88	12	15F	Route 31	Water Supply
92	7	15F	54 Lilac Drive	Disabled Veteran

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

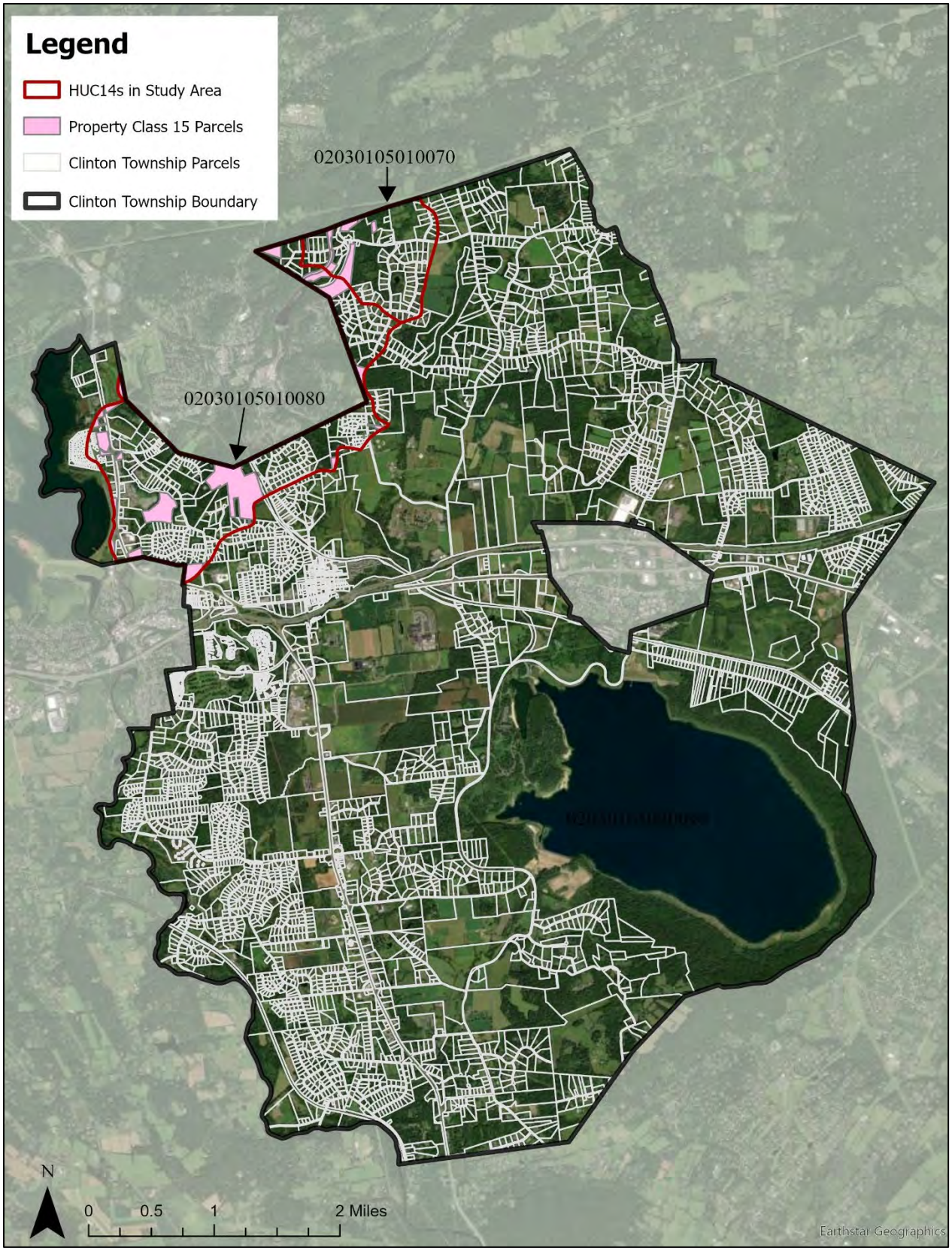


Figure 11: Property Class 15 Parcels in the Study Area of Clinton Township

Table 9: Property Class 15 Parcels in the Study Area of Clinton Township

Block	Lot	Prop Class	Location	Facility Type
***60[1]**	**56**	**15A**	**34 Grayrock Road**	**Schools**
71.04[1]	1	15A	35 Grayrock Road	Vacant Lands
33[1]	2	15C	47 Herman Thau Road	Vacant Land
33[1]	9	15C	172 East Main Street	Vacant Land
***33[1]**	**10**	**15C**	**59 Petticoat Lane**	**Emergency Services**
34.06	16	15C	459 County Road 639	Park
36	17	15C	438 Cokesbury Road	Vacant Land
36	20	15C	8 Stone Mill Road	Vacant Land
36	24	15C	10 Stone Mill Road	Vacant Land
39	1	15C	Route 513	Park
39	7	15C	Route 513	Footpath
46	14.01	15C	29 Round Top Drive	Vacant Land
46[1]	32	15C	31 Petticoat Lane	Disabled Veteran Ss
61	15	15C	139 Annandale-Hb Road	Dedicated Open Space
63[1]	2	15C	153 Annandale-Hb Road	Open Space
63	3.14	15C	16 Sunrise Circle	Open Space
68	9.01	15C	1801 Route 31	Vacant Land
68	9.04	15C	1763 Route 31	Vacant Land
68	15	15C	1851 Route 31	Vacant Land
70	2.01	15C	1704 Route 31	Vacant Land
70	8	15C	1740 Route 31	Park
70	20	15C	1764 Route 31	Vacant Land
400	1	15C	Railroad Track	Camp
400	2	15C	Stone Mill Road	Footpath
39	4.03	15F	530 Cokesbury Road	Vacant Land
41	3.01	15F	509 Cokesbury Road	Camp
41	4	15F	511 Cokesbury Road	Camp
46[1]	27.01	15F	15 Possum Hollow Run	Disabled Veteran Ss
61	19	15F	28 Michael Lane	Vacant Land
66	15	15F	1860 Route 31	Golf Course

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

Only a portion of the parcel is within the study area

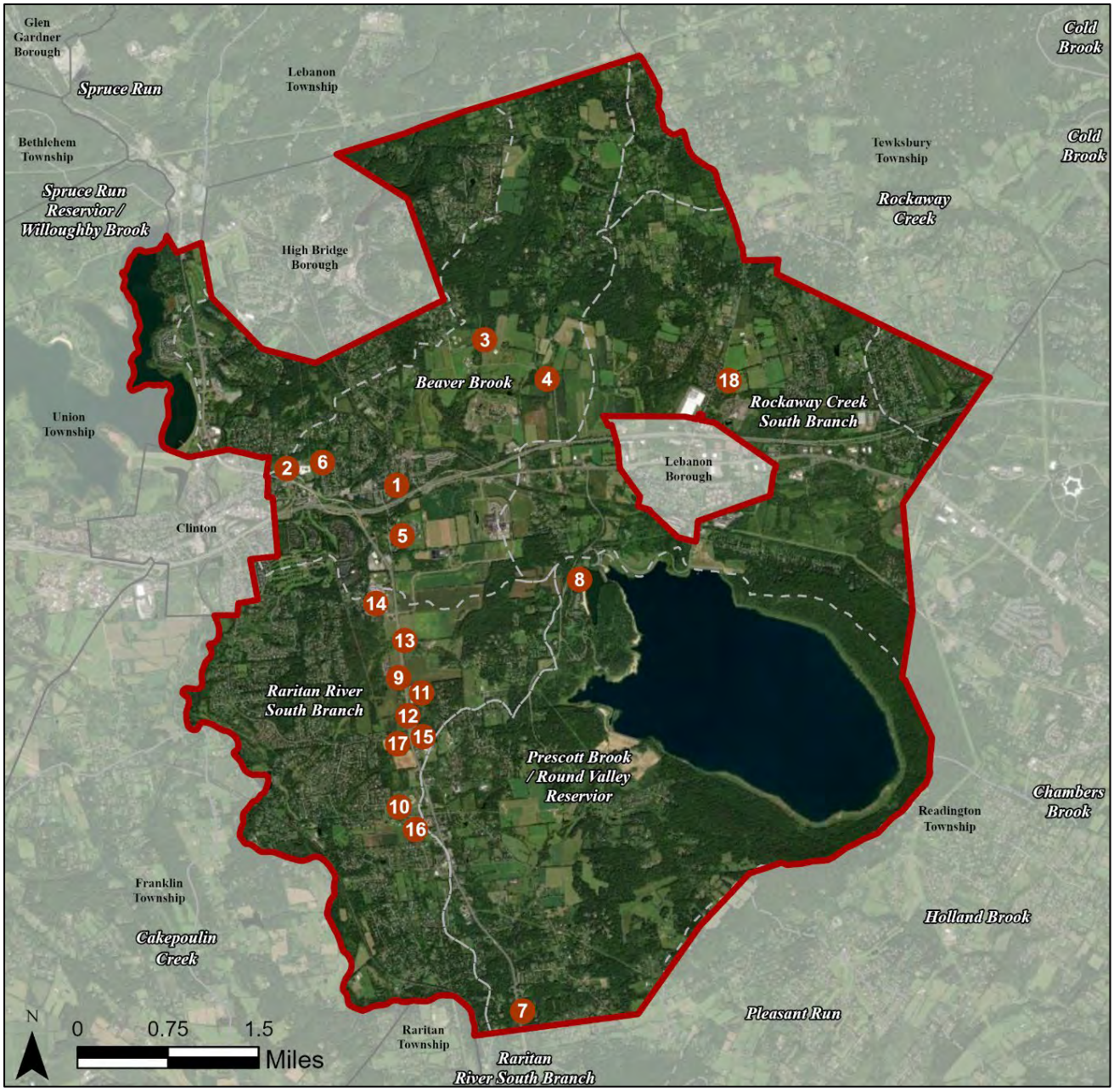


Figure 12: Sites with Green Infrastructure Opportunities in Clinton Township

ANNANDALE REFORMED CHURCH

RAP ID: 1

Subwatershed: Beaver Brook

HUC14 ID: 02030105020050

Site Area: 25,986 sq. ft.

Address: 2 West Street,
Annandale, NJ 08801

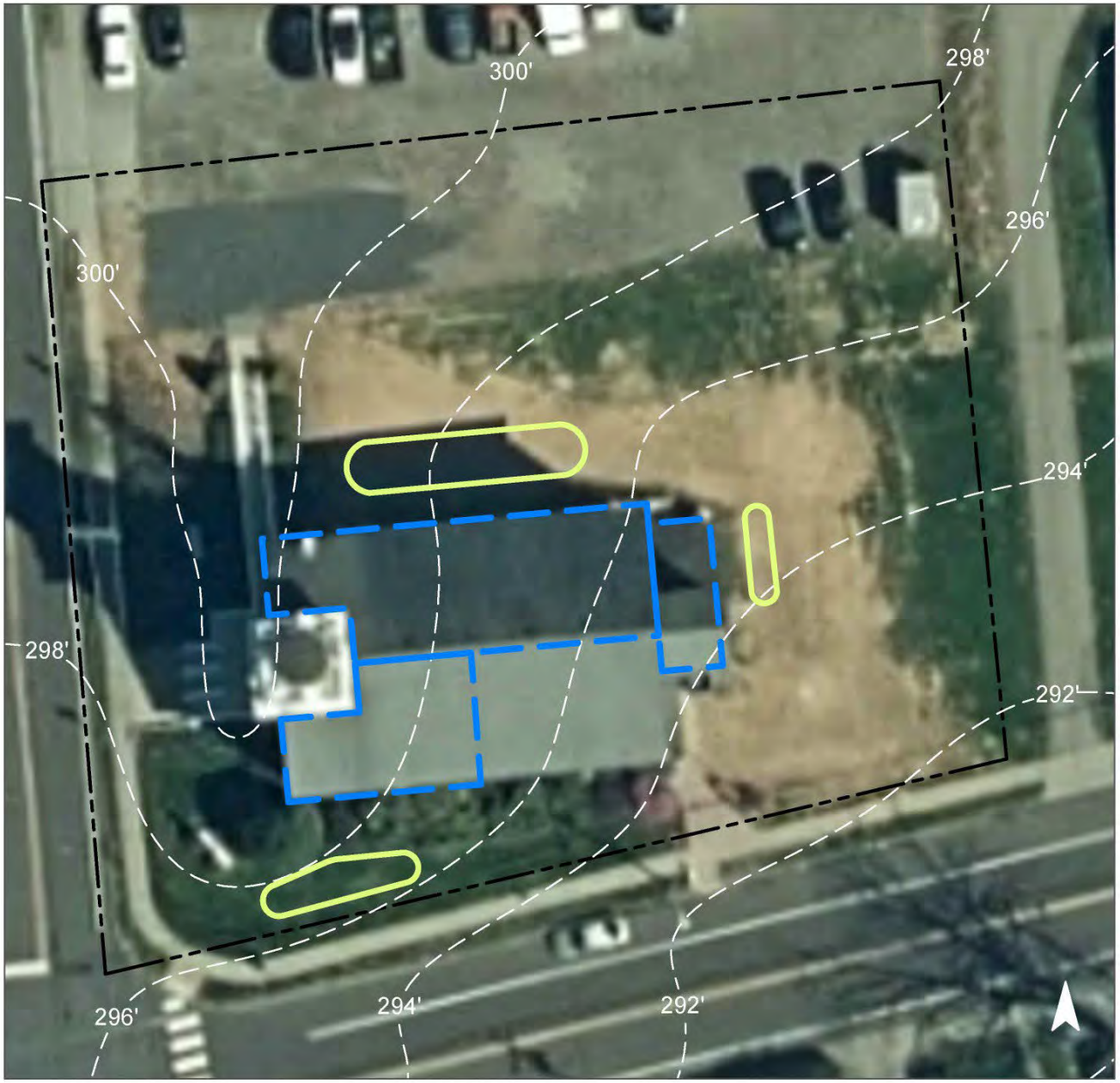
Block and Lot: Block 53, Lot 1

Three rain gardens requiring downspout disconnection and redirection can be installed in the grass areas around 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 49.4"
56	14,609	0.7	7.4	67.1	0.011	0.45

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	2,995	0.088	13	6,010	0.23	750	$7,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Annandale Reformed Church

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

0 15' 30'

CLINTON TOWNSHIP MIDDLE SCHOOL

RAP ID: 2

Subwatershed: Beaver Brook

Site Area: 1,150,067 sq. ft.

Address: 34 Grayrock Road
Clinton, NJ 08809

Block and Lot: Block 60, Lot 56

Two downspout planter boxes can be installed along the building, and bioretention systems can be installed in the turfgrass median in front of the 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"
31	353,034	17.0	178.3	1,620.9	0.275	9.68

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.165	28	12,536	0.55	1,165	$5,825
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Clinton Township Middle School

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

0 50' 100'

HUNTERDON COUNTY EMERGENCY SERVICES

RAP ID: 3

Subwatershed: Beaver Brook

HUC14 ID: 02030105020050

Site Area: 11,443,751 sq. ft.

Address: 59 Petticoat Lane,
Annandale, NJ 08801

Block and Lot: Block 33, Lot 10

A rain garden can be installed in the grass area near the southwest side of the building to capture, treat, and infiltrate stormwater runoff from the roof. Another rain garden requiring downspout disconnection and redirection can be installed in the grass area near the northwest 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 49.4"
5	528,755	25.5	267.0	2,427.7	0.412	16.28

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	1,290	0.038	6	2,590	0.10	320	$3,200

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hunterdon County Emergency Services

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

0 15' 30'

HUNTERDON PREPARATORY SCHOOL

RAP ID: 4

Subwatershed: Beaver Brook

Site Area: 1,960,034 sq. ft.

Address: 11 Spencer Lane
Annandale, NJ 08801

Block and Lot: Block 13, Lot 3

Pervious pavement can be installed in the northern parking lot spots to capture and infiltrate stormwater. A rain garden can be installed in the turfgrass area to the northeast corner of the building to allow for the capture, infiltration, and filtration of 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"
14	279,043	13.5	140.9	1,281.2	0.217	7.65

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	0.105	18	7,944	0.35	1,015	$5,075
Pervious pavement	0.491	82	37,198	1.64	3,600	$90,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hunterdon Preparatory School

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

0 25' 50'

IMMACULATE CONCEPTION SCHOOL AND ROMAN CATHOLIC CHURCH

RAP ID: 5

Subwatershed: Beaver Brook

HUC14 ID: 02030105020050

Site Area: 2,277,779 sq. ft.

Address: 314 Old Allerton Road, Annandale, NJ 08801

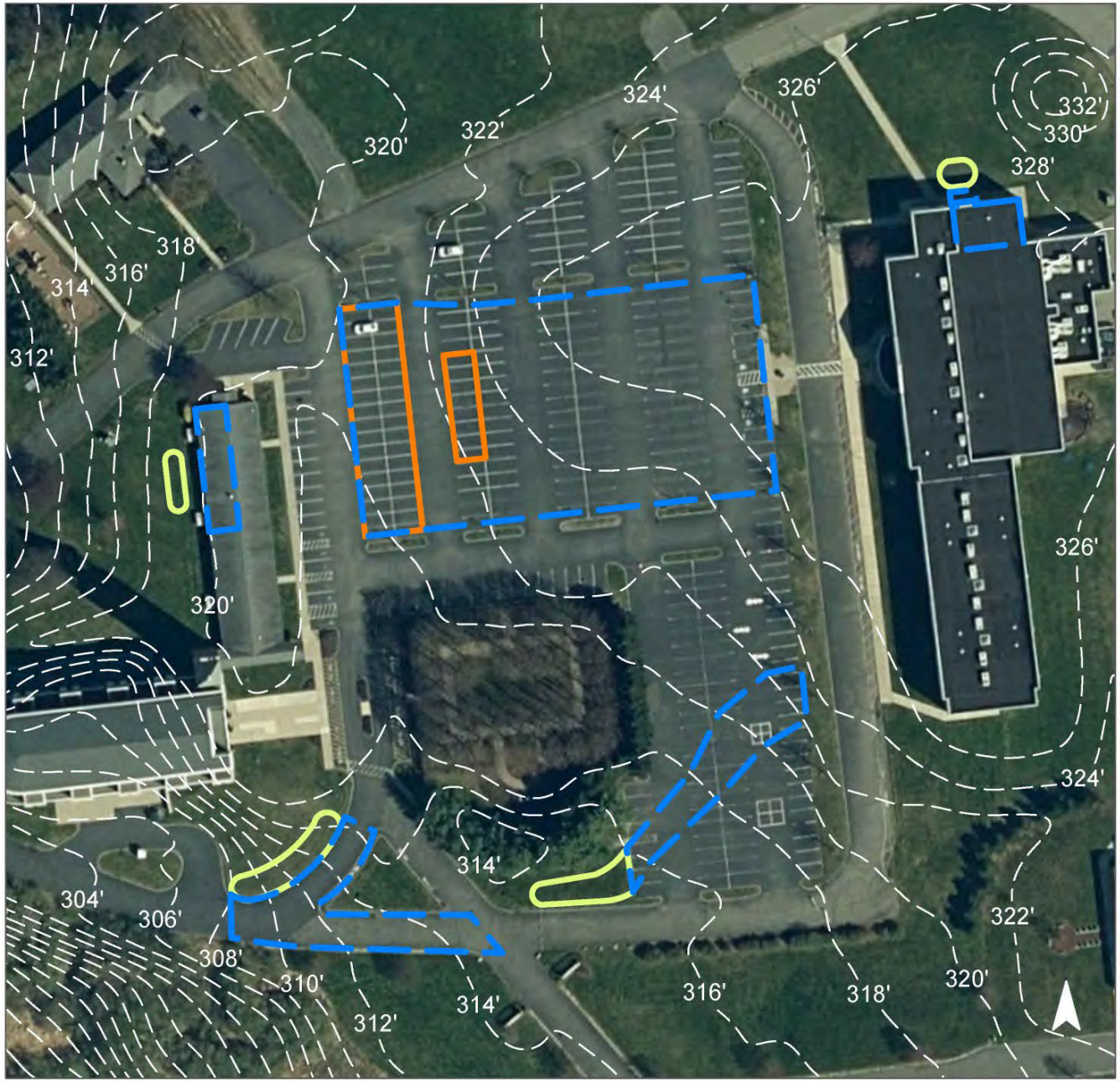
Block and Lot: Block 30, Lot 35

Parking spaces in the lot can be converted to porous pavement to capture and infiltrate stormwater runoff from the asphalt. Two rain gardens requiring downspout disconnection and redirection can be installed in the grass areas near the west and east buildings to capture, treat, and infiltrate stormwater runoff from the roof. Two rain gardens with curb cuts and trench drains can be installed in the grass areas south of the parking lot 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 49.4"
19	438,104	21.1	221.3	2,011.5	0.341	13.49

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	13,345	0.390	59	26,760	1.01	3,340	$33,400
Pervious pavement	39,105	1.144	171	78,410	2.95	7,060	$176,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Immaculate Conception School and Roman Catholic Church

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

0 50' 100'

SPRUCE RUN SCHOOL

RAP ID: 6

Subwatershed: Beaver Brook

Site Area: 741,140 sq. ft.

Address: 27 Belvidere Avenue
Clinton, NJ 08809

Block and Lot: Block 60, Lot 51

Bioretention systems can be installed in the north, west, and east corners of the building to capture, treat, and infiltrate rooftop runoff. Downspout planter boxes can be constructed along the south of 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"
27	201,128	9.7	101.6	923.5	0.157	5.52

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.160	27	12,133	0.53	1,540	$7,700
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Spruce Run School

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

0 30' 60'

HUNTERDON COUNTY ARBORETUM

RAP ID: 7

Subwatershed: Prescott Brook/Round Valley Reservoir

Site Area: 3,189,338 sq. ft.

Address: 1020 NJ-31
Lebanon, NJ 08833

Block and Lot: Block 20, Lot 4

A bioretention system can be installed along the north edge of the parking lot to capture, treat, and infiltrate rooftop runoff from the tilted pitch of the pavement. Downspout planter boxes can be installed to treat the rooftop stormwater near the western entrance. 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"
3	98,515	4.7	49.8	452.3	0.077	2.70

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	0.133	22	10,091	0.44	2,045	$10,225
Planter boxes	n/a	5	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Hunterdon County Arboretum

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

0 30' 60'

ROUND VALLEY RECREATION AREA

RAP ID: 8

Subwatershed: Prescott Brook/Round Valley Reservoir

Site Area: 159,333,833 sq. ft.

Address: 1220 Stanton Lebanon Road
Lebanon, NJ 08833

Block and Lot: Block 16, Lot 1

A bioretention system can be installed to capture the stormwater runoff from the building on its eastern side. Pervious pavement on the northeastern corner of the parking lot can capture and treat 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"
1	2,134,801	102.9	1078.2	9,801.7	1.663	58.55

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.023	4	1,780	0.08	225	$1,125
Pervious pavement	0.263	44	19,897	0.88	1,800	$45,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Round Valley Recreation Area

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

0 50' 100'

ALL TRADES CONTRACTING, INC.

RAP ID: 9

Subwatershed: Raritan River South Branch

Site Area: 134,783 sq. ft.

Address: 1335 NJ-31
Annandale, NJ 08801

Block and Lot: Block 82, Lot 3.01

A bioretention system can be installed north of the building to capture, treat, and infiltrate stomwater runoff from the roof. Pervious pavement can be installed in the southern parking spots to capture and infiltrate stormwater runoff from the parking lot. Downspout planter boxes can be installed next to the eastern entrance to capture and treat the 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"
11	14,657	0.7	7.4	67.3	0.011	0.40

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	0.013	2	980	0.04	125	$625
Pervious pavement	0.105	18	7,959	0.35	720	$18,000
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

All Trades Contracting, Inc.

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

0 25' 50'

BUNDT PARK

RAP ID: 10

Subwatershed: Raritan River South Branch

Site Area: 1,392,166 sq. ft.

Address: Red School House Road
Lebanon, NJ 08833

Block and Lot: Block 88, Lot 3.03

A bioretention system can be installed next to the southeast corner of the basketball court to help infiltrate the stormwater that tends to pool in that area. Pervious pavement can be installed on the western section of the parking lot to capture, treat, and infiltrate the stormwater runoff from it. 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	314,106	15.1	158.6	1,442.2	0.245	8.61

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
Bioretention system	0.064	11	4,855	0.21	615	$3,075
Pervious pavement	0.368	62	27,856	1.23	2,520	$63,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bundt Park

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

0 50' 100'

GEBHARDT & KIEFER, P. C.

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 100,930 sq. ft.

Address: 1318 NJ-31
Annandale, NJ 08801

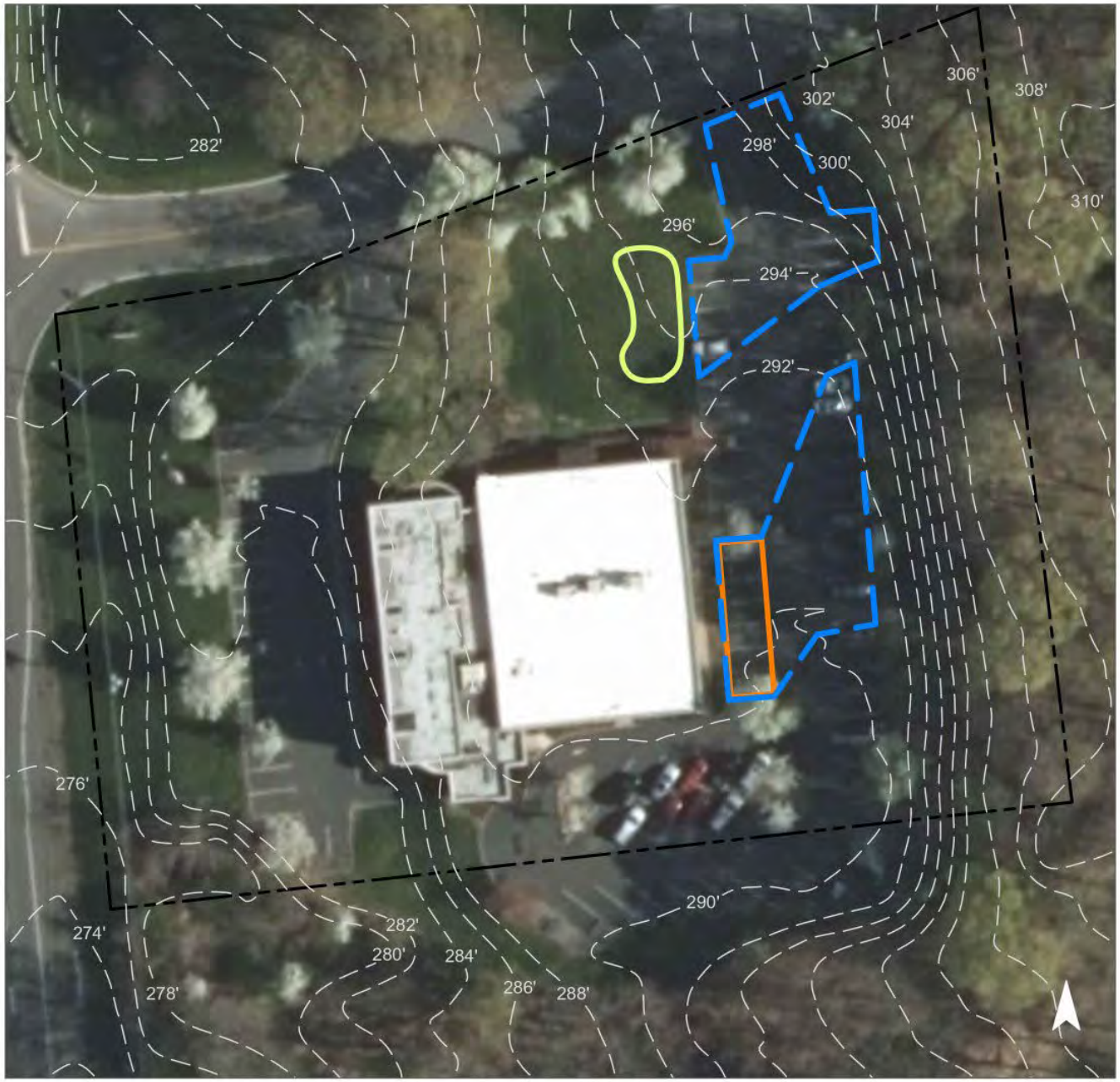
Block and Lot: Block 29, Lot 13

Pervious pavement can be installed in the eastern parking lot to capture, treat, and infiltrate the stormwater from the parking lot. A bioretention system can be installed on the northern side of the building to capture stormwater runoff from the north section of 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"
46	46,286	2.2	23.4	212.5	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 system	0.109	18	8,228	0.36	1,045	$5,225
Pervious pavement	0.122	20	9,208	0.41	1,135	$28,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Gebhardt & Kiefer, P.C.

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

0 30' 60'

HARPER'S TABLE

RAP ID: 12

Subwatershed: Raritan River South Branch

Site Area: 130,622 sq. ft.

Address: 1316 NJ-31 N
Annandale, NJ 08801

Block and Lot: Block 29, Lot 34

A bioretention system can be installed between the parking lot and roadway to capture the parking lot and rooftop runoff. Pervious pavement can be installed in the southeastern corner of the parking lot to capture, treat, and infiltrate stormwater runoff from the lot. A 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"
38	49,716	2.4	25.1	228.3	0.039	1.36

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 system	0.106	18	8,004	0.35	1,010	$5,050
Pervious Pavement	0.354	64	29,060	1.28	2,755	$68,875

GREEN INFRASTRUCTURE RECOMMENDATIONS

Harper's Table

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

0 50' 100'

NORTH HUNTERDON MUNICIPAL COURT

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 86,337 sq. ft.

Address: 1370 NJ-31
Annandale, NJ 08801

Block and Lot: Block 30, Lot 16

Pervious pavement can be installed in the southern parking lot to help remediate the pooling that occurs due to the pitch of the pavement. Bioretention systems can be installed west of the parking lot to allow for the capture of the 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"
52	44,900	2.2	22.7	206.2	0.035	1.23

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.194	33	14,728	0.65	1,865	$9,325
Pervious pavement	0.095	16	7,188	0.32	650	$16,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

North Hunterdon Municipal Court

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

0 30' 60'

NORTH HUNTERDON REGIONAL HIGH SCHOOL

RAP ID: 14

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105020070

Site Area: 2,122,493 sq. ft.

Address: 1445 NJ-31,
Annandale, NJ 08801

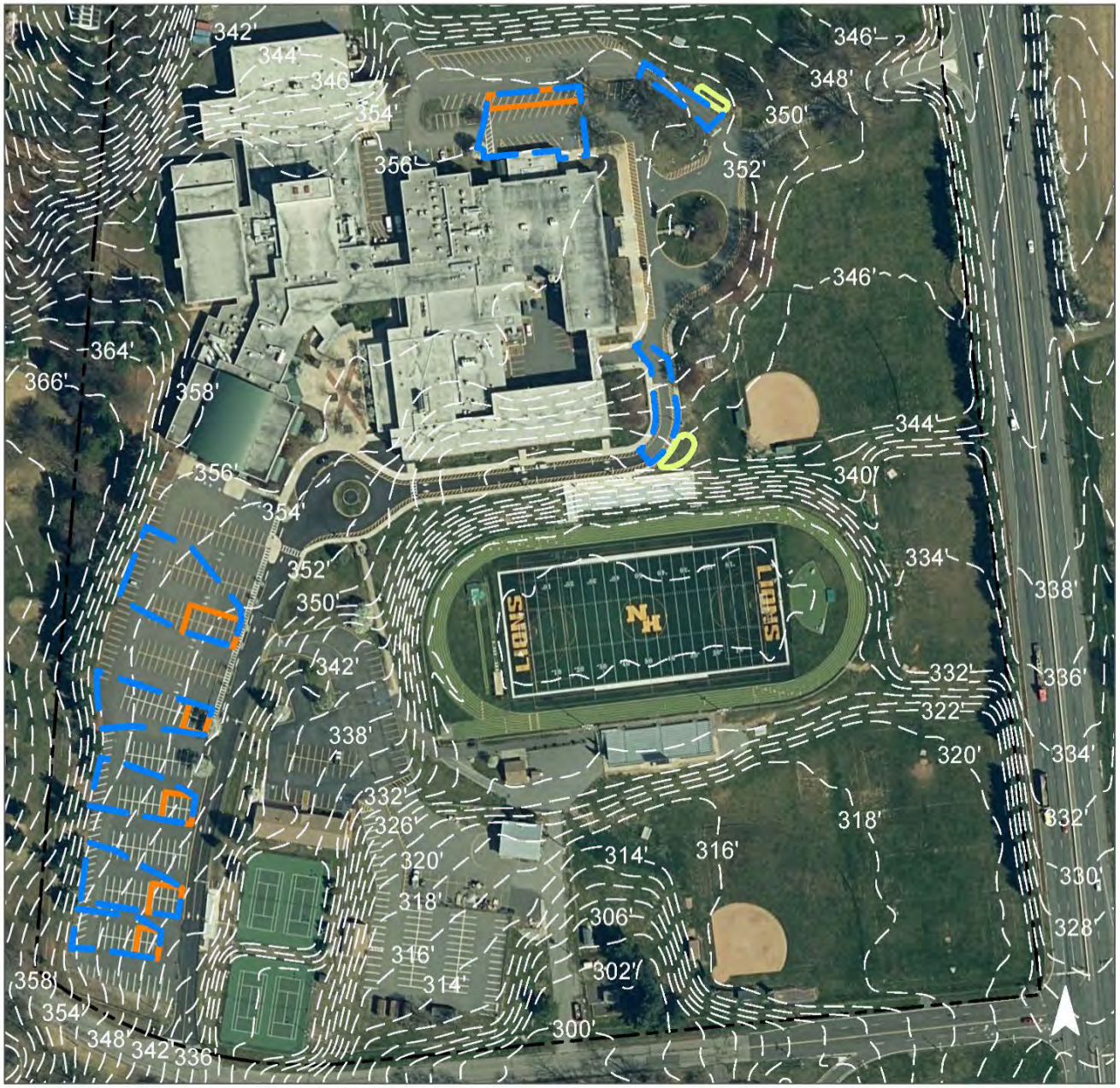
Block and Lot: Block 79, Lot 1

Parking spaces in the lots north and south of the building can be converted to porous pavement using trench drains to redirect, capture and infiltrate stormwater runoff from the pavement. Two rain gardens with trench drains and curb cuts can be installed in the grass areas to the east 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 49.4"
42	894,588	43.1	451.8	4,107.4	0.697	27.55

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	6,375	0.186	29	12,780	0.48	1,595	$15,950
Pervious pavement	45,565	1.333	200	91,360	3.43	8,740	$218,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



North Hunterdon Regional High School

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

0 100' 200'

PATRICK MCGAHERAN SCHOOL

RAP ID: 15

Subwatershed: Raritan River South Branch

Site Area: 1,058,128 sq. ft.

Address: 63 Allerton Road
Lebanon, NJ 08833

Block and Lot: Block 28.01, Lot 12.04

A bioretention system can be installed north of the building to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed in the middle parking strip of the parking lot to capture and infiltrate stormwater. Two rainwater harvesting systems can be installed on the eastern building, and 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"
21	219,947	10.6	111.1	1,009.9	0.171	6.03

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	0.078	13	5,939	0.26	755	$3,775
Pervious pavement	0.283	47	21,468	0.94	1,945	$48,625
Rainwater harvesting	0.043	7	3,254	0.14	1,500 (gal)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Patrick McGaheran School

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

0 50' 100'

THE CHURCH OF JESUS CHRIST OF LATTERDAY SAINTS

RAP ID: 16

Subwatershed: Raritan River South Branch

Site Area: 294,085 sq. ft.

Address: 9 Red School House Road
Lebanon, NJ 08833

Block and Lot: Block 89, Lot 10.03

A bioretention system can be installed on the west side of the building to help infiltrate the stormwater from four downspouts. Pervious pavement can be installed in the south parking lot to capture the stormwater runoff from the 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"
20	57,581	2.8	29.1	264.4	0.045	1.58

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 system	0.112	19	8,505	0.37	1,080	$5,400
Pervious pavement	0.205	34	15,528	0.68	1,495	$37,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

The Church of Jesus Christ of Latter-day Saints

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

0 30' 60'

UNION COMMUNITY BIBLE CHURCH

RAP ID: 17

Subwatershed: Raritan River South Branch

Site Area: 43,455 sq. ft.

Address: 104 Allerton Road
Annandale, NJ 08801

Block and Lot: Block 82, Lot 1

A bioretention system can be placed north of the church to help infiltrate the stormwater from the rooftop. Pervious pavement on the northwestern corner of the parking lot can capture, treat, and infiltrate the 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"
50	21,707	1.0	11.0	99.7	0.017	0.60

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 system	0.039	7	2,962	0.13	375	$1,875
Pervious pavement	0.178	30	13,524	0.59	1,200	$30,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Union Community Bible Church

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

0 30' 60'

ROUND VALLEY SCHOOL

RAP ID: 18

Subwatershed: Rockaway Creek South Branch

HUC14 ID: 02030105050100

Site Area: 1,099,457 sq. ft.

Address: 128 Cokesbury Road, Lebanon, NJ 08833

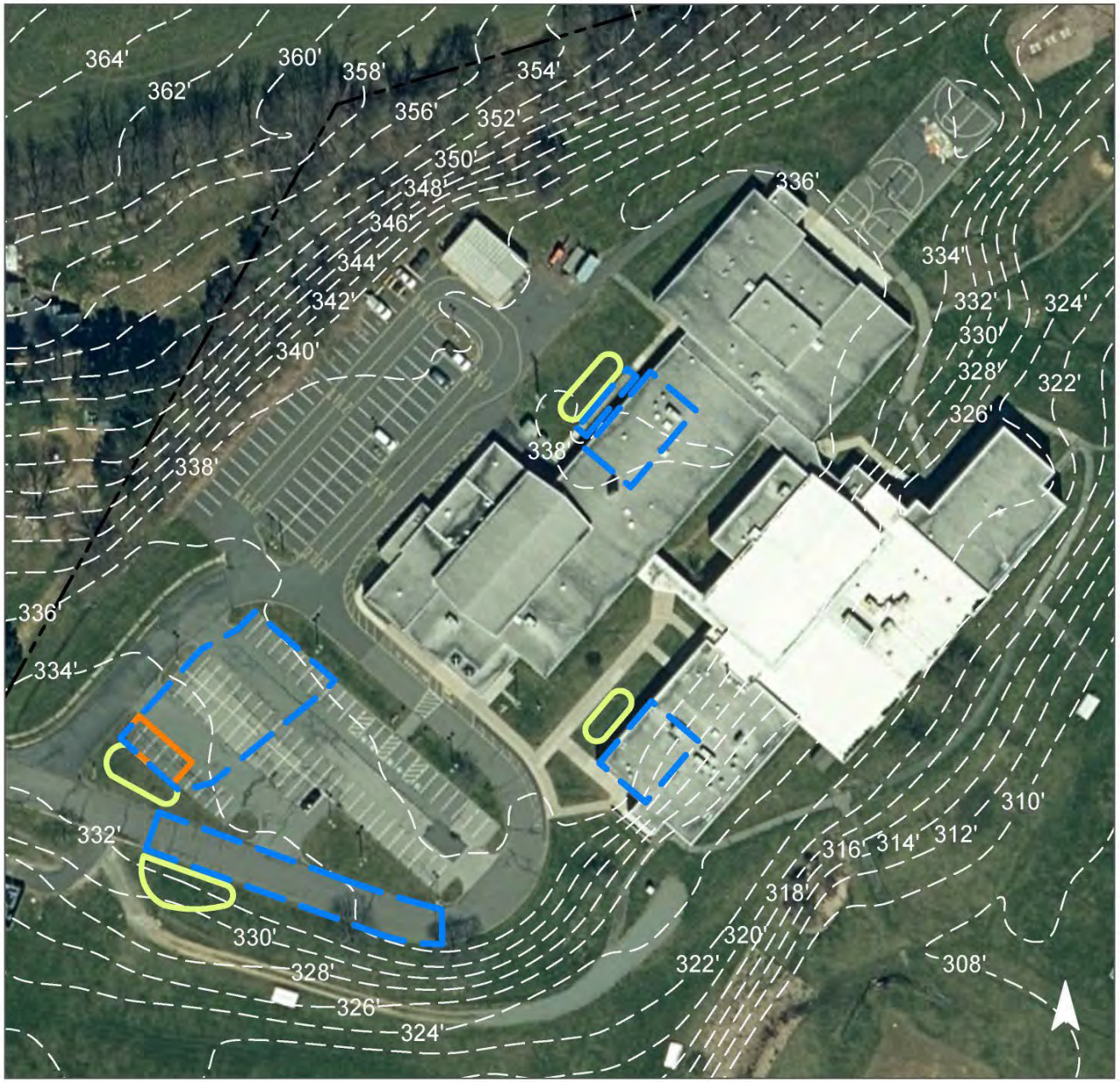
Block and Lot: Block 3, Lot 19

Several rain gardens can be installed in the grass areas around the building or by the parking lot to capture, treat, and infiltrate stormwater runoff from the roof or pavement. Downspout disconnection and redirection, trench drains, and curb cuts will be required for some of these gardens. Parking spaces in the lot in front of one of the gardens can be converted to porous pavement to capture and infiltrate 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 49.4"
21	227,511	11.0	114.9	1,044.6	0.177	7.01

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	13,885	0.406	61	27,840	1.05	3,470	$34,700
Pervious pavement	4,590	0.134	21	9,200	0.35	875	$21,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Round Valley School

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

0 50' 100'

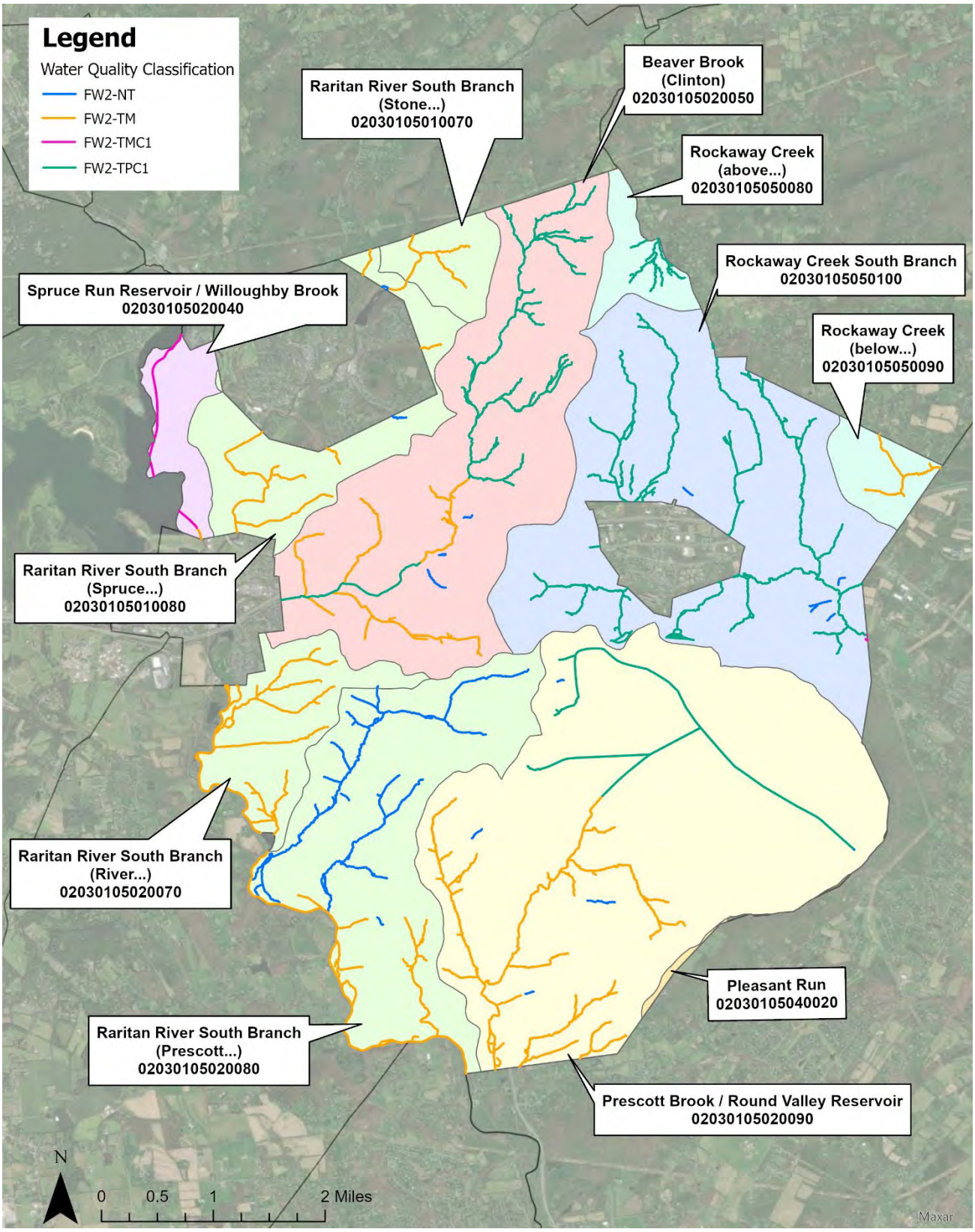


Figure 13. Water Quality Classification of Surface Waters in Clinton Township

Table 10. Water Quality Classification of Surface Waters in Clinton Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	12.2	12.3%
Freshwater 2, trout production, Category One	FW2-TPC1	41.6	42.0%
Freshwater 2, trout maintenance	FW2-TM	43.8	44.2%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	1.5	1.5%

High Bridge Borough

Introduction

Located in Hunterdon County in New Jersey, High Bridge Borough covers about 2.4 square miles. With a population of 3,546 (2020 United States Census), High Bridge Borough consists of 51.4% of urban land uses by area. Of that urban land use, approximately 42.4% is comprised of medium-density residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 46.7% of High Bridge Borough.

High Bridge Borough contains portions of two subwatersheds (Table 1). There are approximately 7.9 miles of rivers and streams within the municipality; these include the South Branch Raritan River and its tributaries, Willoughby Brook and its tributaries, and several uncoded tributaries. High Bridge Borough is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of High Bridge Borough

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

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

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

Analysis by Municipality

An analysis was completed by municipality. Figure 1 shows High Bridge Borough in relation to the study area. Figure 2 shows the portions of the two HUC14s in High Bridge Borough and

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

For the area of the municipality in the study area, a stormwater facilities analysis was completed (see Figure 5). Two sources were used to identify stormwater facilities. The first data source was the New Jersey Hydrologic Modeling Database (SCS, 2024) that was prepared by the Soil Conservation Districts (SCD) and Rutgers University. The second data source was the NJDEP 2020 land use/land cover GIS Layer. Land use data uses a land use code (1499) to identify stormwater basins. Each stormwater basin was inspected (see Table 4). The detention basins in Table 4 that are already naturalized are identified as type "N". Only a naturalized detention basin was identified in High Bridge Borough within the study area.

The Q-Farms in High Bridge Borough have been identified (see Figure 6). Table 5 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. The Q-Farms in the study area of High Bridge Borough have been identified (see Figure 7 and Table 6). It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 8 illustrates the land use on the Q-Farms, which is summarized in Table 7. There are 28.7 acres of agricultural land use in High Bridge Borough, of which, 20.7 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 7 Q-Farms in the study area portion of High Bridge Borough, totaling 39.8 acres. Within the 7 Q-Farms, there are approximately no acres of agricultural land use.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. One HUC14 is included in the study area (02030105010080). Within this HUC14, there are 62.5 acres of buildings and 95.8 acres of roadway. The Watershed Restoration and Protection Plan recommends managing stormwater runoff from ¼ of 25% of the building rooftops. For the study area within High Bridge Borough, approximately 3.9 acres of rooftop runoff would be managed with 0.78 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within High Bridge Borough, approximately 9.6 acres of roadway would be managed, or 2.6 miles of roadway.

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

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

The Property Class 15 parcels for High Bridge Borough are shown in Figure 9 and presented in Table 8. When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 10). Available information for each parcel in the study area is presented in Table 9. Class 15E parcels were excluded from the assessment. Eleven of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 9 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 11 shows parcels within the entire municipality that offer opportunities to be retrofitted with green infrastructure. These sites are included in the Impervious Cover Reduction Action Plan that was completed by the RCE Water Resources Program for the municipality.

Water Quality Classification

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

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

Saline waters that are not PL are classified under the SWQS as either Saline Estuarine (SE) or Saline Coastal (SC). SE waters are further classified based on their ability to support recreation, shellfish harvesting, and warm water fish species. SE1 waters have the highest protection within the SE category, and must support the maintenance, migration, and propagation of fish and aquatic life, as well as shellfish harvesting. SE2 waters must support the maintenance, migration, and propagation of fish and aquatic life but do not need to support shellfish harvesting. SE3 waters must support the migration of fish but do not need to support permanent aquatic biota populations or shellfish harvesting. Some coastal waters have dual classifications where the waters change from freshwater to saltwater as they drain into the estuary or ocean.

Finally, there are three antidegradation classifications assigned to all New Jersey surface waters. Outstanding National Resource Waters (ONRW) is the most protective classification and applies to all F1 and PL waters. No degradation is permitted in ONRW waters. Category One waters (C1) are protected from any measurable change to existing water quality because of their

exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. Category Two waters (C2) permit some measurable degradation in water quality, but the changes must be limited and justified. C2 is the default classification for all surface waters that are not categorized as F1, PL, or C1.

There are three classifications that apply to the streams in High Bridge Borough. Figure 12 depicts the water quality classifications of surface waters throughout High Bridge Borough and Table 10 summarizes the total miles and percentage of each surface water quality classification in the municipality.

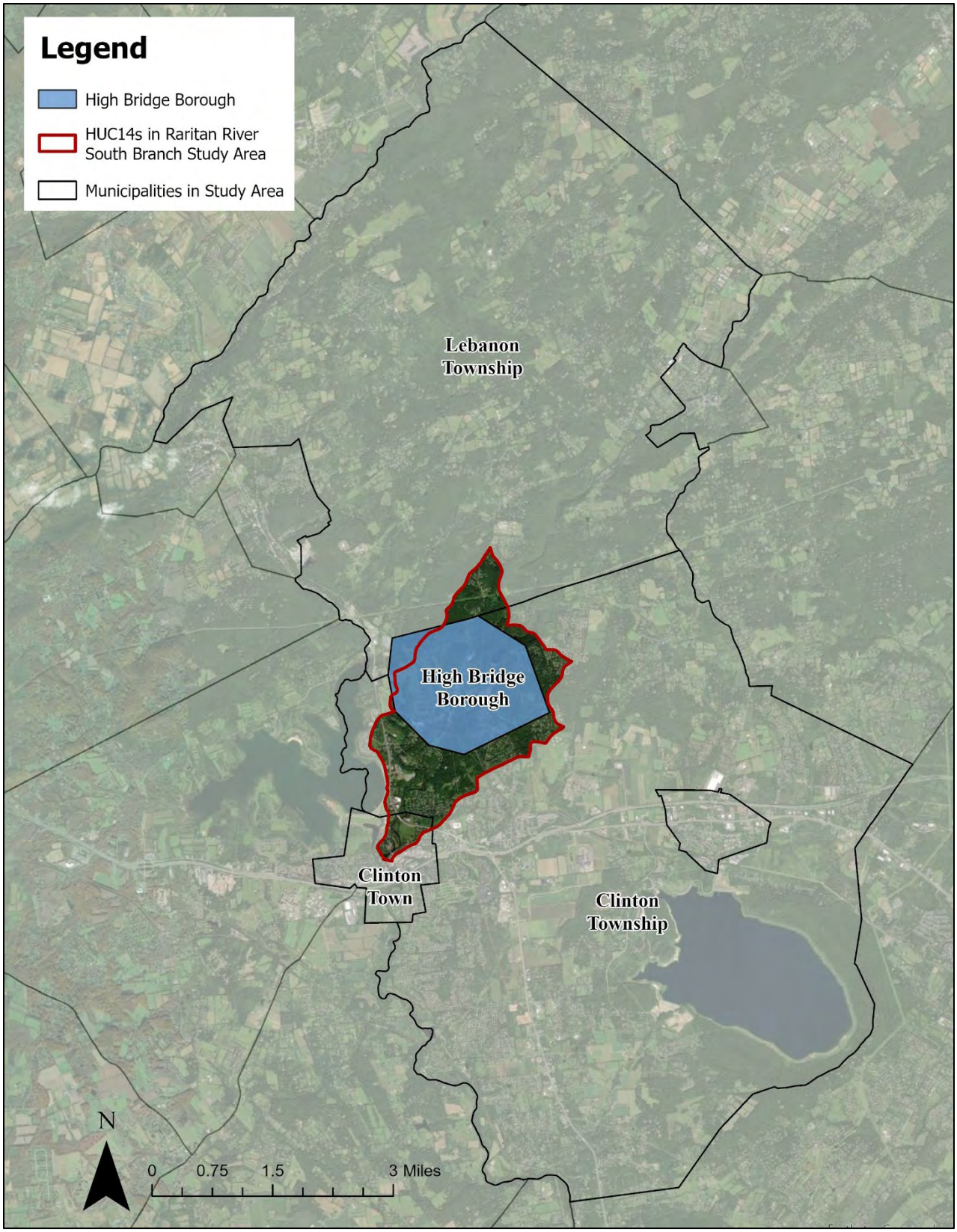


Figure 1: Municipalities in the Study Area

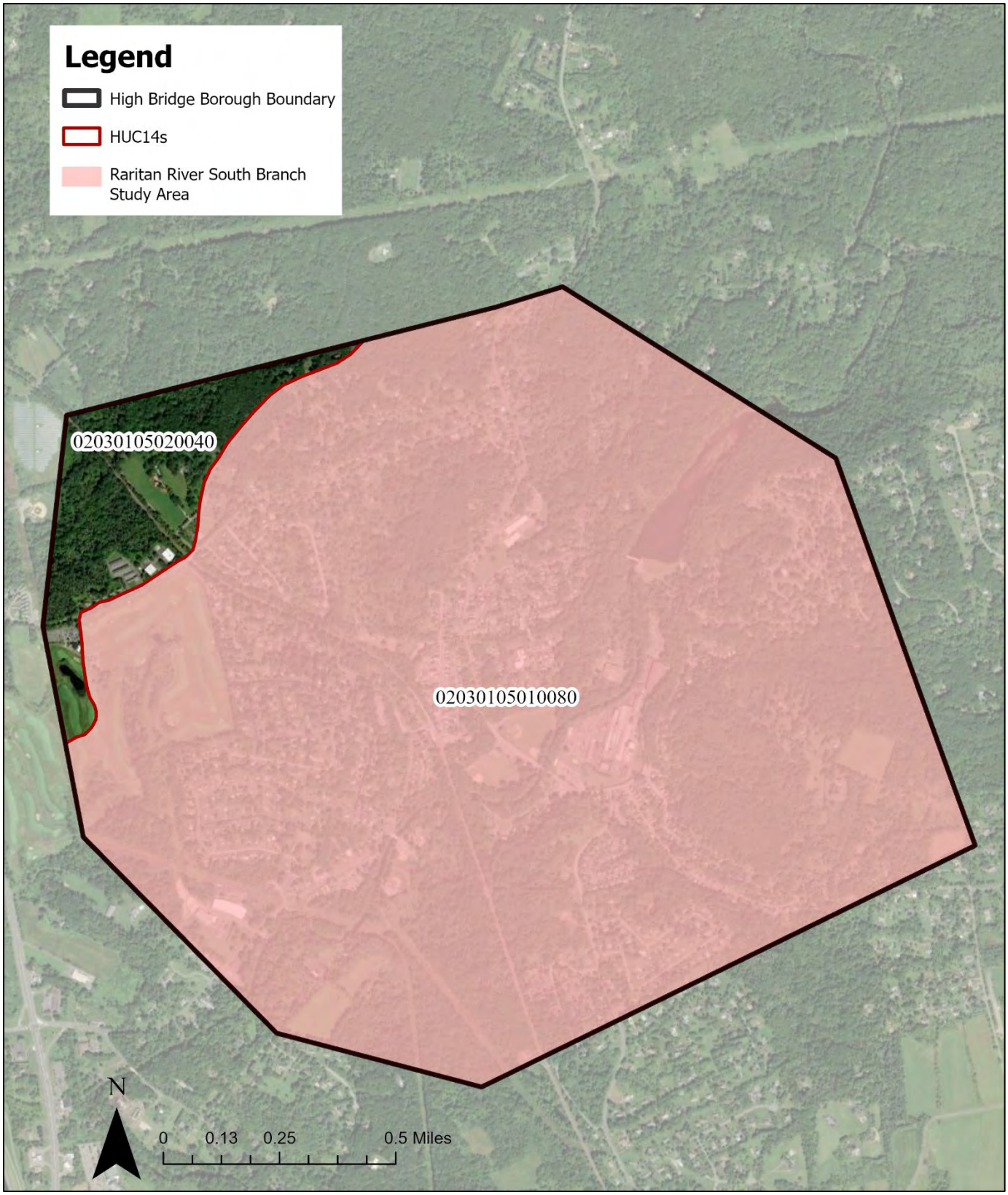


Figure 2: Portions of two HUC14s are in High Bridge Borough

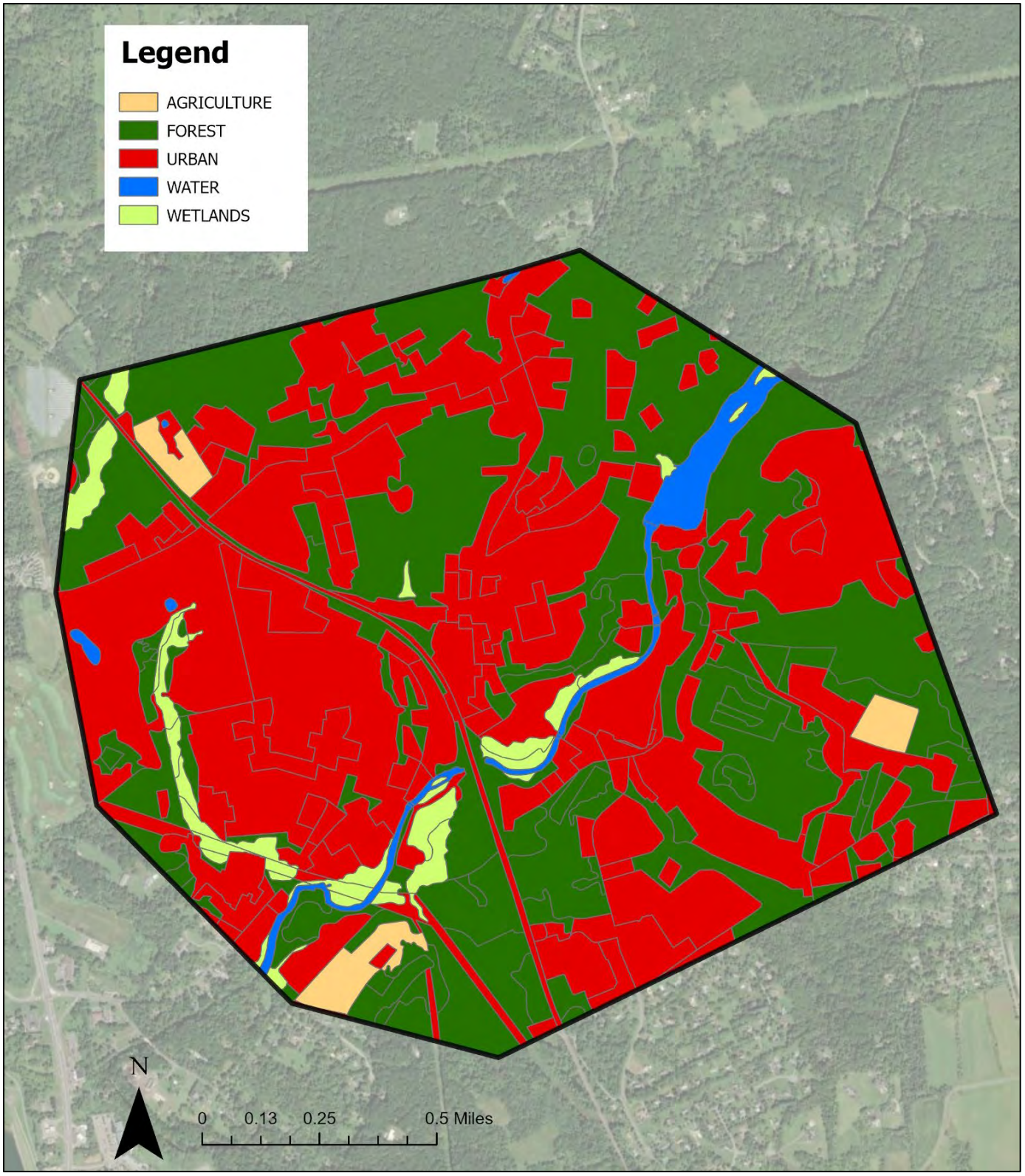


Figure 3: Land Use in High Bridge Borough

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

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

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout High Bridge Borough that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These surfaces include rooftops, roadways, sidewalks, and other paved areas. These impervious cover values were used to estimate the impervious coverage for High Bridge Borough. Based upon the NJDEP impervious surface data, High Bridge Borough has impervious cover totaling 19.4%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in High Bridge Borough is shown in Figure 4.

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

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

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

Based upon this information, High Bridge Borough's impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to not meeting the state's surface water quality standards.

Figure 4: Impervious Cover in High Bridge Borough

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

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

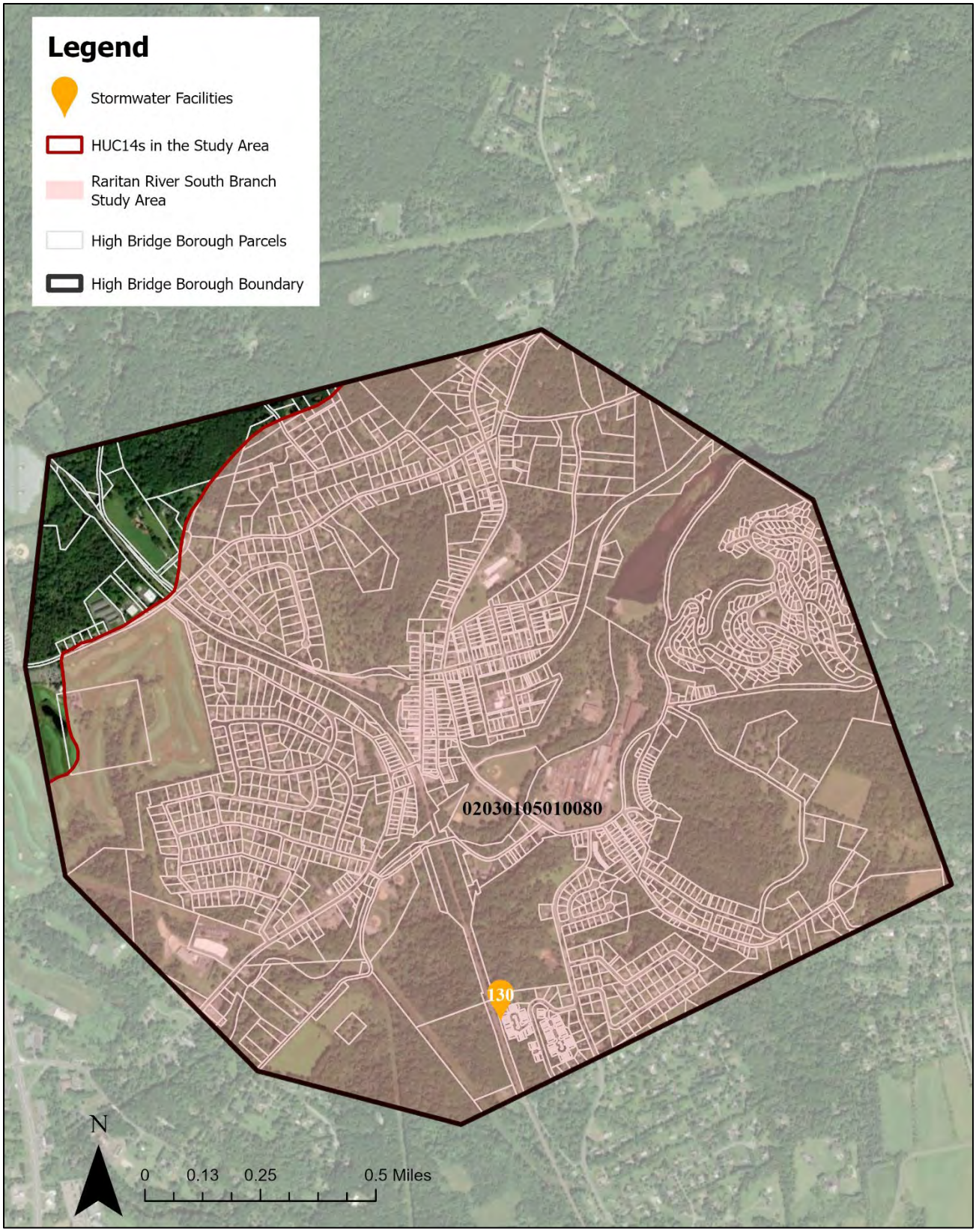


Figure 5: Stormwater Facilities in the Study Area of High Bridge Borough

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

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

"N" = Naturalized

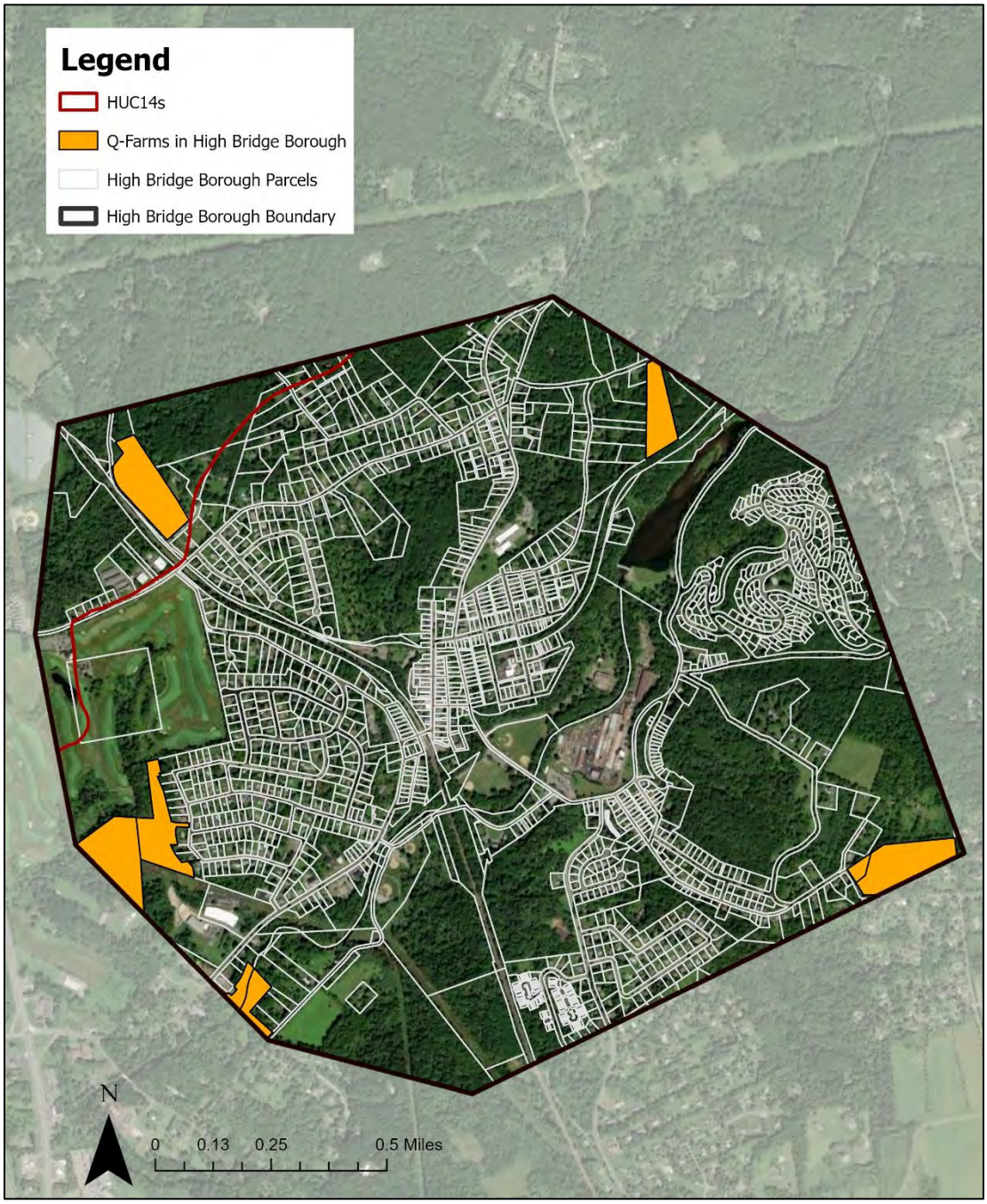


Figure 6: Q-Farm Parcels in High Bridge Borough

Table 5: Q-Farm Parcels in High Bridge Borough

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

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

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

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

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

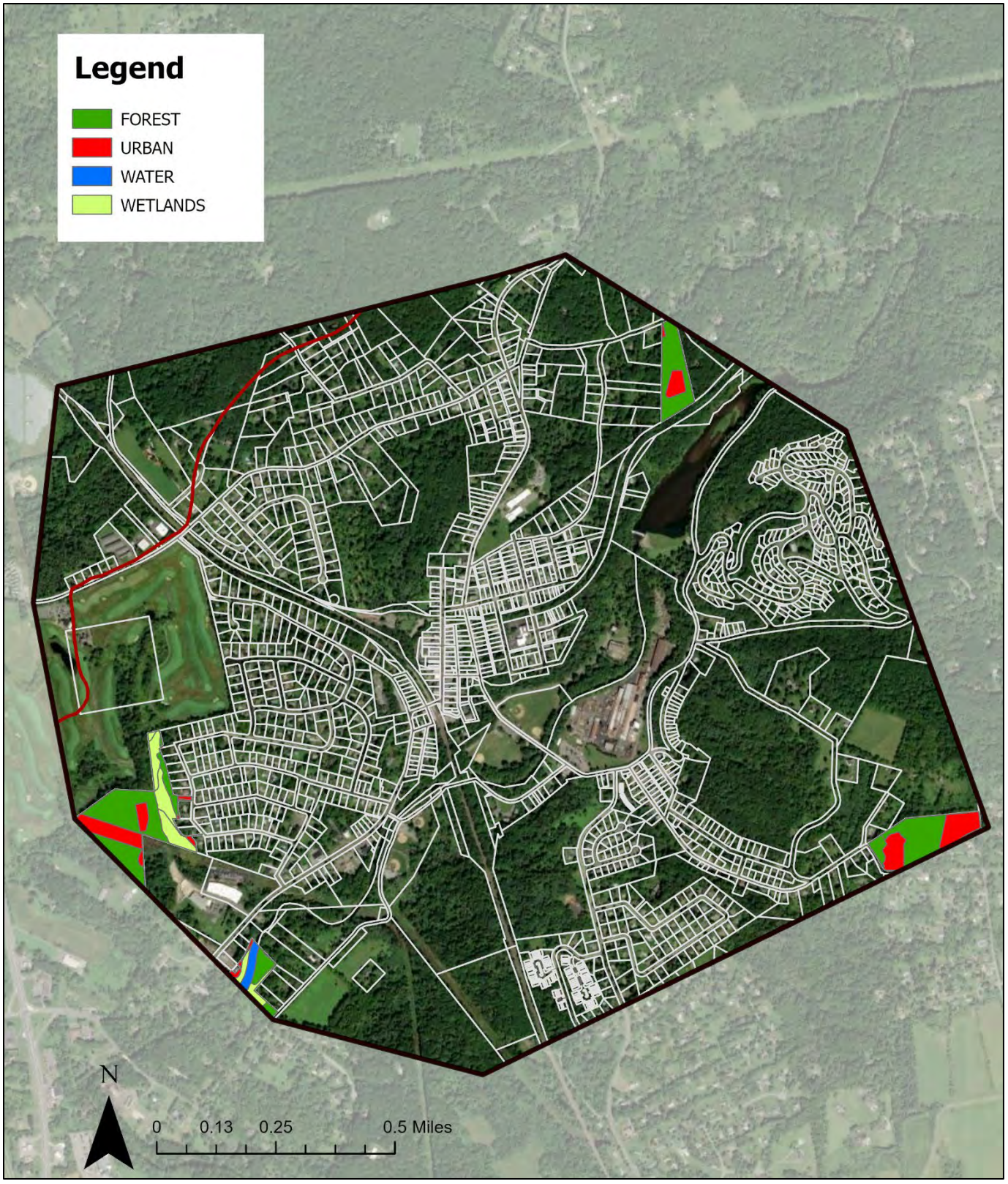


Figure 8: Land Use on Q-Farm Parcels in the Study Area of High Bridge Borough

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

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

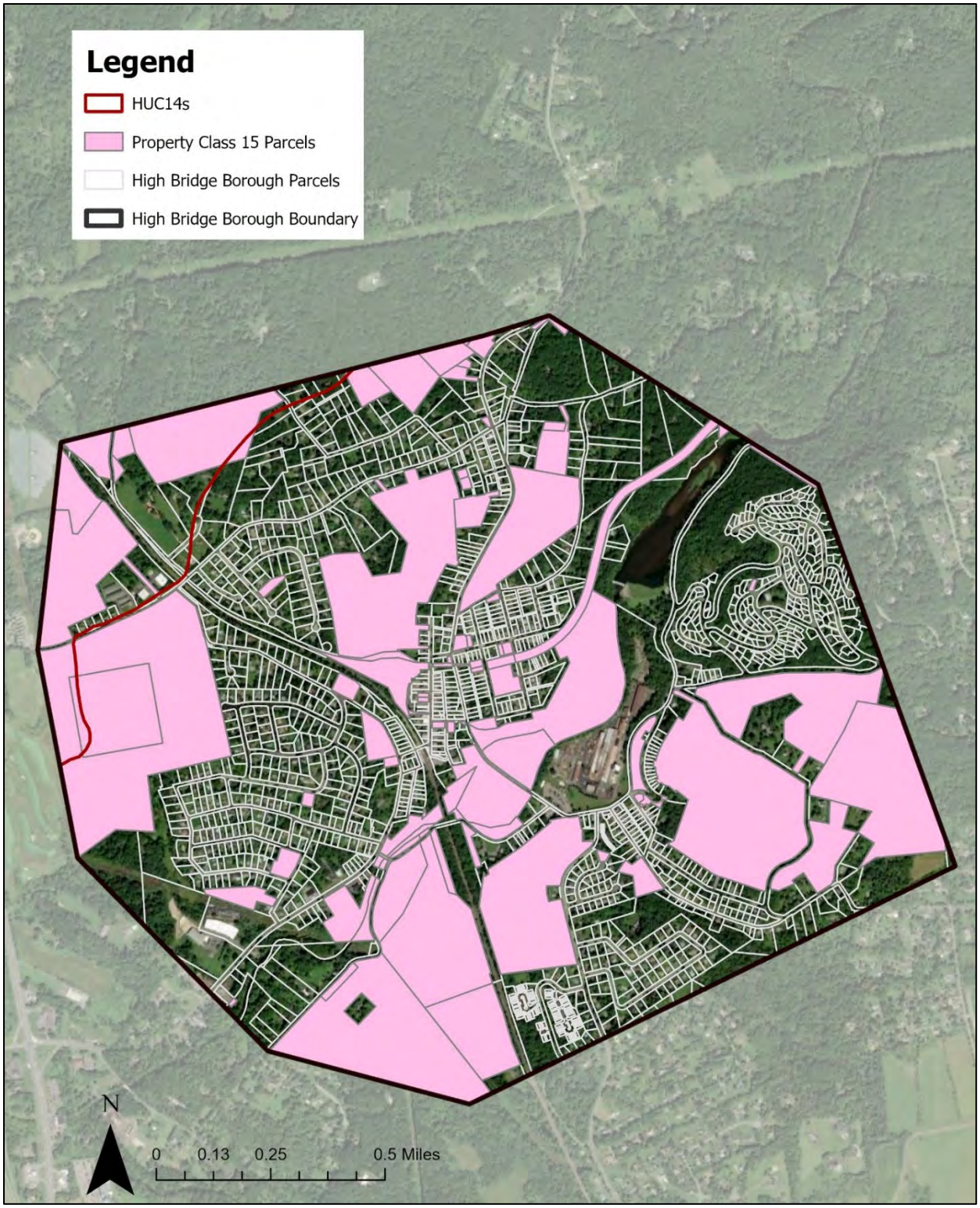


Figure 9: Property Class 15 Parcels in High Bridge Borough

Table 8: Property Class 15 Parcels in High Bridge Borough

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

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

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

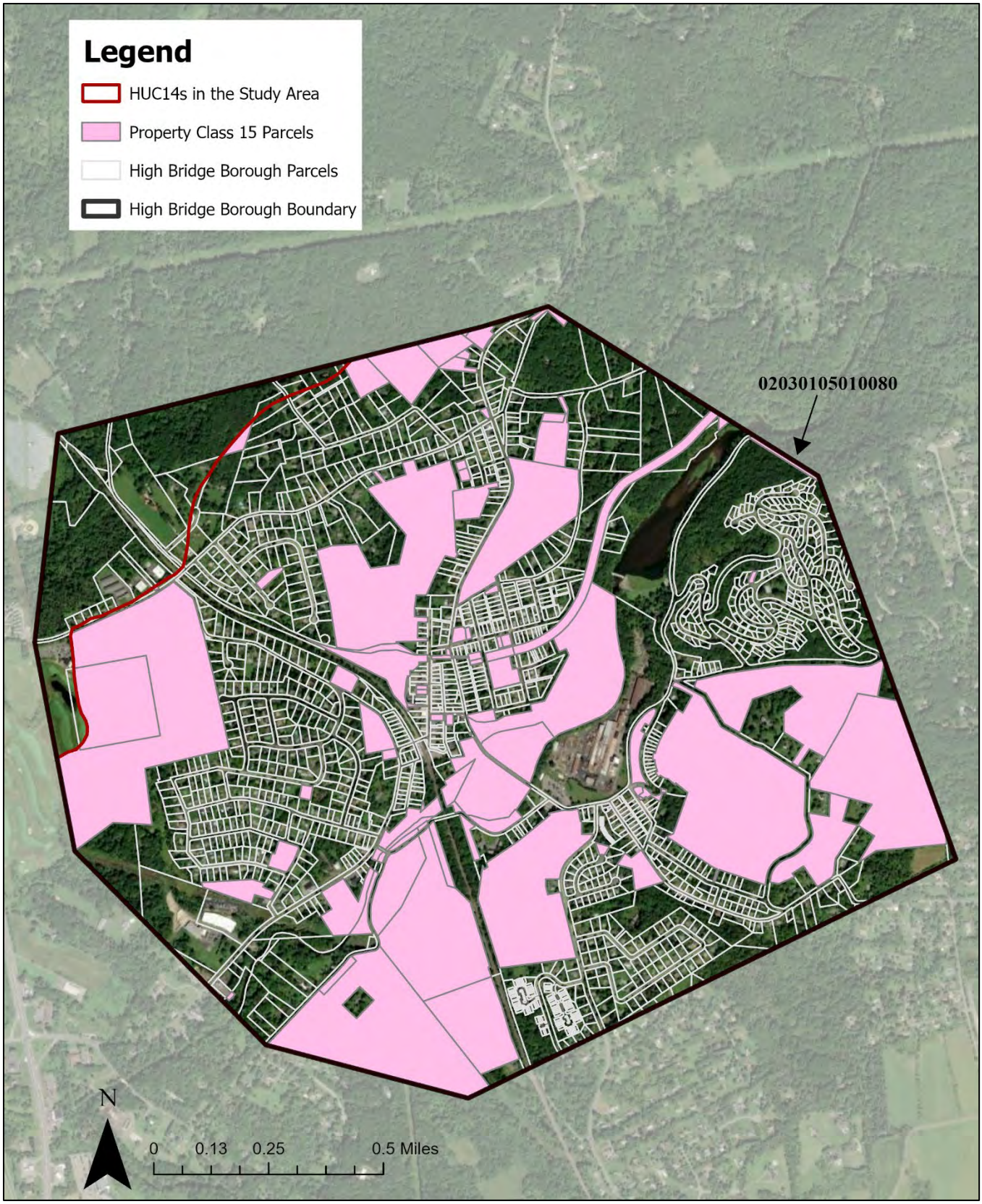


Figure 10: Property Class 15 parcels in the Study Area of High Bridge Borough

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

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

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

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

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

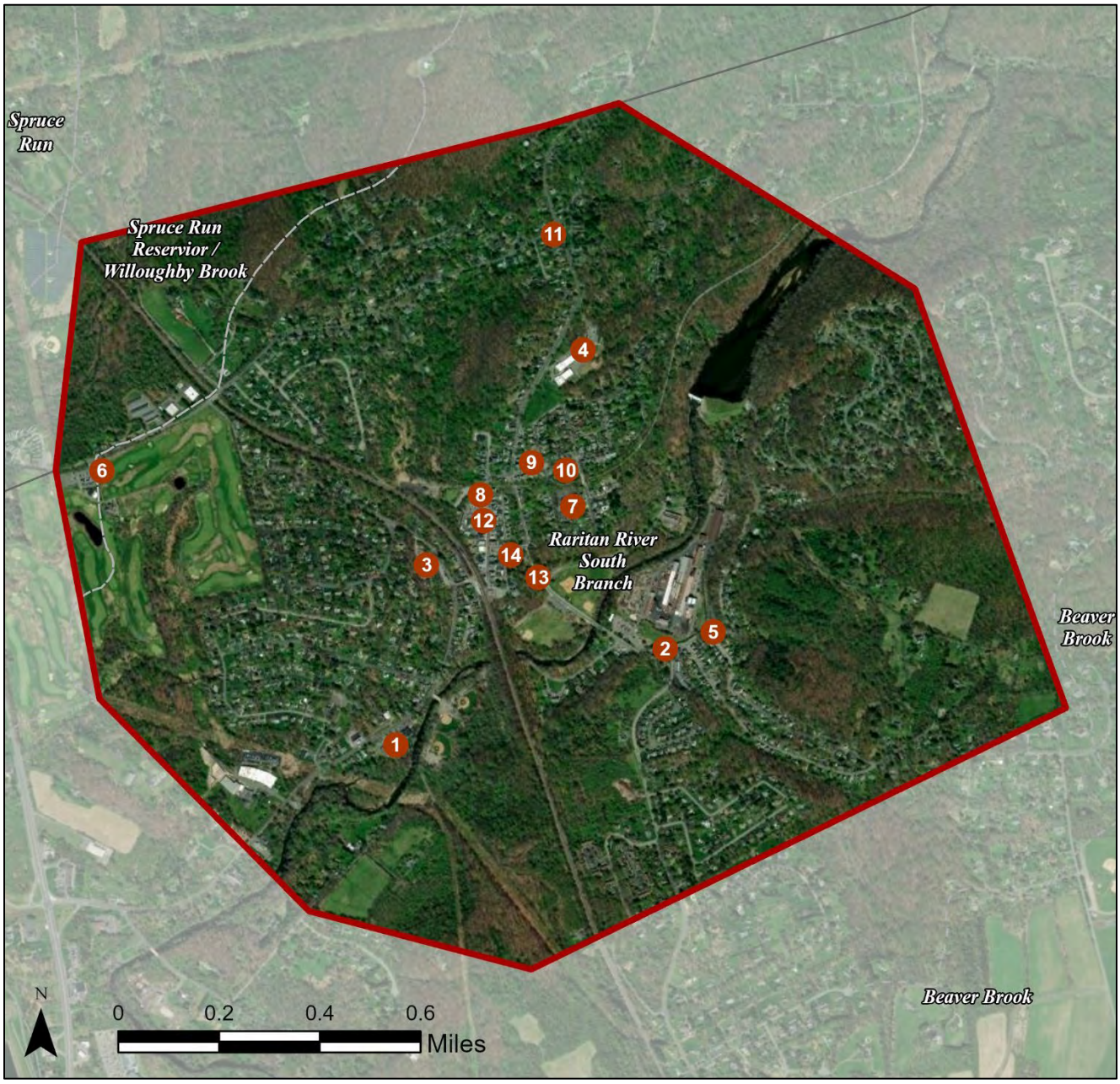


Figure 11: Sites with Green Infrastructure Opportunities in High Bridge Borough

BOROUGH OF HIGH BRIDGE MUNICIPAL BUILDINGS

RAP ID: 1

Subwatershed: Raritan River South Branch

Site Area: 233,539 sq. ft.

Address: 97 West Main Street
High Bridge, NJ 08829

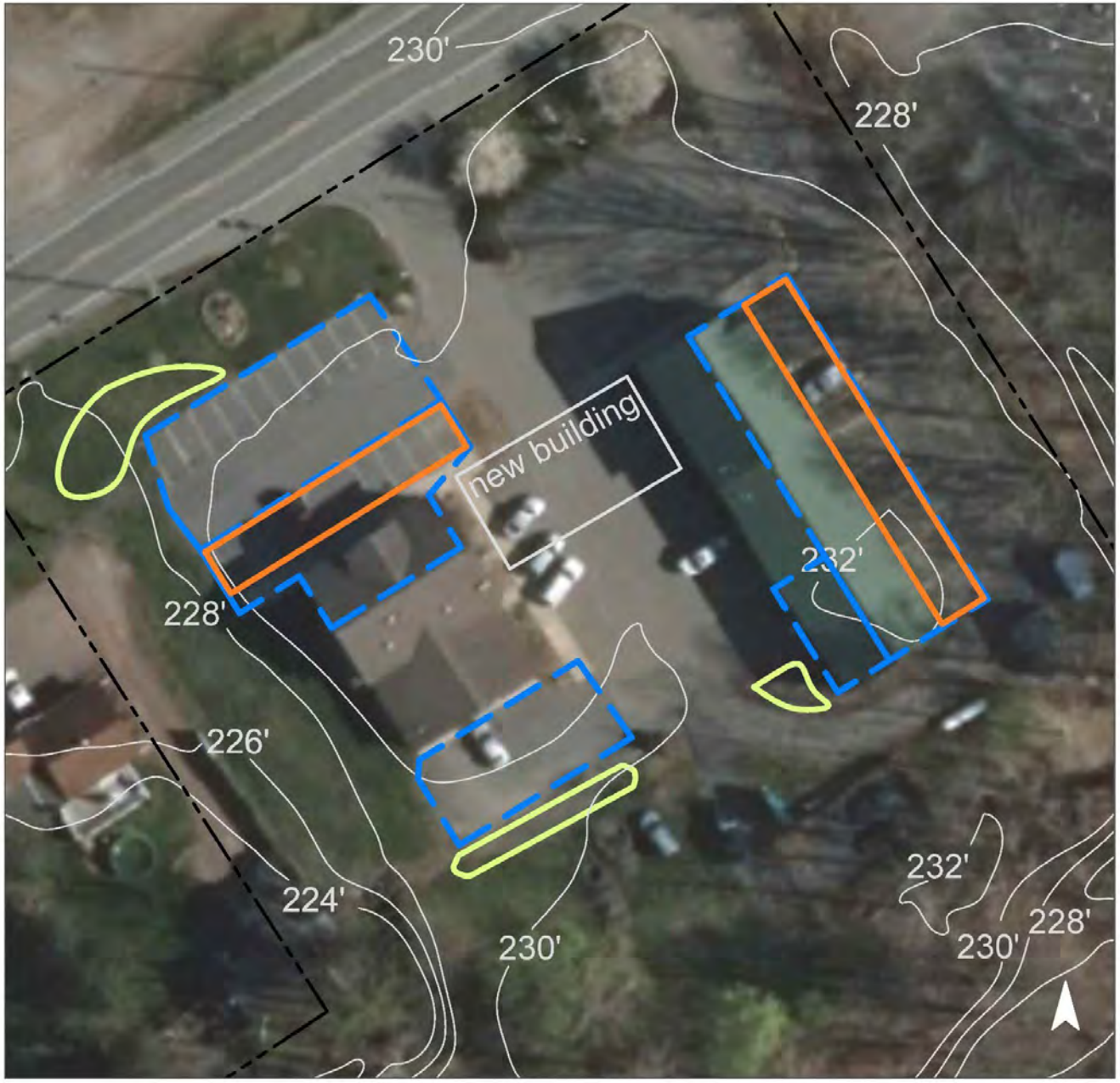
Block and Lot: Block 30, Lot 12

Parking spaces in the parking lot to the north and east of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot and downspouts. Porous pavements can support parked vehicles while allowing stormwater to infiltrate and have an underlying stone layer to store and slowly release captured stormwater into the ground. Rain gardens can be installed in the turfgrass areas adjacent to the parking lot areas to capture additional stormwater runoff from the parking lot. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
23	53,215	2.6	26.9	244.3	0.041	1.46

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.172	29	13,030	0.50	1,650	$8,250
Pervious pavement	0.206	35	15,630	0.60	3,925	$98,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Borough of High Bridge
Municipal Buildings

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

0 50' 100'

EAST MAIN STREET ALLEYWAY

RAP ID: 2

Subwatershed: Raritan River South Branch

Site Area: 121,730 sq. ft.

Address: Washington Avenue
High Bridge, NJ 08829

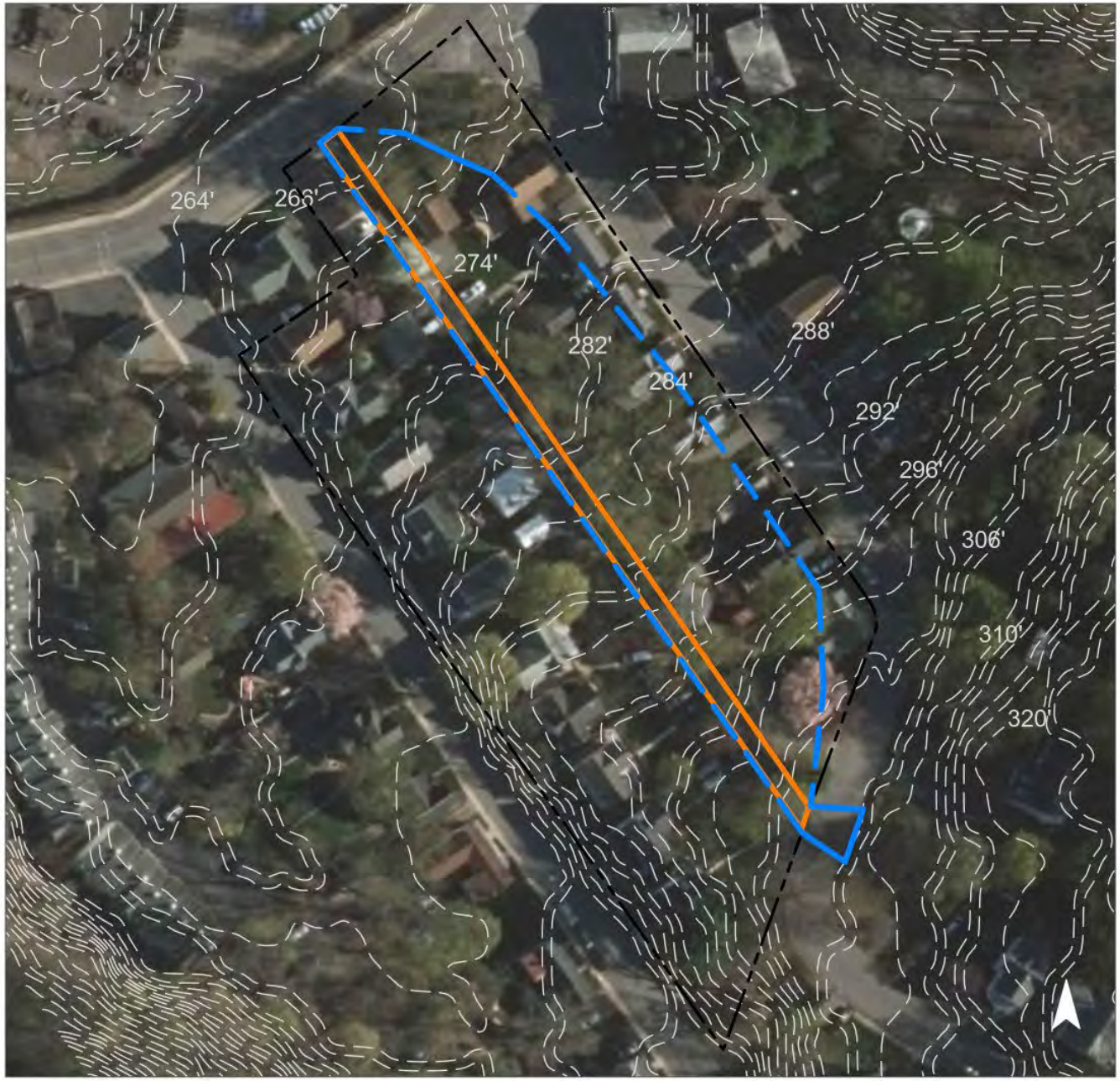
Block and Lot: Block 36, Lots 2-19 & 21

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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	1.409	236	106,770	4.13	8,240	$206,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



East Main Street Alleyway

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

0 50' 100'

HIGH BRIDGE DEPARTMENT OF WORKS

RAP ID: 3

Subwatershed: Raritan River South Branch

Site Area: 139,031 sq. ft.

Address: 26 Main Street
High Bridge, NJ 08829

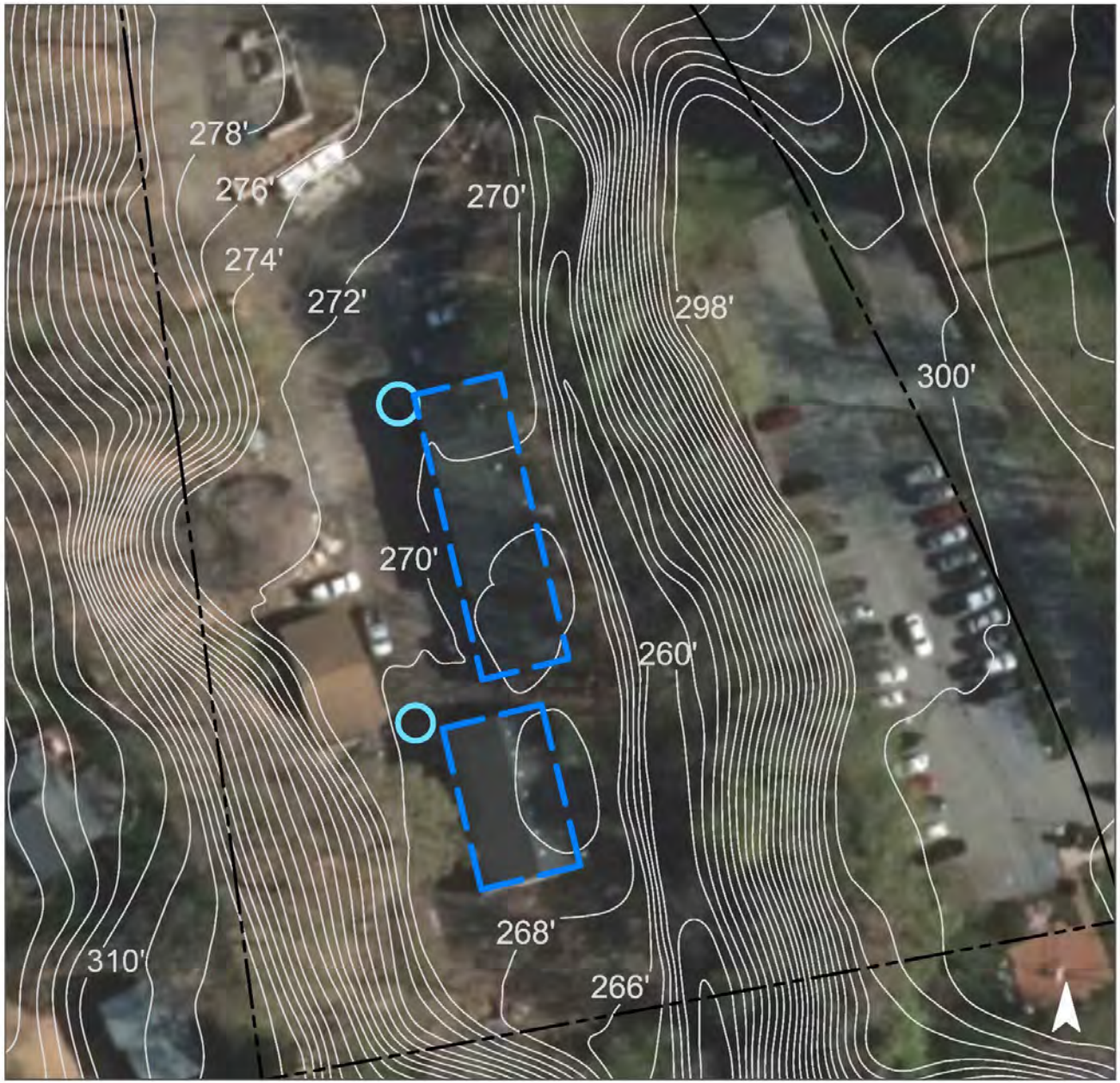
Block and Lot: Block 25
Lot 1

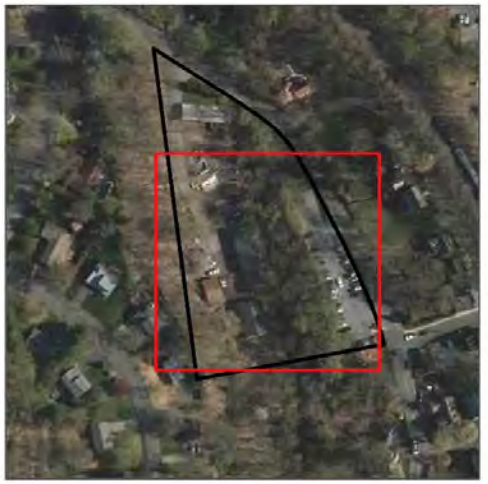
Downspouts on the garages at the High Bridge Department of Works can be connected to cisterns to harvest rainwater from the rooftops. Collected rainwater from the cisterns can then be used for washing public works vehicles as part of a green car wash or be used to water landscaping. A preliminary soil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

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

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

GREEN INFRASTRUCTURE RECOMMENDATIONS





High Bridge
Department of Works

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

0 30' 60'

HIGH BRIDGE ELEMENTARY SCHOOL

RAP ID: 4

Subwatershed: Raritan River South Branch

Site Area: 983,059 sq. ft.

Address: 40 Fairview Avenue
High Bridge, NJ 08829

Block and Lot: Block 15, Lot 19

A rain garden can be installed in the turfgrass area near the garden shed and another near the rear parking lot to capture, treat, and infiltrate stormwater runoff from the roof and parking lot. Parking spaces can be converted to porous pavement to intercept water before reaching nearby catch basins. A small cistern could be installed on the shed to collect water for use in watering the garden. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
20	197,850	9.5	99.9	908.4	0.154	5.43

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.083	14	6,270	0.24	800	$4,000
Pervious pavement	0.791	132	59,940	2.32	6,700	$167,500
Rainwater harvesting	0.013	2	400	0.02	400 (gal)	$800

GREEN INFRASTRUCTURE RECOMMENDATIONS

High Bridge Elementary School

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

0 50' 100'

HIGH BRIDGE FIRE DEPARTMENT

RAP ID: 5

Subwatershed: Raritan River South Branch

Site Area: 132,142 sq. ft.

Address: 7 Maryland Avenue
High Bridge, NJ 08829

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

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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.043	7	3,250	0.13	900	$22,500
Rainwater harvesting	0.073	12	2,200	0.08	2,200 (gal)	$4,400

GREEN INFRASTRUCTURE RECOMMENDATIONS

High Bridge Fire Department

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

0 15' 30'

HIGH BRIDGE GOLF CLUB

RAP ID: 6

Subwatershed: Raritan River South Branch

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

Address: 203 Cregar Road
High Bridge, NJ 08829

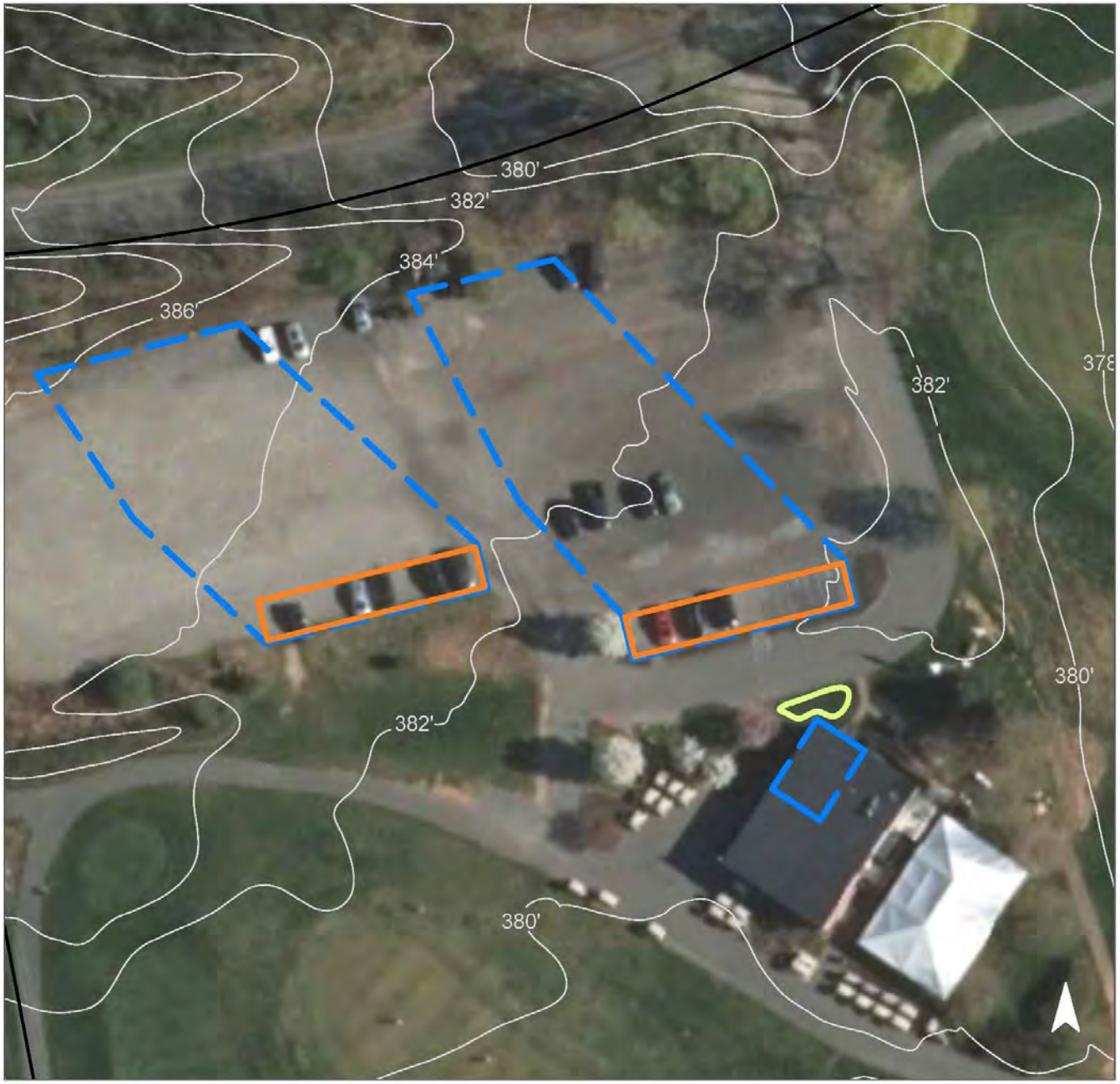
Block and Lot: Block 20, Lots 1 & 1.01

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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.019	3	1,440	0.06	185	$925
Pervious pavement	0.473	79	35,810	1.38	3,240	$81,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Golf Club

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

0 30' 60'

HIGH BRIDGE MIDDLE SCHOOL

RAP ID: 7

Subwatershed: Raritan River South Branch

Site Area: 96,239 sq. ft.

Address: 50 Thomas Street
High Bridge, NJ 08829

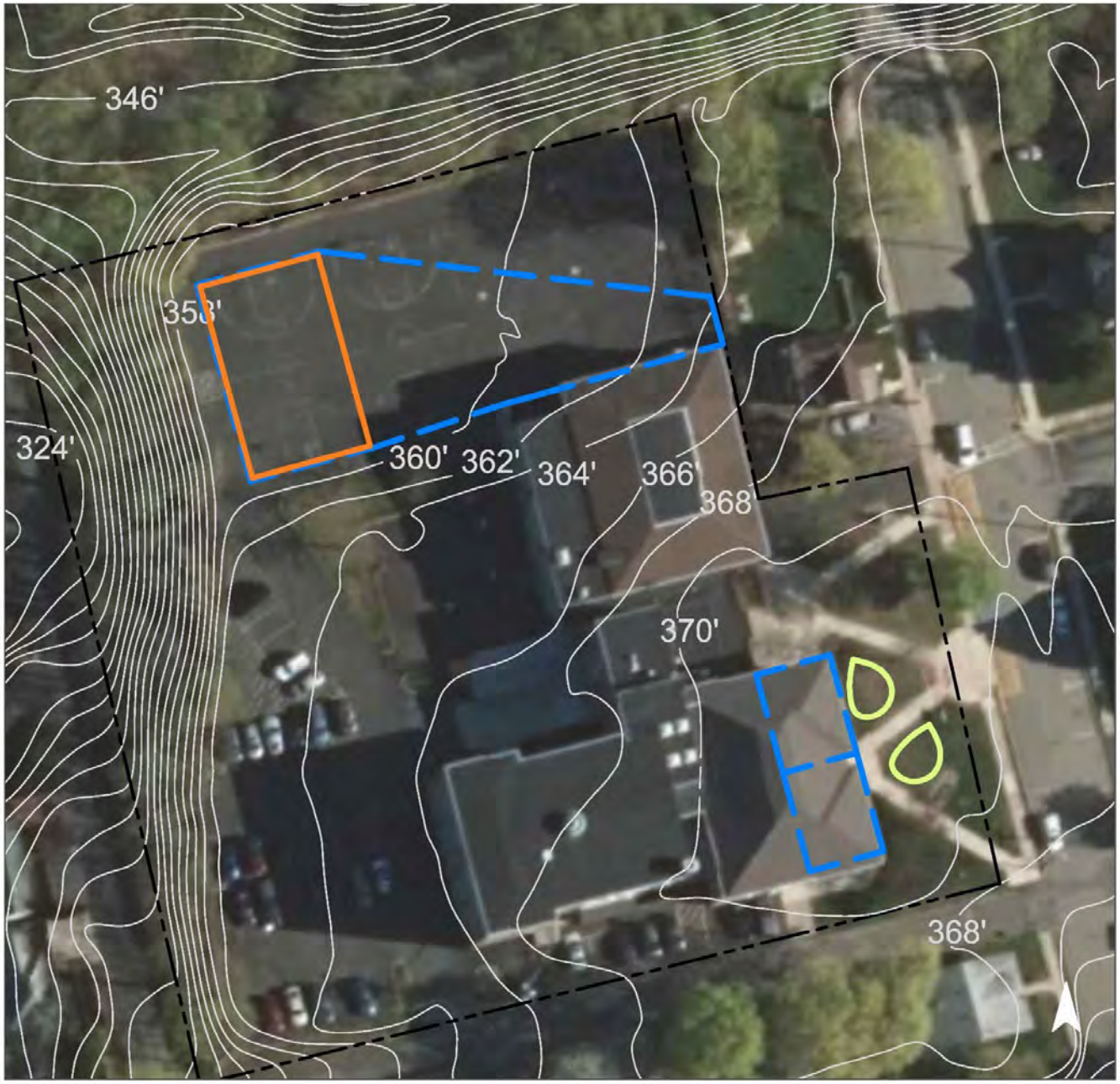
Block and Lot: Block 4.05, Lot 57

Rain gardens can be installed on the front lawn of the school to capture, filter, and infiltrate rainwater from the rooftop by redirecting downspouts into them. The blacktop playground area could be partially or fully repaved with pervious pavement to capture additional stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
72	69,508	3.4	35.1	319.1	0.054	1.91

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Middle School

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

0 30' 60'

HIGH BRIDGE PUBLIC LIBRARY

RAP ID: 8

Subwatershed: Raritan River South Branch

Site Area: 13,154 sq. ft.

Address: 71 Main Street
High Bridge, NJ 08829

Block and Lot: Block 19.02, Lot 81

A rain barrel could be installed at one of the downspouts to collect rainwater to be used for watering the plants at the front of the building. A rain garden could be installed adjacent to the neighboring shed if the homeowner gives permission to redirect their gutter into it. The parking space could be repaved with porous asphalt to capture a majority of the parking lot's runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
78	10,299	0.5	5.2	47.3	0.008	0.28

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.005	1	400	0.02	50	$250
Pervious pavement	0.107	18	8,150	0.31	1,400	$35,000
Rainwater harvesting	0.002	0	55	0.00	55 (gal)	$250

GREEN INFRASTRUCTURE RECOMMENDATIONS

High Bridge Public Library

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

0 15' 30'

HIGH BRIDGE REFORMED CHURCH

RAP ID: 9

Subwatershed: Raritan River South Branch

Site Area: 32,614 sq. ft.

Address: 23 Church Street
High Bridge, NJ 08829

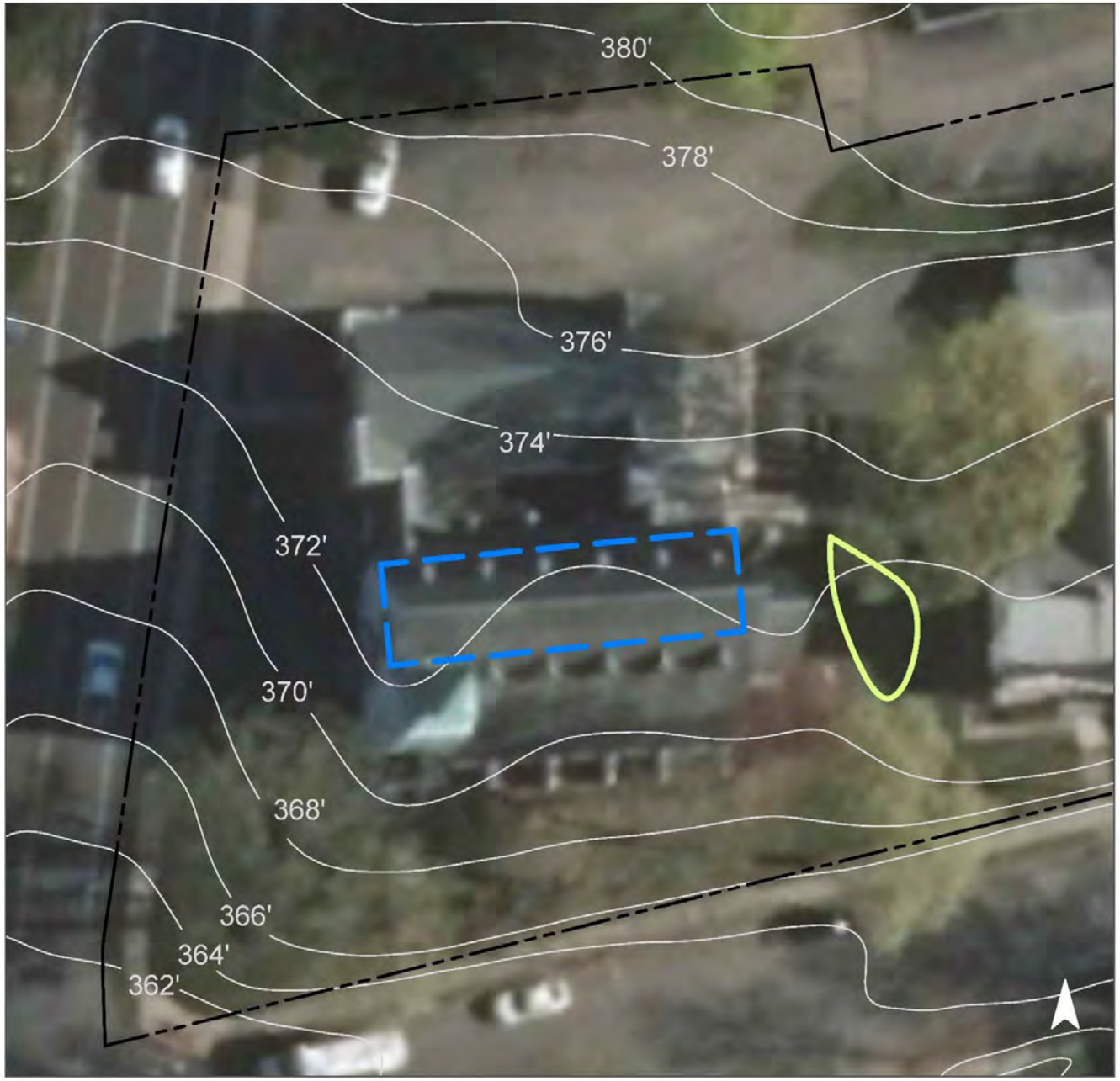
Block and Lot: Block 11, Lots 6 & 7

A rain garden to the east the church can be installed to capture, filter, and infiltrate roof runoff. The garden will also provide aesthetic value to the property, attract natural pollinators, and create an education experience. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
74	23,993	1.2	12.1	110.2	0.019	0.66

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



High Bridge Reformed Church

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

0 15' 30'

HIGH BRIDGE UNITED METHODIST CHURCH

RAP ID: 10

Subwatershed: Raritan River South Branch

Site Area: 20,876 sq. ft.

Address: 36 Church Street
High Bridge, NJ 08829

Block and Lot: Block 4.03, Lots 3 & 4

A rain garden can be installed to the west of the church to capture, treat, and infiltrate stormwater from the rooftop. The garden will provide aesthetic value to the property, attract natural pollinators, and create an education experience. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
61	12,632	0.6	6.4	58.0	0.010	0.35

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

GREEN INFRASTRUCTURE RECOMMENDATIONS

High Bridge United Methodist Church

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

0 15' 30'

HILLTOP DELI & CATERING

RAP ID: 11

Subwatershed: Raritan River South Branch

Site Area: 7,042 sq. ft.

Address: 115 Fairview Avenue
High Bridge, NJ 08829

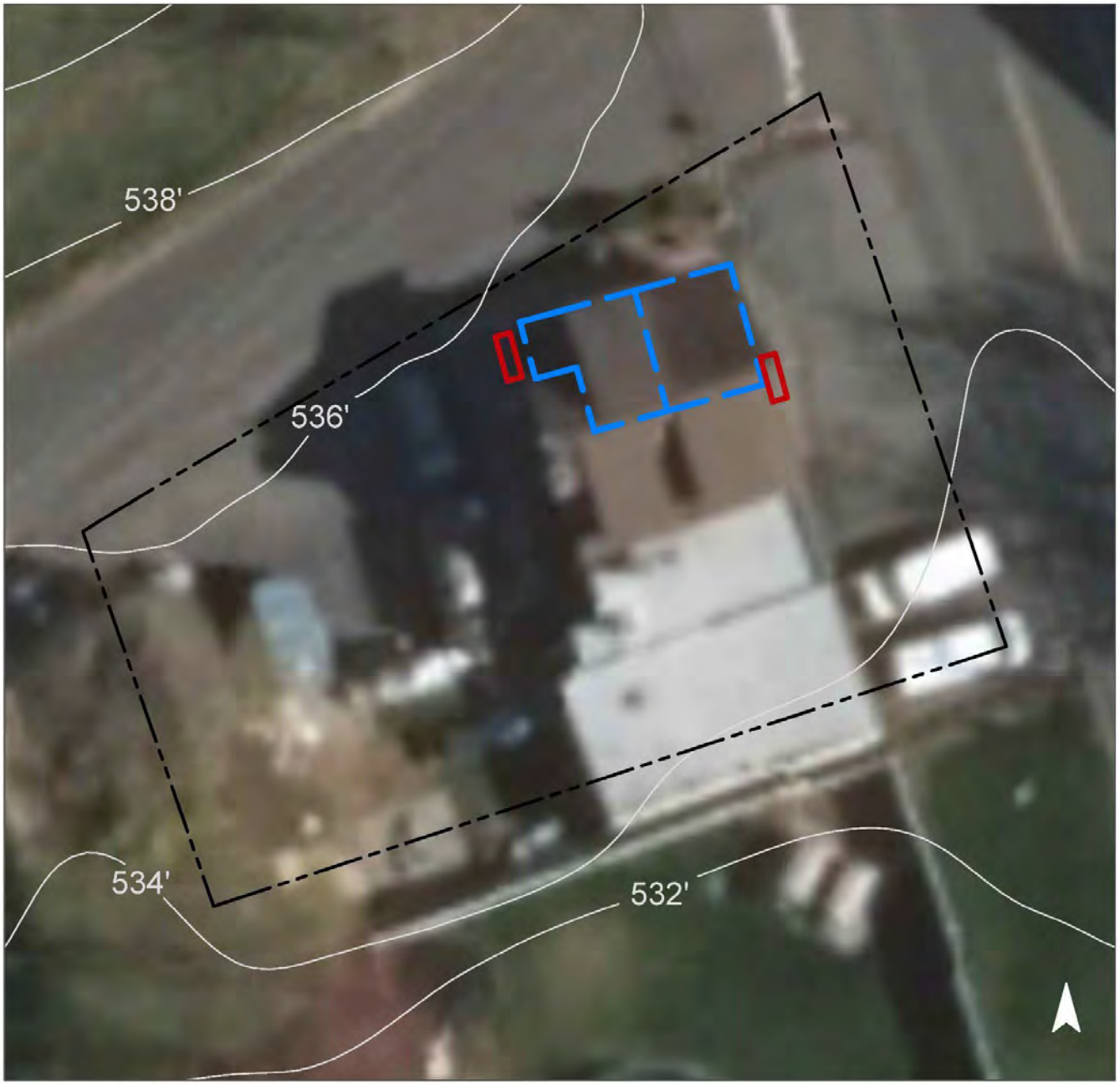
Block and Lot: Block 17, Lot 1

Downspout planter boxes can be installed at the downspouts of the building. Downspout planter boxes are constructed at the base of downspouts with plants that will utilize rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
42	2,992	0.1	1.5	13.7	0.002	0.08

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size	Estimated Cost
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hilltop Deli & Catering

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

0 10' 20'

ST. JOSEPH CHURCH

RAP ID: 12

Subwatershed: Raritan River South Branch

Site Area: 20,531 sq. ft.

Address: 59 Main Street
High Bridge, NJ 08829

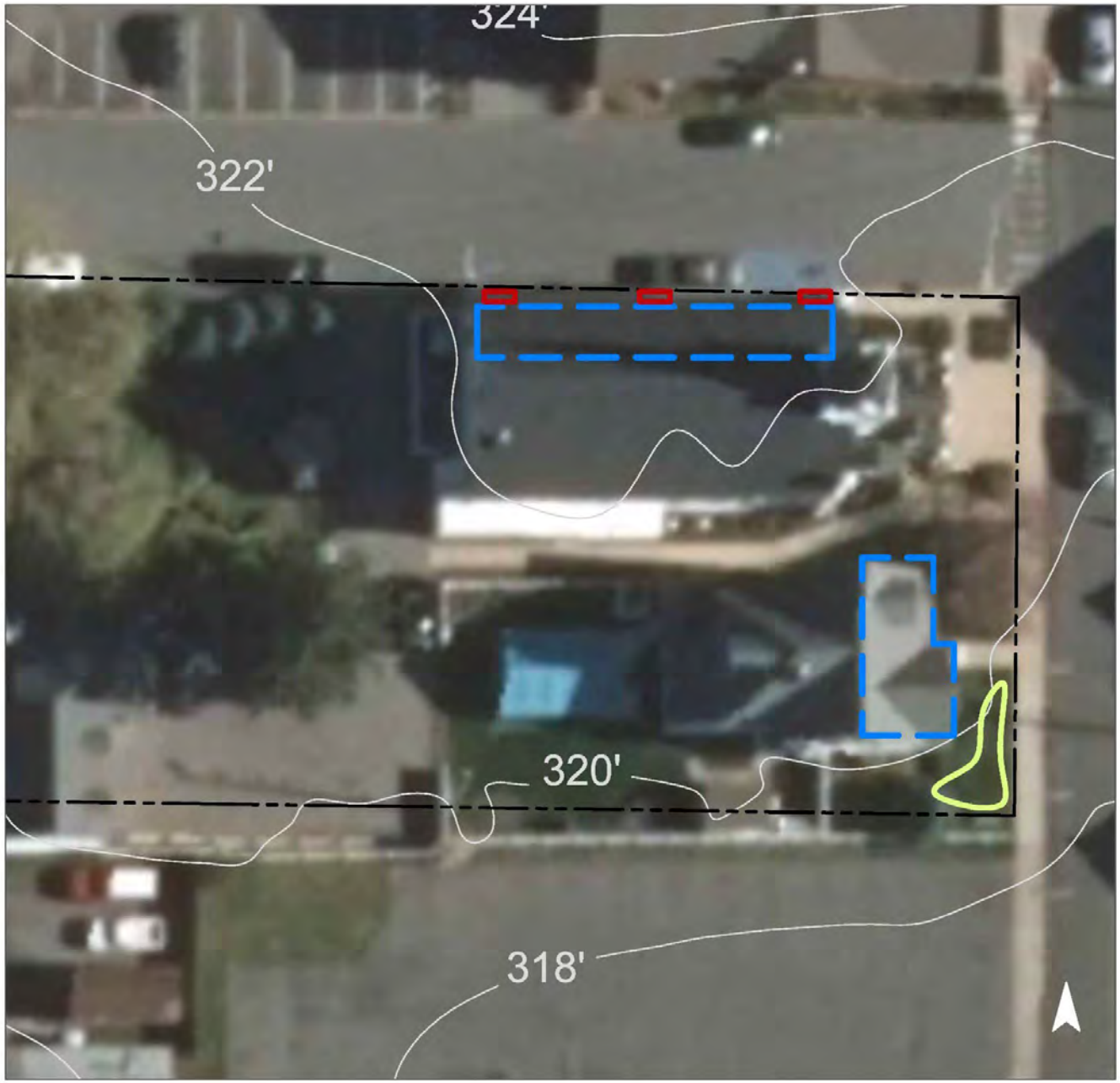
Block and Lot: Block 19.03, Lots 83, 83.01, 83.02

The downspouts along the north side of the building can be rerouted into downspout planter boxes to filter roof runoff. A small rain garden can be installed at the front of the building by redirecting downspouts into it. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
81	16,683	0.8	8.4	76.6	0.013	0.46

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.015	2	1,110	0.04	140	$700
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Joseph Church

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

0 15' 30'

UNION FORGE PARK

RAP ID: 13

Subwatershed: Raritan River South Branch

Site Area: 311,670 sq. ft.

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

Block and Lot: Block 4.06, Lot 34.01

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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.193	32	14,610	0.56	1,850	$9,250
Pervious pavement	0.390	65	29,510	1.14	2,800	$70,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Union Forge Park

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

0 30' 60'

UNITED STATES POSTAL SERVICE

RAP ID: 14

Subwatershed: Raritan River South Branch

Site Area: 10,090 sq. ft.

Address: 10 McDonald Street
High Bridge, NJ 08829

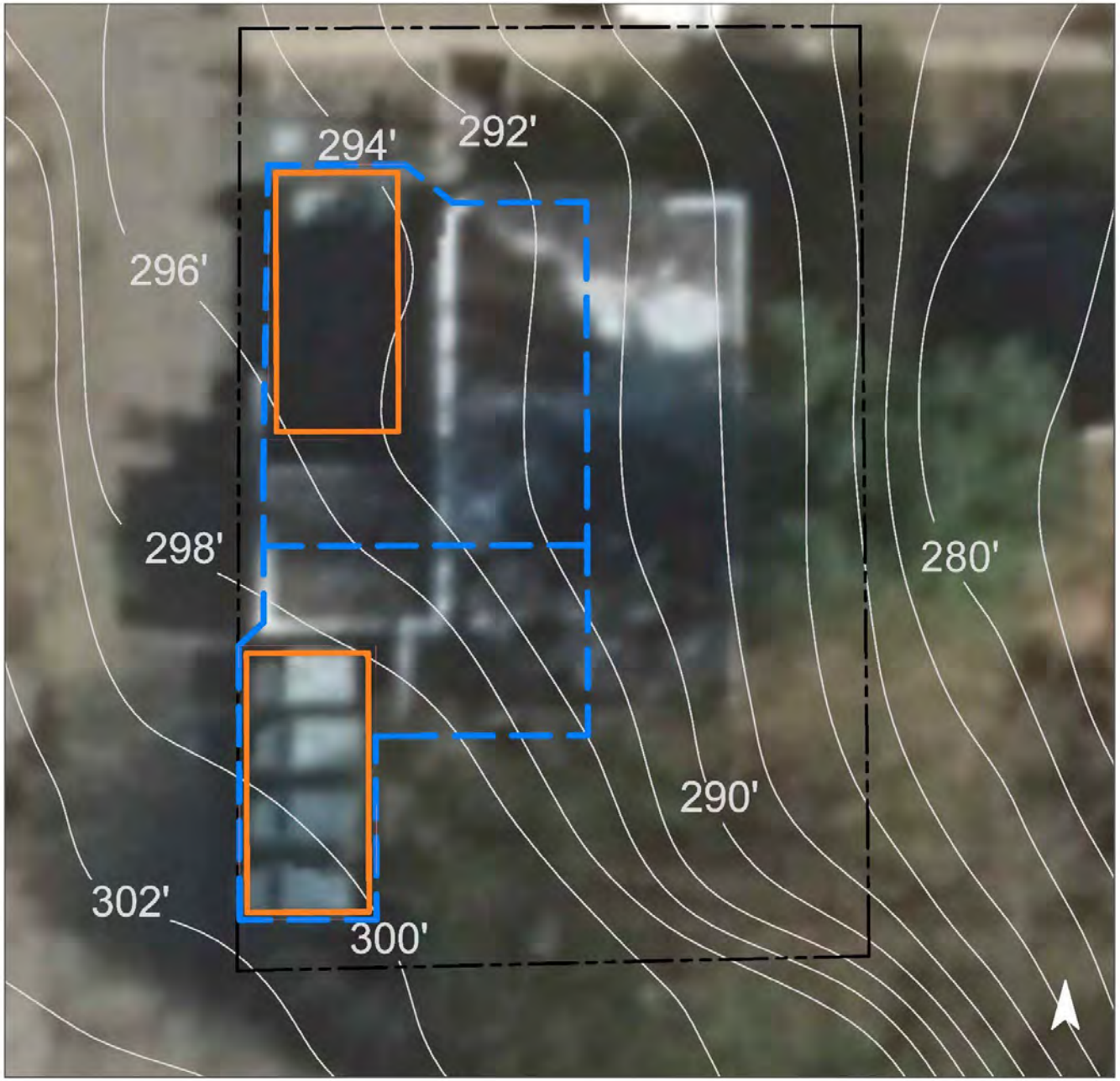
Block and Lot: Block 29.02, Lot 5

The parking spaces to the north and south of the building can be converted into porous pavement. Porous pavement will allow water directed from the rooftop to pass through where it is stored and allowed to infiltrate into the ground. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
72	7,228	0.3	3.7	33.2	0.006	0.20

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



United States Postal Service

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

0 10' 20'

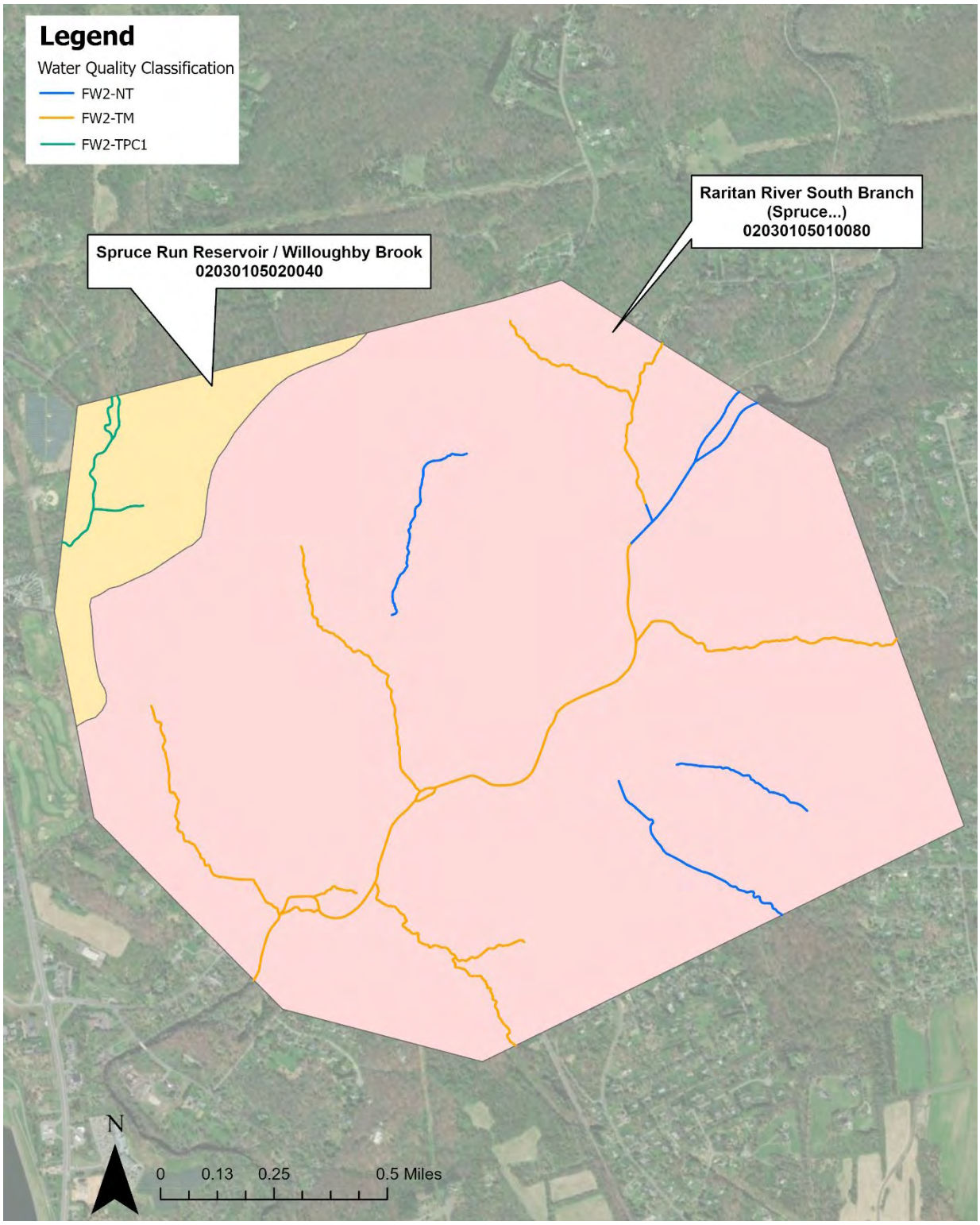


Figure 12. Water Quality Classification of Surface Waters in High Bridge Borough

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

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

Lebanon Township

Introduction

Located in Hunterdon County in New Jersey, Lebanon Township covers about 31.7 square miles. With a population of 6,195 (2020 United States Census), Lebanon Township consists of 20.1% of urban land uses by area. Of that urban land use, approximately 73.1% is comprised of rural residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 63.2% of Lebanon Township.

Lebanon Township contains portions of eleven subwatersheds (Table 1). There are approximately 78.0 miles of rivers and streams within the municipality; these include Beatty's Brook and its tributaries, Guinea Hollow Brook, Hickory Run and its tributaries, Little Brook and its tributaries, Musconetcong River and its tributaries, Rocky Run and its tributaries, South Branch Raritan River and its tributaries, Spruce Run and its tributaries, Teetertown Brook and its tributaries, Willoughby Brook and its tributaries, and several uncoded tributaries. Lebanon 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 Lebanon Township

Subwatershed	HUC14
Raritan River South Branch (Califon bridge to Long Valley)	02030105010060
Raritan River South Branch (Stone Mill gage to Califon)	02030105010070
Raritan River South Branch (Spruce Run to Stone Mill gage)	02030105010080
Spruce Run (above Glen Gardner)	02030105020010
Spruce Run (Reservoir to Glen Gardner)	02030105020020
Spruce Run Reservoir / Willoughby Brook	02030105020040
Beaver Brook (Clinton)	02030105020050
Rockaway Creek (above McCrea Mills)	02030105050080
Musconetcong River (Changewater to Hances Brook)	02040105160020

Musconetcong River (Route 31 to Changewater)	02040105160030
Musconetcong River (75d 00m to Route 31)	02040105160040

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

The Q-Farms in Lebanon 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 Lebanon 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 3,336.5 acres of agricultural land use in Lebanon Township, of which, 933.8 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 90 Q-Farms and portions of 18 Q-Farms in the study area portion of Lebanon Township, totaling 2,146.5 acres. Within the 90 Q-Farms and portions of 18 Q-Farms, there are approximately 724.9 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 Lebanon 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. Three HUC14s are included in the study area (02030105010060, 02030105010070, 02030105010080). Within these three HUC14s, there are 66.8 acres of buildings and 144.8 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 Lebanon Township, approximately 4.2 acres of rooftop runoff would be managed with 0.84 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Lebanon Township, approximately 14.5 acres of roadway would be managed, or 4.0 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

The Property Class 15 parcels for Lebanon 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. Six 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 four classifications that apply to the streams in Lebanon Township. Figure 13 depicts the water quality classifications of surface waters throughout Lebanon 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 Lebanon Township have identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. The lawns in front of Bunnvale Library and several houses have been reported to flood following storm events. Several locations along Raritan River Road and Musconetcong River Road have also been observed to flood frequently, posing risks to public safety. Figure 14 shows the locations of the aforementioned areas of concern.

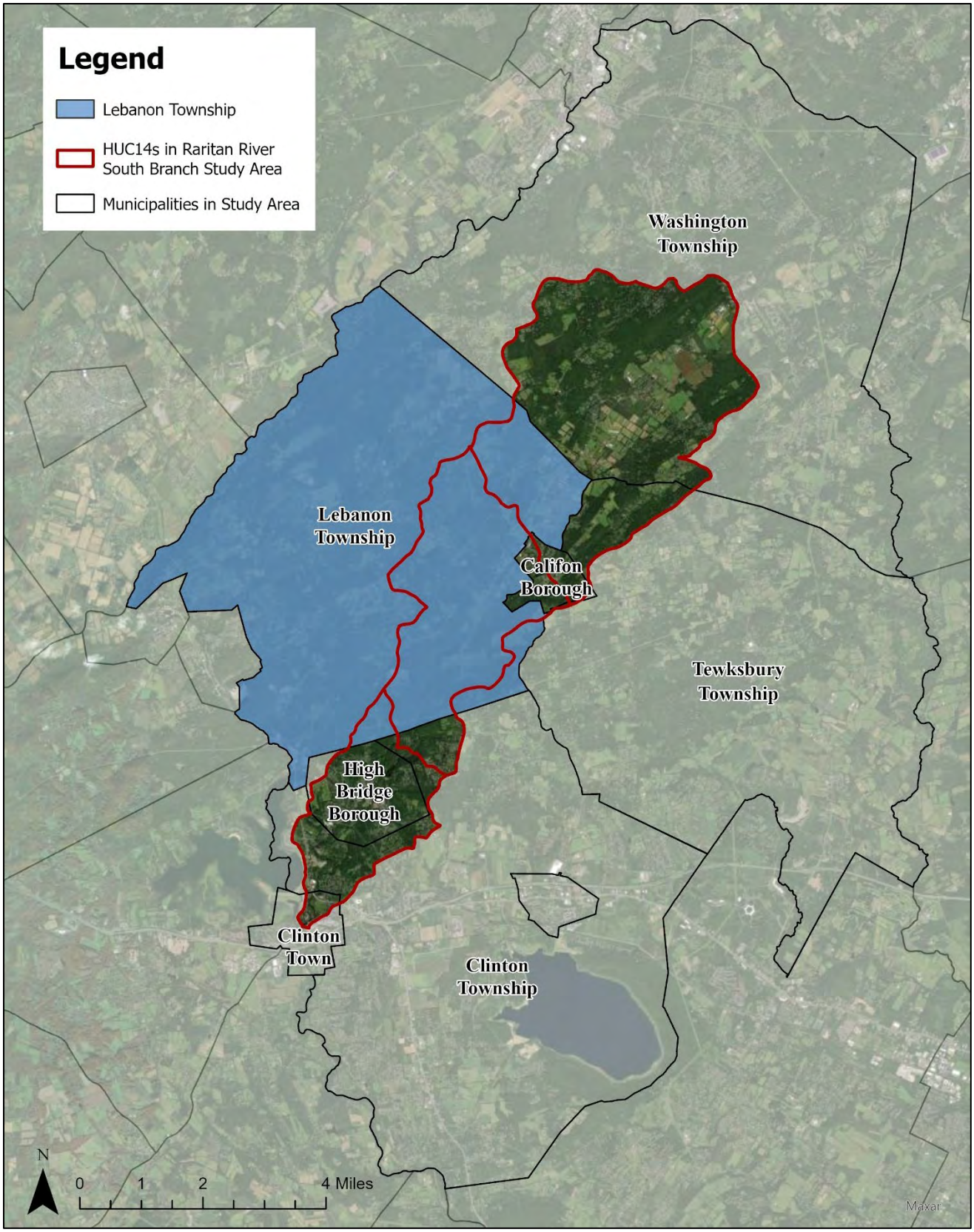


Figure 1: Municipalities in the Study Area

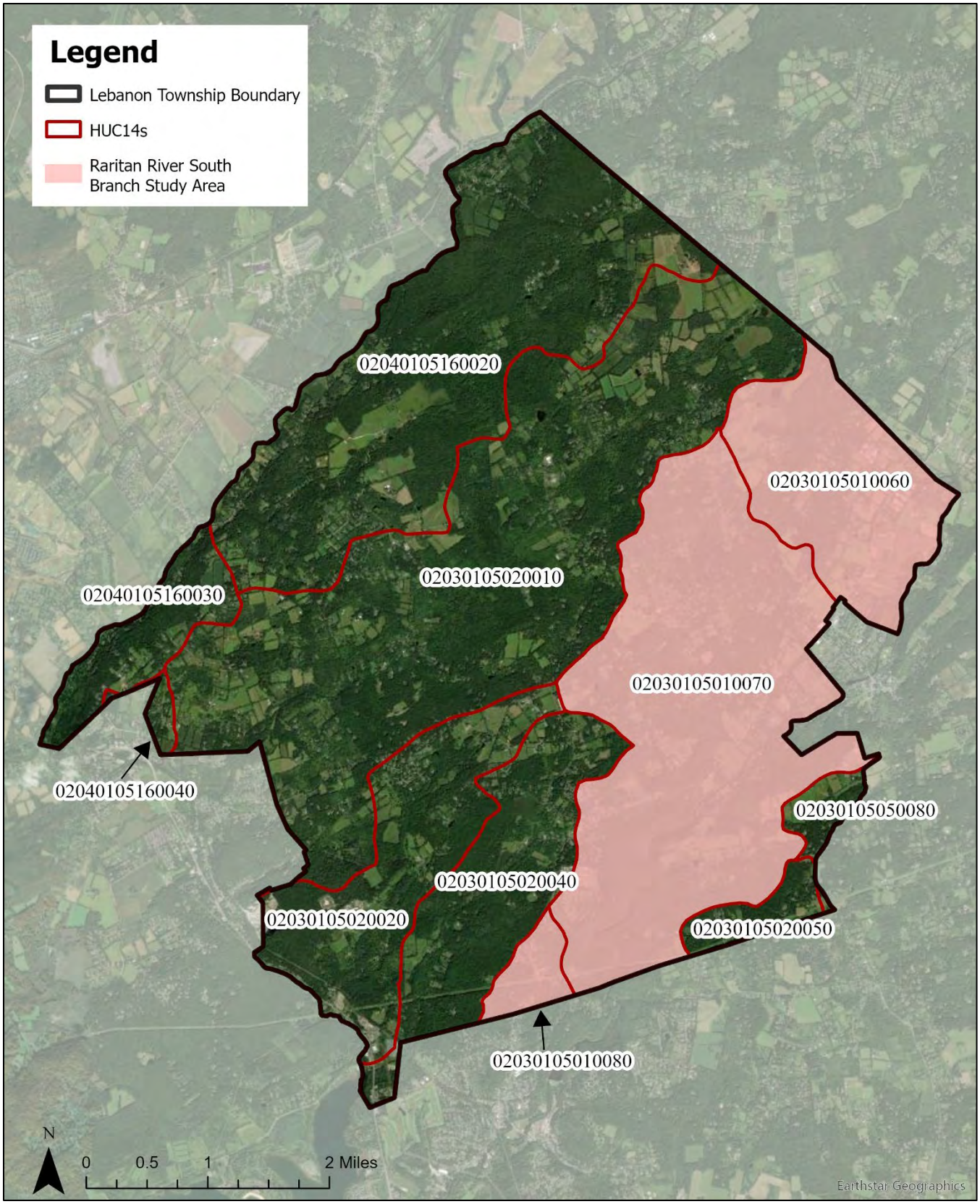


Figure 2: Portions of eleven HUC14s are in Lebanon Township

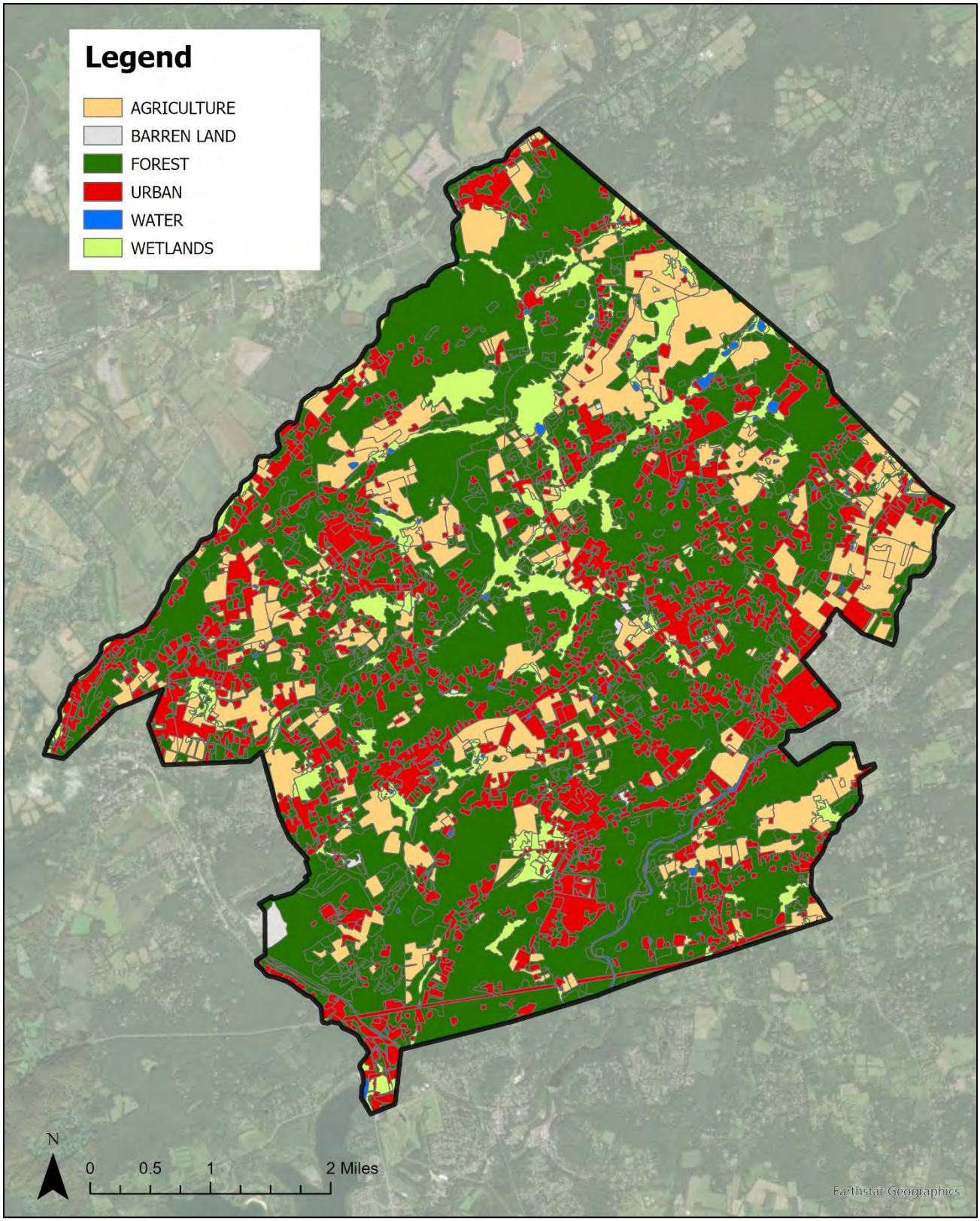


Figure 3: Land Use in Lebanon Township

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010060				
Agriculture	473.6	615.7	4,736.5	142,094.0
Barren Land	0.0	0.0	0.0	0.0
Forest	685.7	68.6	2,057.1	27,427.5
Urban	291.5	408.1	4,372.5	40,809.9
Water	21.7	2.2	65.2	868.7
Wetlands	70.2	7.0	210.5	2,806.1
TOTAL =	**1,542.7**	**1,101.6**	**11,441.6**	**214,006.2**
02030105010070				
Agriculture	445.9	579.7	4,459.1	133,773.3
Barren Land	8.9	4.4	44.3	531.2
Forest	2,601.4	260.1	7,804.2	104,056.0
Urban	1,134.4	1,588.1	17,015.7	158,813.1
Water	44.9	4.5	134.7	1,795.6
Wetlands	55.0	5.5	165.0	2,199.3
TOTAL =	**4,290.4**	**2,442.4**	**29,622.9**	**401,168.5**
02030105010080				
Agriculture	14.3	18.6	142.9	4,286.2
Barren Land	0.0	0.0	0.0	0.0
Forest	158.3	15.8	474.8	6,330.5
Urban	55.8	78.2	837.4	7,816.1
Water	0.7	0.1	2.2	29.0
Wetlands	2.0	0.2	6.0	79.8
TOTAL =	**231.1**	**112.8**	**1,463.3**	**18,541.6**
02030105020010				
Agriculture	1,087.2	1,413.3	10,871.7	326,151.4
Barren Land	8.0	4.0	40.1	481.6
Forest	3,033.3	303.3	9,099.9	121,332.2
Urban	1,034.2	1,447.9	15,513.0	144,788.2
Water	41.9	4.2	125.6	1,674.1
Wetlands	684.7	68.5	2,054.1	27,388.2
TOTAL =	**5,889.3**	**3,241.2**	**37,704.5**	**621,815.8**
02030105020020				
Agriculture	279.2	363.0	2,792.4	83,770.8
Barren Land	31.8	15.9	159.2	1,910.5
Forest	941.7	94.2	2,825.2	37,669.3
Urban	340.3	476.5	5,105.2	47,648.6
Water	9.7	1.0	29.2	388.8
Wetlands	58.8	5.9	176.3	2,350.7

TOTAL =	**1,661.6**	**956.4**	**11,087.4**	**173,738.7**
02030105020040				
Agriculture	157.7	205.1	1,577.3	47,320.0
Barren Land	0.0	0.0	0.0	0.0
Forest	873.7	87.4	2,621.2	34,949.9
Urban	327.3	458.3	4,910.1	45,828.0
Water	8.7	0.9	26.1	348.2
Wetlands	133.0	13.3	398.9	5,318.2
TOTAL =	**1,500.5**	**764.9**	**9,533.7**	**133,764.3**
02030105020050				
Agriculture	32.1	41.7	321.1	9,633.9
Barren Land	0.0	0.0	0.0	0.0
Forest	142.9	14.3	428.8	5,717.6
Urban	56.7	79.4	851.0	7,942.4
Water	0.7	0.1	2.1	28.4
Wetlands	22.1	2.2	66.3	883.9
TOTAL =	**254.6**	**137.7**	**1,669.3**	**24,206.1**
02030105050080				
Agriculture	86.8	112.9	868.3	26,047.7
Barren Land	0.0	0.0	0.0	0.0
Forest	56.1	5.6	168.2	2,242.4
Urban	23.1	32.4	346.7	3,235.6
Water	0.0	0.0	0.0	0.0
Wetlands	17.2	1.7	51.6	687.6
TOTAL =	**183.2**	**152.6**	**1,434.7**	**32,213.4**
02040105160020				
Agriculture	679.6	883.4	6,795.6	203,867.8
Barren Land	0.0	0.0	0.0	0.0
Forest	2,323.3	232.3	6,969.9	92,931.3
Urban	583.9	817.5	8,758.7	81,747.7
Water	35.3	3.5	106.0	1,413.5
Wetlands	401.8	40.2	1,205.4	16,071.9
TOTAL =	**4,023.9**	**1,976.9**	**23,835.5**	**396,032.2**
02040105160030				
Agriculture	66.0	85.8	659.8	19,793.1
Barren Land	0.0	0.0	0.0	0.0
Forest	330.8	33.1	992.5	13,233.4
Urban	182.2	255.0	2,732.5	25,503.4
Water	11.9	1.2	35.6	474.4
Wetlands	24.5	2.5	73.6	981.5
TOTAL =	**615.4**	**377.5**	**4,494.0**	**59,985.8**
02040105160040				
Agriculture	14.0	18.2	140.0	4,199.7

Barren Land	0.0	0.0	0.0	0.0
Forest	22.7	2.3	68.2	909.1
Urban	41.6	58.2	623.4	5,818.8
Water	0.0	0.0	0.0	0.0
Wetlands	1.1	0.1	3.3	43.5
TOTAL =	**79.4**	**78.8**	**834.9**	**10,971.1**
All HUCs				
Agriculture	3,336.5	4,337.4	33,364.6	1,000,938.1
Barren Land	48.7	24.4	243.6	2,923.2
Forest	11,170.0	1,117.0	33,509.9	446,799.1
Urban	4,071.1	5,699.5	61,066.3	569,951.9
Water	175.5	17.6	526.6	7,020.8
Wetlands	1,470.3	147.0	4,410.8	58,810.7
TOTAL =	**20,272.0**	**11,342.9**	**133,121.8**	**2,086,443.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Lebanon 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 Lebanon Township. Based upon the NJDEP impervious surface data, Lebanon Township has impervious cover totaling 5.3%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Lebanon 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, Lebanon 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.

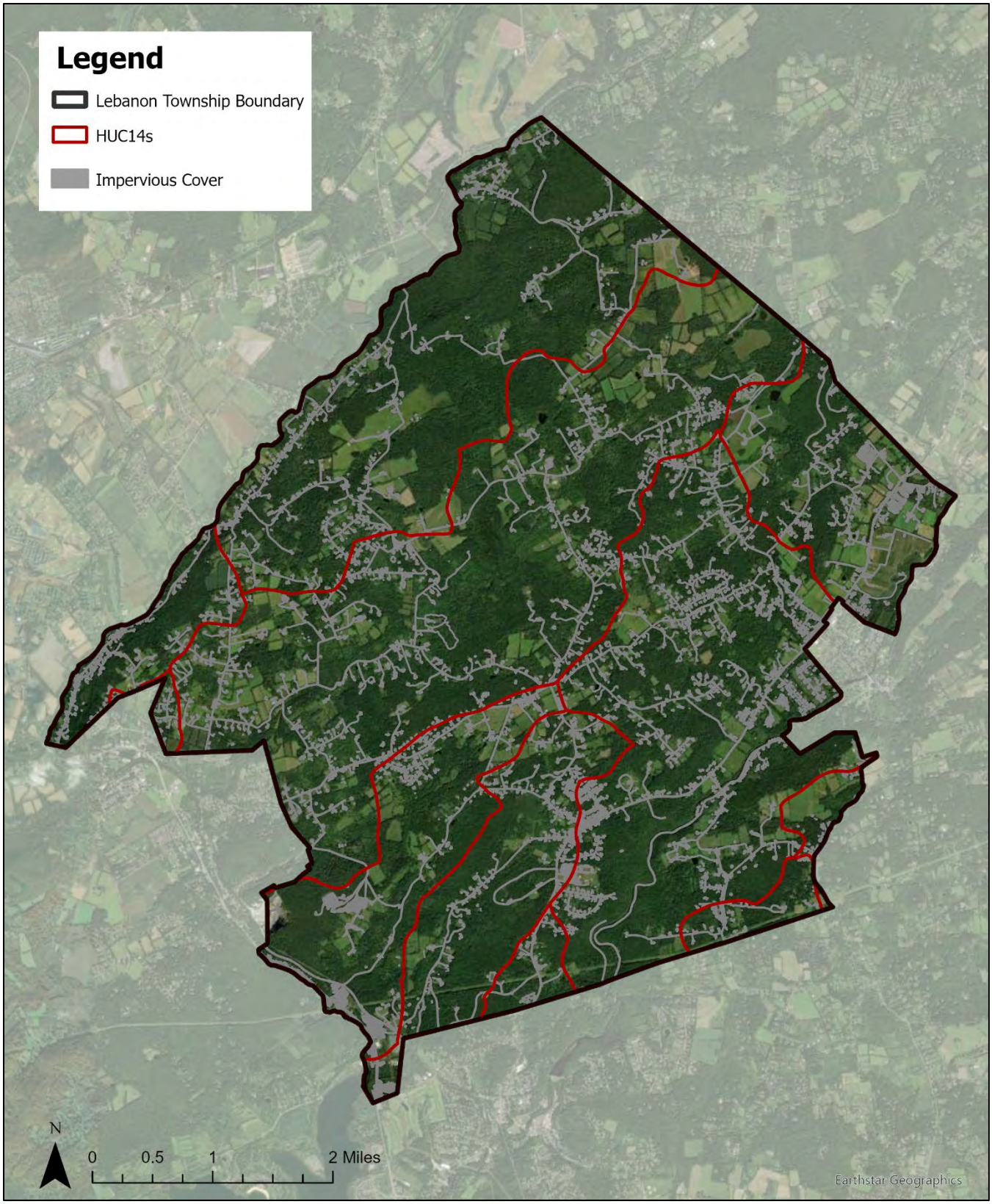


Figure 4: Impervious Cover in Lebanon Township

Table 3: Impervious Cover Analysis by HUC14 for Lebanon Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010060		
Building	14.69	
Other	52.30	
Road	35.53	
TOTAL =	**102.5**	**6.6%**
02030105010070		
Building	50.01	
Other	133.75	
Road	102.38	
TOTAL =	**286.1**	**6.7%**
02030105010080		
Building	2.09	
Other	4.84	
Road	6.89	
TOTAL =	**13.8**	**6.0%**
02030105020010		
Building	40.44	
Other	100.55	
Road	99.31	
TOTAL =	**240.3**	**4.1%**
02030105020020		
Building	16.65	
Other	60.07	
Road	46.74	
TOTAL =	**123.5**	**7.4%**
02030105020040		
Building	15.24	
Other	42.31	
Road	40.50	
TOTAL =	**98.1**	**6.5%**
02030105020050		
Building	2.35	
Other	5.36	
Road	5.85	
TOTAL =	**13.6**	**5.3%**
02030105050080		
Building	1.93	
Other	2.84	
Road	3.21	
TOTAL =	**8.0**	**4.4%**
02040105160020		
Building	21.92	
Other	50.96	
Road	64.89	
TOTAL =	**137.8**	**3.4%**

02040105160030		
Building	8.01	
Other	17.30	
Road	18.33	
TOTAL =	**43.6**	**7.1%**
02040105160040		
Building	1.29	
Other	3.70	
Road	2.60	
TOTAL =	**7.6**	**9.6%**
All HUCs		
Building	174.61	
Other	474.00	
Road	426.22	
TOTAL =	**1,074.8**	**5.3%**

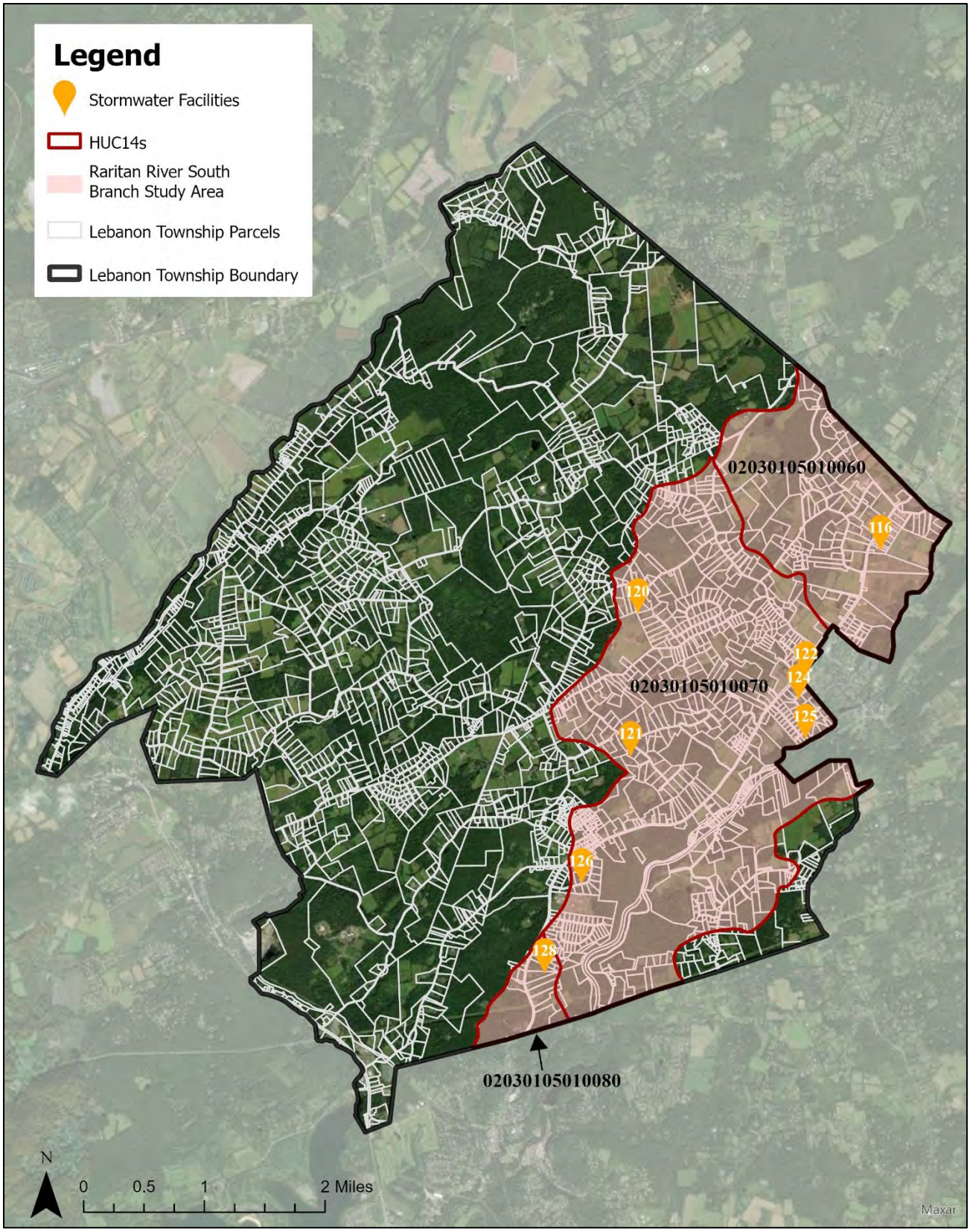


Figure 5: Stormwater Facilities in the Study Area of Lebanon Township

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

Raritan River South Branch Study Area		
ID	**Address**	**Type**
116	514 Route 513	N
120	435 Little Brook Road	N
121	1 Lance Drive	N
122	429 Route 513	N
124	1 Windy Heights Road	N
125	17 Windy Heights Road	RB
126	17 Country Woods Drive	N
128	109 Forest Drive	N

"RB" = Retention with Buffer, "N" = Naturalized

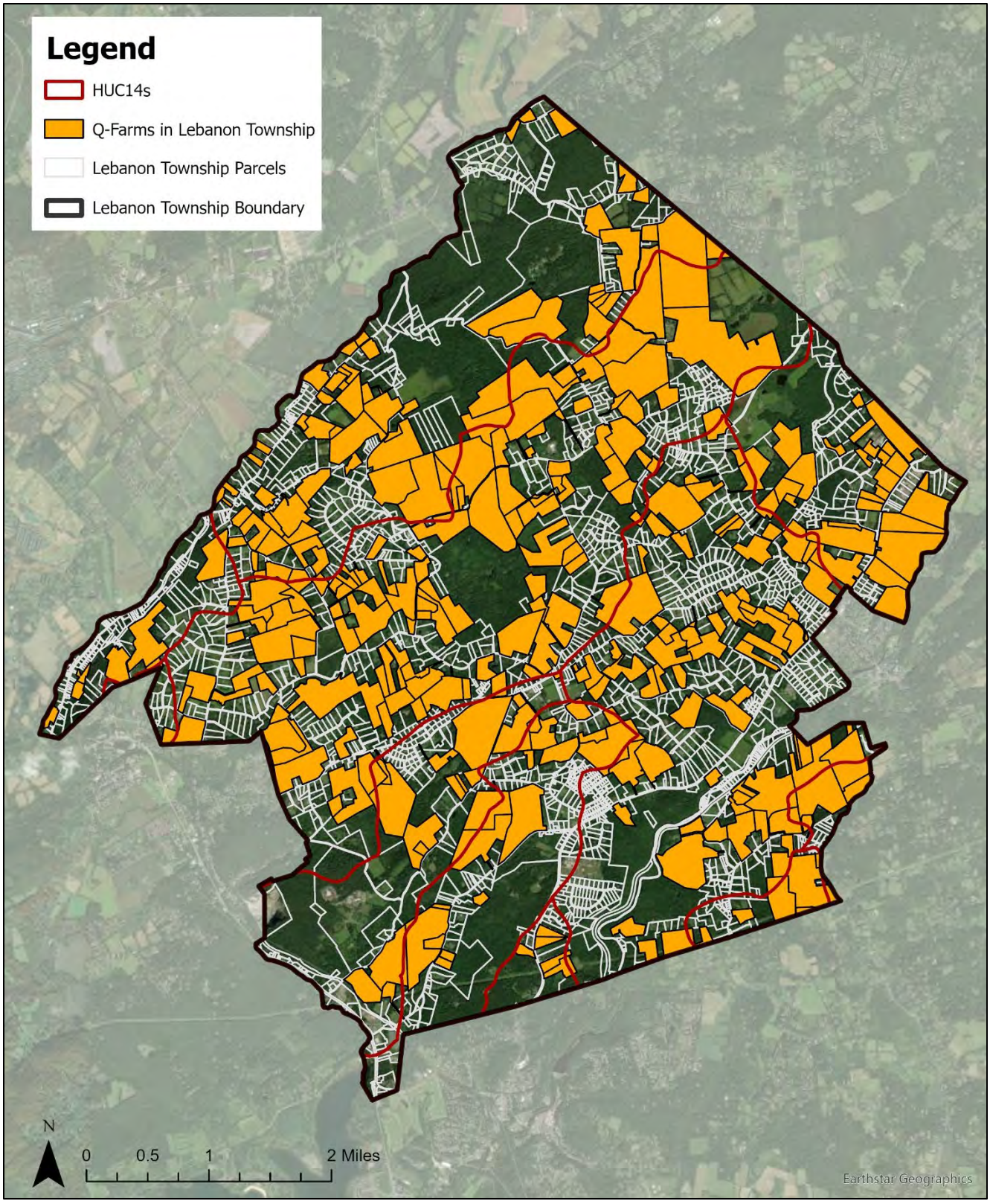


Figure 6: Q-Farm Parcels in Lebanon Township

Table 5: Q-Farm Parcels in Lebanon Township

Block	Lot	Q-Code	Prop Class	Location
10	3.02	Q0001		Wendy Way
10	1	Q0002	3B	207-217 Rocky Run Road
10	55	Q0003	3B	154 Buffalo Hollow Road
30	48	Q0003	3B	258 Rocky Run Road
30	48.01	Q0003	3B	254 Rocky Run Road
10	39	Q0005	3B	212-188 Buffalo Hollow Rd
10	40	Q0006	3B	291 Rocky Run Road
10	41	Q0007		Buffalo Hollow Rd
10	56.01	Q0008	3B	148-152 Buffalo Hollow Rd
11	8	Q0009		Buffalo Hollow Rd
11	8.04	Q0010		Buffalo Hollow Rd
11	17	Q0012	3B	163 Buffalo Hollow Road
24	3	Q0013		Bunnvale Rd
11	43	Q0014		County Route 513
12	3	Q0015	3B	204 Route 513
10	3	Q0016	3B	221-225 Rocky Run Road
12	5	Q0017	3B	210 Route 513
12	8	Q0018		County Route 513
12	9	Q0018		County Route 513
24	5.11	Q0019	3B	506 Kubin Court
24	5.01	Q0020	3B	62 Bunnvale Road
12	57	Q0021	3B	314 Route 513
12	65	Q0022	3B	356-360 Route 513
24	37	Q0023	3B	323 Wilde Lane
16	17	Q0024		Hoffmans Crossing Rd
16	20	Q0024		Hoffmans Crossing Rd
16	66	Q0025	3B	60 Old Readingsburg Rd
18	6	Q0026	3B	20 Hoffmans Crossing Road
18	9	Q0026	3B	16 Hoffmans Crossing Road
18	11	Q0026	3B	14 Hoffmans Crossing Road
17	28	Q0027		Califon Cokesbury Rd
17	29	Q0028	3B	1121 Califon-Cokesbury Rd
65	20.03	Q0029	3B	4 American Way
54	19	Q0030	3B	384 Penwell Road
18	44	Q0031	3B	1209 Califon-Cokesbury Rd
18	20	Q0032	3B	off Raritan Rvr Rd
18	21	Q0032	3B	off Raritan Rvr Rd
18	22	Q0032	3B	off Raritan Rvr Rd
18	28	Q0033	3B	1221 Califon-Cokesbury Rd
18	47	Q0034	1	157 Mt Grove Road
18	1	Q0035	3B	34-58 Hoffmans Crossing R

18	49.03	Q0035	3B	147 Mt Grove Road
30	42	Q0036		Rocky Run Rd
24	8	Q0037	3B	46 Hickory Run Road
38	103	Q0038	3B	307 Goberman Road
24	2	Q0039		Bunnvale Rd
29	17	Q0039	3B	45 Bunnvale Road
38	7	Q0040	3B	17 Hickory Run Road
18	44.02	Q0041	3B	163 Mt Grove Road
29	6.03	Q0042	3B	5 Briar Lane
38	8	Q0043	3B	1 Hickory Run Road
24	8.06	Q0044	3B	560 East Hill Road
24	8.01	Q0045	3B	548 East Hill Road
24	8.02	Q0046	3B	42 Hickory Run Road
24	16	Q0047		Hickory Run Rd
24	32	Q0048	3B	333-335 Route 513
24	8.05	Q0049	3B	558 East Hill Road
30	5.01	Q0050	3B	8 Farrell Lane
36	29	Q0051	3B	304 Newport Road
29	32.07	Q0052	3B	38 Berk Lane
29	32	Q0053	3B	102 Hidden Hollow Lane
30	41	Q0054	3B	508 West Hill Road
29	32.06	Q0055	3B	526 West Hill Road
30	39	Q0056	3B	4 Kodiak Trail
35	56	Q0057	3B	515 West Hill Road
30	19	Q0058	3B	5 Echo Lane
30	20	Q0059	3B	4 Echo Lane
30	43	Q0060		Rocky Run Rd
30	44	Q0060		Rocky Run Rd
34	2	Q0061	3B	4 Sturbridge Ct
34	7	Q0062	3B	1 Spring Brook Lane
34	9	Q0063	3B	2 Spring Brook Lane
30	3	Q0064	3B	448 West Hill Road
35	34	Q0065	3B	401 Antler Road
35	36	Q0066	3B	405 Antler Road
35	73	Q0066	3B	406 Antler Road
35	38	Q0067	3B	51 Onahil Lane
35	64	Q0068	3B	5 Red Mill Road
36	6	Q0068	3B	6 Red Mill Road
49	46	Q0069	3B	410 Little Brook Road
36	39	Q0070	3B	22 Red Mill Road
35	76.01	Q0071	3B	75 Bull Run Lane
37	30	Q0072		Sliker Rd
35	76.03	Q0073	3B	81 Red Mill Road
30	20.02	Q0074		Echo Ln

35	87	Q0075	3B	93 Red Mill Road
37	25	Q0076	3B	637 East Hill Road
36	15	Q0077	3B	653 Woodglen Road
36	16	Q0078	3B	657 Woodglen Road
36	17	Q0079	3B	661 Woodglen Road
18	29	Q0080	3B	1213 Califon-Cokesbury Rd
36	18	Q0081		Woodglen Rd
36	23	Q0082	3B	85-107 Anthony Road
57	29	Q0082	3B	86 Anthony Road
36	26	Q0083	3B	109 Anthony Road
57	32	Q0083	3B	128 Anthony Road
65	20.01	Q0084	3B	222 Mt Airy Road
38	1.01	Q0085	3B	1 Rountree Lane
37	19	Q0086	3B	591 East Hill Road
35	67	Q0087	3B	25-29 Red Mill Road
36	29.06	Q0088	3B	310 Newport Road
37	29	Q0089	3B	55 Sliker Road
36	18.01	Q0090	3B	683 Woodglen Road
37	36	Q0091	3B	425 Little Brook Road
36	29.02	Q0092	3B	306 Newport Road
17	9	Q0093		Stevenson Ln
61	36	Q0094	3B	238 Mt Airy Road
36	29.03	Q0095	3B	320 Newport Road
38	2	Q0096	3B	39-41 Hickory Run Road
38	5	Q0096		Hickory Run Rd
41	11.01	Q0097	3B	472-478 Route 513
41	11.02	Q0097	3B	496-502 Route 513
38	5.05	Q0098	3B	23 Hickory Run Road
38	13	Q0099		Stone Gate Ter
38	19.01	Q0100		County Route 513
49	39	Q0101	3B	Little Brook Rd Rear
49	44	Q0101	3B	426 Little Brook Road
38	19.03	Q0102	3B	409 Route 513
18	25	Q0103	3B	Off Raritan Rvr Rd
38	21	Q0104	3B	417 Route 513
38	88	Q0105	3B	618 East Hill Road
38	84.01	Q0106	3B	500 Danforth Lane
38	87	Q0106	3B	500 Danforth Ln Rear
35	39	Q0107	3B	Whiteoak Ridge Road
35	42	Q0107	3B	Whiteoak Ridge Road
38	106.01	Q0108	3B	206 Sassafras Lane
40	5.02	Q0109		Maple Ln
40	10	Q0110	3B	463 Route 513
40	13	Q0111	3B	16 Sliker Road

57	32.01	Q0112	3B	112 Anthony Road
41	2.01	Q0113	3B	371 Vernoy Road
41	10	Q0113	3B	369 Vernoy Road
44	23	Q0114	3B	141 Hollow Brook Road
41	11	Q0115	3B	486-492 Route 513
41	13	Q0116	3B	470 Route 513
40	5	Q0117	3B	205 Maple Lane
44	19	Q0118	3B	400 Trimmer Rd
43	1.01	Q0119	3B	405 Trimmer Road
43	1.02	Q0120	3B	413 Trimmer Road
43	1.03	Q0120	3B	411 Trimmer Road
44	21	Q0120	3B	414 Trimmer Road
44	22.02	Q0121	3B	420 Trimmer Road
46	21	Q0122	3B	301-303 Teetertown Road
51	5	Q0123		Mount Lebanon Rd
53	12	Q0123		Mount Lebanon Rd
46	29.01	Q0124		Sliker Rd & White Tail Ln
57	26	Q0125	3B	72 Anthony Road
46	29.03	Q0126	3B	50 Pleasant Grove Road
48	1	Q0127	3B	41 Pleasant Grove Road
49	89	Q0128	3B	16-24 Shady Lane
46	33	Q0130	3B	10 Whitetail Lane
36	22	Q0131	3B	79 - 83 Anthony Road
49	4.01	Q0132	3B	676 Woodglen Road
49	2	Q0133	3B	682 Woodglen Road
49	1	Q0134	3B	688 Woodglen Road
49	49	Q0135	3B	67 Sliker Road
38	104	Q0136	3B	211 Sassafras Lane
49	72	Q0137	3B	25-31 Anthony Road
49	75	Q0138	3B	37 Anthony Road
50	2	Q0139	3B	2 Rocky Top Lane
50	9	Q0140	3B	92 Mt Lebanon Road
50	10	Q0141		Sharrer Rd
51	1	Q0141		Sharrer Rd
50	12	Q0142	3B	16 Sharrer Road
50	18	Q0143	3B	14 Anthony Road
66	3.06	Q0144	3B	65 Forge Hill Road
51	6	Q0145	3B	26 Mt Lebanon Road
43	2	Q0146	3B	515 Route 513
59	55	Q0147	3B	30 Hollow Road (Rear)
66	2	Q0148	3B	41 Forge Hill Road
53	4	Q0149		Turkey Top Rd
56	14	Q0150		Turkey Top Rd
56	14.03	Q0150		Turkey Top Rd

56	14.04	Q0150		Turkey Top Rd
56	14.05	Q0150		Turkey Top Rd
49	79	Q0151		Shady Ln
53	19	Q0152	3B	383 Penwell Road
49	50.04	Q0154	3B	71 Sliker Road
54	23.01	Q0156	3B	205 Old Turnpike Road
57	14	Q0157	3B	99 Mt Lebanon Road
56	10	Q0159	3B	24 Point Mountain Road
56	13	Q0160	3B	79 Mt Lebanon Road
51	7	Q0161		Ascot Dr
59	64	Q0162		Hollow Rd
57	13	Q0163		Mount Lebanon Rd
57	21.01	Q0164	3B	5 Beech Brook Lane
57	27	Q0165	3B	10 Stillwatters Way
57	28	Q0165	3B	80-84 Anthony Road
57	38	Q0166	3B	106 Mountain Top Road
57	40	Q0167	3B	112 Mountain Top Road
57	41	Q0168	3B	122 Mountain Top Road
59	34	Q0168	3B	129 Mountain Top Road
59	34.02	Q0168	3B	127 Mountain Top Road
57	47.01	Q0169	3B	130 Mountain Top Road
59	20	Q0171	3B	244 Musconetcong River Rd
58	5.02	Q0172	3B	259 Musconetcong River Rd
59	11	Q0173	3B	224 Musconetcong River Rd
59	12	Q0173	3B	226 Musconetcong River Rd
59	18	Q0174	3B	4 Safari Trail
59	19	Q0174		Musconetcong River Rd
59	22	Q0174		Musconetcong River Rd
59	22.01	Q0174		Musconetcong River Rd
59	33	Q0174	3B	4 Safari Trail
66	3.03	Q0175		Sunset Farm Rd
61	40.03	Q0176	3B	250 Mt Airy Road
61	34	Q0177	3B	228 Mt Airy Road
59	24	Q0178	3B	262 Musconetcong River Rd
61	8	Q0179	3B	1 Stonehill Run
60	1	Q0180		Musconetcong River Rd
60	4	Q0180	3B	183 Musconetcong River Rd
60	7	Q0180	3B	189 Musconetcong River Rd
60	11.01	Q0181	3B	209 Musconetcong River Rd
60	11.03	Q0182	3B	205 Musconetcong River Rd
61	7	Q0183	3B	7 Derry Run Lane
61	20	Q0184	3B	39 Hollow Road
61	40	Q0186	3B	260 Mt Airy Road
61	40.02	Q0186	3B	258 Mt Airy Road

65	20	Q0187	3B	5 Terre Lane
65	2	Q0188	3B	167 Anthony Road
65	2.04	Q0188	3B	181 Anthony Road
65	2.07	Q0188	3B	173 Anthony Road
64	7	Q0189		Newport Rd
65	14	Q0190		Newport Rd
66	3.04	Q0191	3B	71 Forge Hill Road
61	6	Q0192	3B	3 Derry Run Lane
66	2.09	Q0193	3B	47 Forge Hill Road
69	1.01	Q0194	3B	73 Mackenzie Road
65	2.05	Q0195	3B	179 Anthony Road
65	2.06	Q0195	3B	177 Anthony Road
69	49	Q0197	3B	106 Forge Hill Road
66	14	Q0198	3B	245 Mt Airy Road
66	14.03	Q0199	3B	237 Mt Airy Road
66	3.07	Q0200	3B	1 Sunset Farm Lane
66	3.08	Q0200	3B	4 Sunset Farm Lane
66	3.09	Q0200	3B	79-83 Forge Hill Road
66	16	Q0200	3B	213 Mt Airy Road
66	16.01	Q0201	3B	207 Mt Airy Road
69	1	Q0202	3B	42 Forge Hill Road
65	6.02	Q0203	3B	29 Dewey Lane
65	15	Q0204		Newport Rd
58	5.01	Q0205	3B	257 Musconetcong River Rd
66	17.04	Q0206	3B	98 Red Mill Road
66	18	Q0207	3B	110 Red Mill Road
66	12.03	Q0208	3B	257 Mt Airy Road
68	1	Q0209	3B	74-82 Mackenzie Road
56	10.01	Q0210	3B	30 Point Mountain Road
64	1	Q0211	3B	32 Dewey Lane
69	3	Q0212	3B	142 Dutch Hollow Rd
72	4	Q0215		Musconetcong River Rd
46	17	Q0216	3B	315 Teetertown Road
46	18	Q0216	3B	317 Teetertown Road
51	13	Q0217	3B	29 Pleasant Grove Road
69	2.04	Q0218		Dutch Hill Rd
77	9.02	Q0219		Old Turnpike Rd
40	23	Q0220	3B	304 Teetertown Road
17	3.01	Q0221		Mount Grove Rd
38	106	Q0222	3B	594 East Hill Road
55	1	Q0223	3B	222 Old Turnpike Road
43	2.04	Q0226	3B	214 Maple Lane
43	2.05	Q0227	3B	218 Maple Lane
43	2.06	Q0228	3B	511 Route 513

66	12.07	Q0229	3B	5 Lebanon Farm Lane
66	12.08	Q0229	3B	3 Lebanon Farm Lane
10	56	Q0230	3B	146 Buffalo Hollow Road
16	67	Q0231		Old Readingsburg Rd
35	8	Q0232	3B	449-451 West Hill Road
49	78	Q0233	3B	20 Shady Lane
49	82	Q0238		Shady Ln
46	24	Q0239	3B	6 Oak Hill Trail
35	38.01	Q0240	3B	49 Onahil Lane
46	15	Q0241	3B	329-335 Teetertown Rd
18	47.01	Q0243		Mount Grove Rd
18	49.01	Q0243	3B	151 Mt Grove Road
17	31	Q0244		Stevenson Ln
65	20.02	Q0245	3B	224 Mt Airy Road
36	28.01	Q0246	3B	619 Woodglen Rd-Rear
36	28.02	Q0246	3B	615 Woodglen Road
35	76	Q0247		Red Mill Rd
38	103.01	Q0248	3B	208 Sassafras Lane
57	16	Q0249	3B	113 Mt Lebanon Road
38	92	Q0250	3B	406 Berry Drive
38	19.04	Q0252	3B	413 Route 513
36	9	Q0253	3B	617-635 Woodglen Road
44	24.08	Q0256	3B	911 Ravine Road
37	42.03	Q0259		Little Brook Rd
50	21	Q0260	3B	28 Anthony Road
17	16	Q0262	3B	158 Mt Grove Road
73	54	Q0263	15F	41-43 Dutch Hill Road
73	45	Q0264		Dogwood Dr
73	46	Q0264		Musconetcong River Rd
61	35	Q0265	1	232 Mt Airy Road
36	18.02	Q0266		Woodglen Rd
65	11	Q0267		Dewey Ln
58	1	Q0268	3B	2 Mowder Rd
59	48	Q0269	3B	20 Hollow Road
57	32.02	Q0271	3B	110 Anthony Road
16	12	Q0272	3B	73 Old Readingsburg Road
29	35	Q0274	3B	12-28 Berk Lane
38	21.01	Q0276	3B	417a Route 513
38	21.02	Q0277	3B	417b Route 513

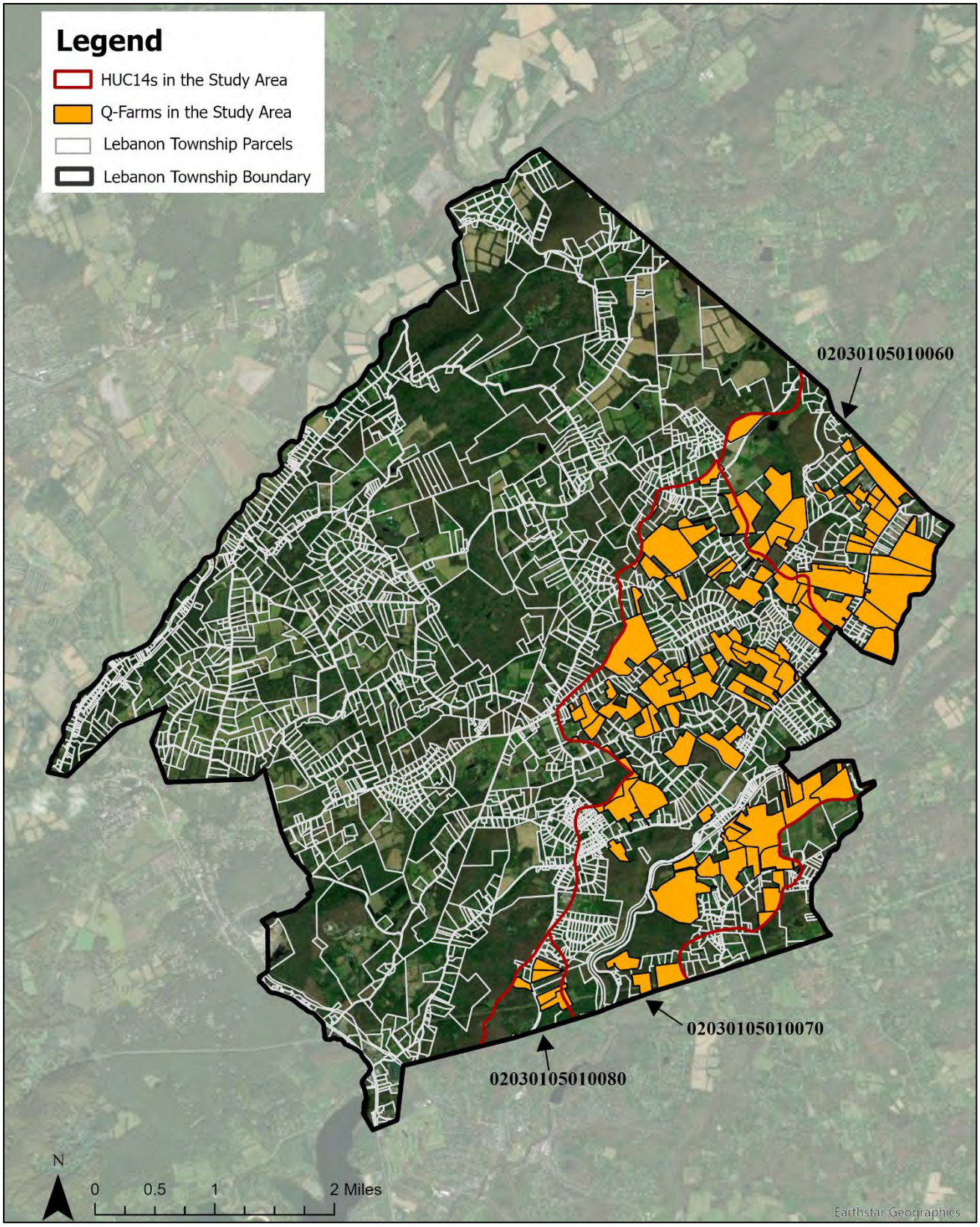


Figure 7: Q-Farm Parcels in the Study Area of Lebanon Township

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

Block	Lot	Q-Code	Prop Class	Location
11	43	Q0014		County Route 513
12	3	Q0015	3B	204 Route 513
12	5	Q0017	3B	210 Route 513
12	8	Q0018		County Route 513
12	9	Q0018		County Route 513
*24	5.11	Q0019	3B	506 Kubin Court
*24	5.01	Q0020	3B	62 Bunnvale Road
12	57	Q0021	3B	314 Route 513
12	65	Q0022	3B	356-360 Route 513
24	37	Q0023	3B	323 Wilde Lane
16	17	Q0024		Hoffmans Crossing Rd
16	20	Q0024		Hoffmans Crossing Rd
*16	66	Q0025	3B	60 Old Readingsburg Rd
18	6	Q0026	3B	20 Hoffmans Crossing Road
18	9	Q0026	3B	16 Hoffmans Crossing Road
18	11	Q0026	3B	14 Hoffmans Crossing Road
*17	29	Q0028	3B	1121 Califon-Cokesbury Rd
*18	44	Q0031	3B	1209 Califon-Cokesbury Rd
18	20	Q0032	3B	Off Raritan Rvr Rd
18	21	Q0032	3B	Off Raritan Rvr Rd
18	22	Q0032	3B	Off Raritan Rvr Rd
*18	28	Q0033	3B	1221 Califon-Cokesbury Rd
*18	47	Q0034	1	157 Mt Grove Road
18	1	Q0035	3B	34-58 Hoffmans Crossing R
18	49.03	Q0035	3B	147 Mt Grove Road
24	8	Q0037	3B	46 Hickory Run Road
38	103	Q0038	3B	307 Goberman Road
*24	2	Q0039		Bunnvale Rd
38	7	Q0040	3B	17 Hickory Run Road
*18	44.02	Q0041	3B	163 Mt Grove Road
38	8	Q0043	3B	1 Hickory Run Road
24	8.06	Q0044	3B	560 East Hill Road
*24	8.01	Q0045	3B	548 East Hill Road
24	8.02	Q0046	3B	42 Hickory Run Road
24	16	Q0047		Hickory Run Rd
24	32	Q0048	3B	333-335 Route 513
24	8.05	Q0049	3B	558 East Hill Road
*49	46	Q0069	3B	410 Little Brook Road
37	30	Q0072		Sliker Rd
37	25	Q0076	3B	637 East Hill Road
38	1.01	Q0085	3B	1 Rountree Lane

*37	19	Q0086	3B	591 East Hill Road
37	29	Q0089	3B	55 Sliker Road
37	36	Q0091	3B	425 Little Brook Road
*17	9	Q0093		Stevenson Ln
38	2	Q0096	3B	39-41 Hickory Run Road
38	5	Q0096		Hickory Run Rd
41	11.01	Q0097	3B	472-478 Route 513
41	11.02	Q0097	3B	496-502 Route 513
38	5.05	Q0098	3B	23 Hickory Run Road
38	13	Q0099		Stone Gate Ter
38	19.01	Q0100		County Route 513
*49	39	Q0101	3B	Little Brook Rd Rear
49	44	Q0101	3B	426 Little Brook Road
38	19.03	Q0102	3B	409 Route 513
18	25	Q0103	3B	Off Raritan Rvr Rd
38	21	Q0104	3B	417 Route 513
38	88	Q0105	3B	618 East Hill Road
38	84.01	Q0106	3B	500 Danforth Lane
38	87	Q0106	3B	500 Danforth Ln Rear
38	106.01	Q0108	3B	206 Sassafras Lane
40	5.02	Q0109		Maple Ln
40	10	Q0110	3B	463 Route 513
40	13	Q0111	3B	16 Sliker Road
41	2.01	Q0113	3B	371 Vernoy Road
41	10	Q0113	3B	369 Vernoy Road
44	23	Q0114	3B	141 Hollow Brook Road
41	11	Q0115	3B	486-492 Route 513
41	13	Q0116	3B	470 Route 513
40	5	Q0117	3B	205 Maple Lane
44	19	Q0118	3B	400 Trimmer Rd
43	1.01	Q0119	3B	405 Trimmer Road
43	1.02	Q0120	3B	413 Trimmer Road
43	1.03	Q0120	3B	411 Trimmer Road
44	21	Q0120	3B	414 Trimmer Road
44	22.02	Q0121	3B	420 Trimmer Road
46	21	Q0122	3B	301-303 Teetertown Road
46	29.01	Q0124		Sliker Rd & White Tail Ln
46	29.03	Q0126	3B	50 Pleasant Grove Road
*48	1	Q0127	3B	41 Pleasant Grove Road
46	33	Q0130	3B	10 Whitetail Lane
49	49	Q0135	3B	67 Sliker Road
38	104	Q0136	3B	211 Sassafras Lane
43	2	Q0146	3B	515 Route 513
49	50.04	Q0154	3B	71 Sliker Road

46	17	Q0216	3B	315 Teetertown Road
46	18	Q0216	3B	317 Teetertown Road
*51	13	Q0217	3B	29 Pleasant Grove Road
40	23	Q0220	3B	304 Teetertown Road
38	106	Q0222	3B	594 East Hill Road
43	2.04	Q0226	3B	214 Maple Lane
43	2.05	Q0227	3B	218 Maple Lane
43	2.06	Q0228	3B	511 Route 513
16	67	Q0231		Old Readingsburg Rd
*49	82	Q0238		Shady Ln
46	24	Q0239	3B	6 Oak Hill Trail
46	15	Q0241	3B	329-335 Teetertown Rd
*18	47.01	Q0243		Mount Grove Rd
18	49.01	Q0243	3B	151 Mt Grove Road
38	103.01	Q0248	3B	208 Sassafras Lane
38	92	Q0250	3B	406 Berry Drive
38	19.04	Q0252	3B	413 Route 513
44	24.08	Q0256	3B	911 Ravine Road
37	42.03	Q0259		Little Brook Rd
17	16	Q0262	3B	158 Mt Grove Road
16	12	Q0272	3B	73 Old Readingsburg Road
38	21.01	Q0276	3B	417a Route 513
38	21.02	Q0277	3B	417b Route 513

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

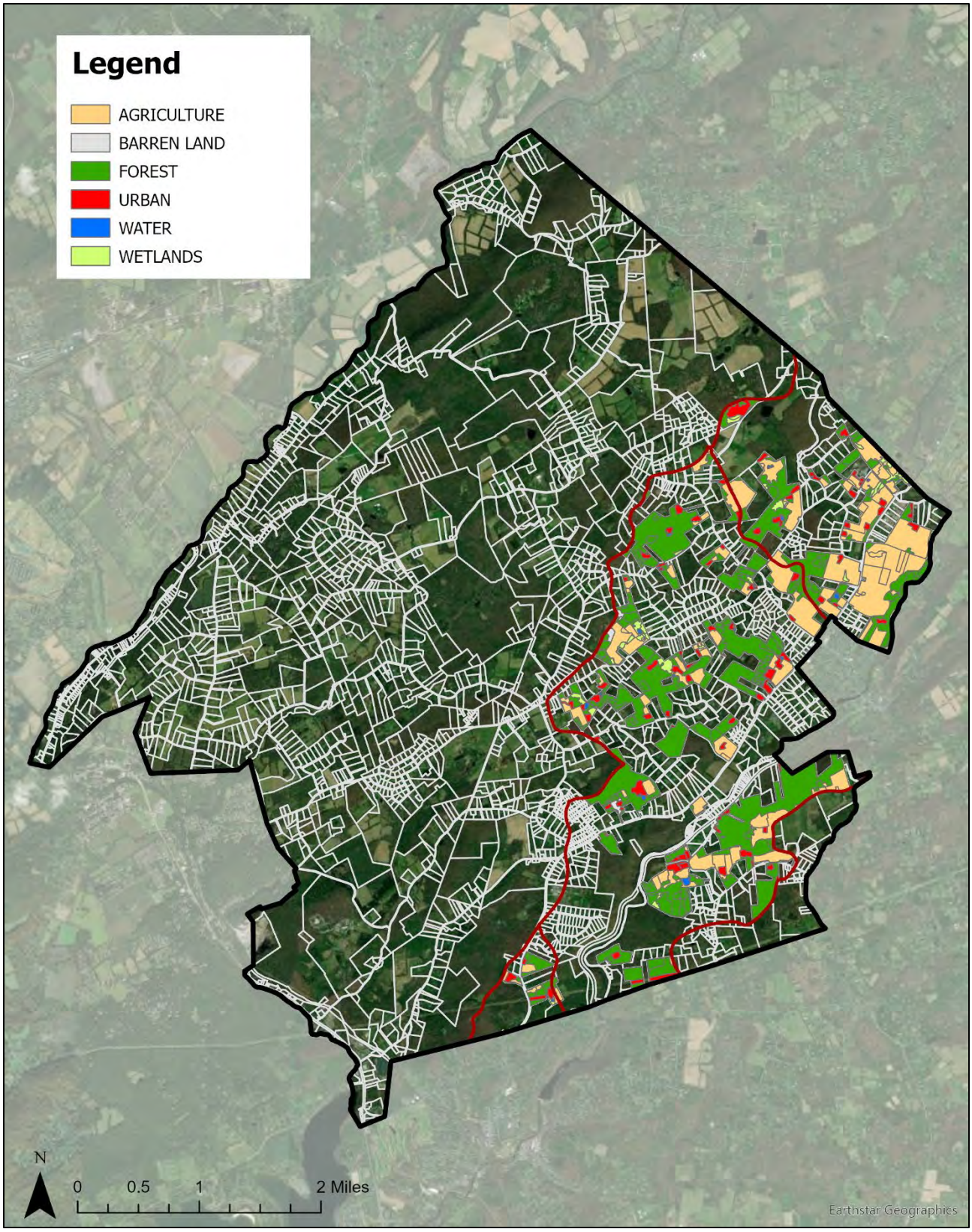


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Lebanon Township

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

Land Use	Area (acres)
Agriculture	724.9
Barren Land	8.9
Forest	1,162.5
Urban	175.3
Water	17.3
Wetlands	57.6
Total:	**2,146.5**

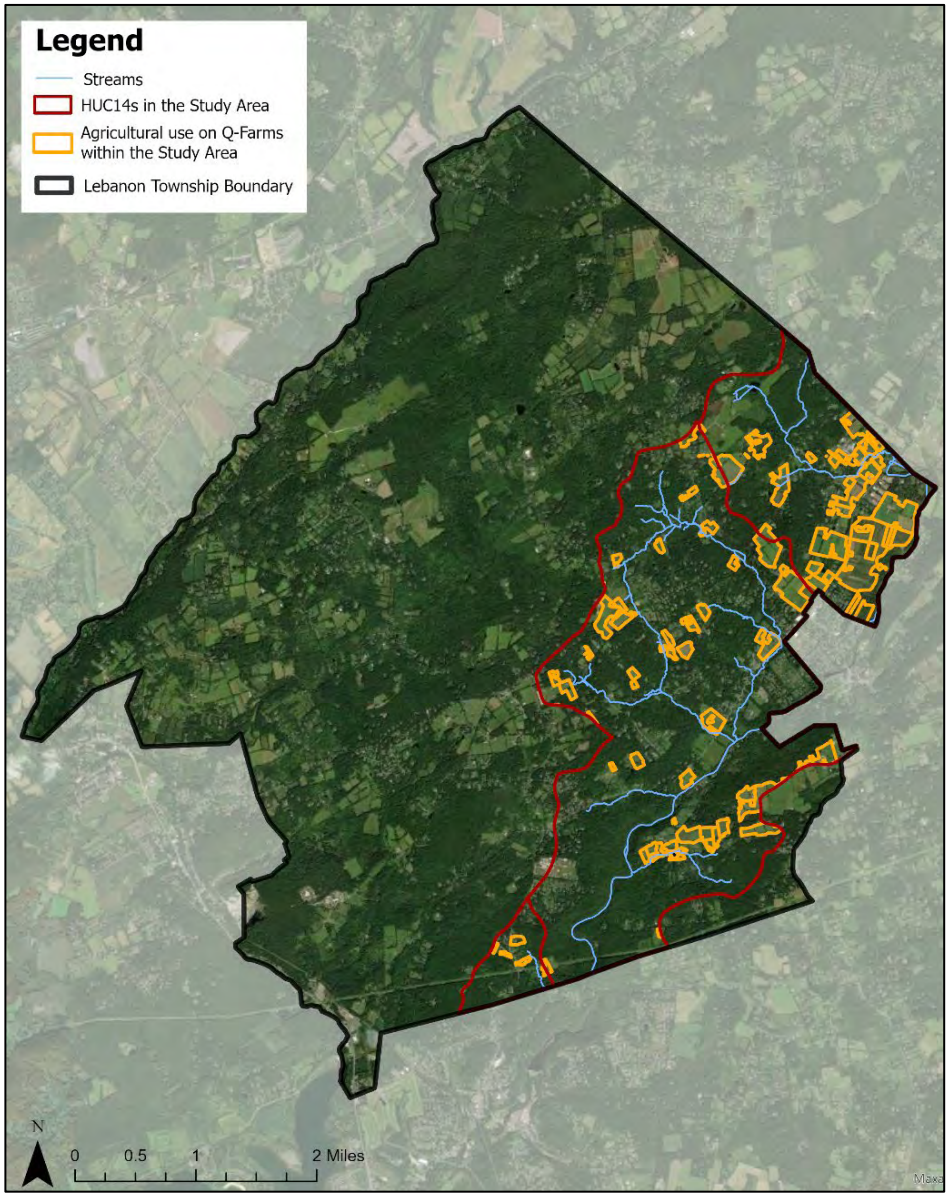


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Lebanon Township

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

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	3	Q0015				X		X
12	5	Q0017				X		
16	20	Q0024			X	X		
18	49.03	Q0035						X
41	11.01	Q0097	X		X	X		
41	10	Q0113				X		X
41	11	Q0115	X	X				
41	13	Q0116	X					
44	19	Q0118				X		X

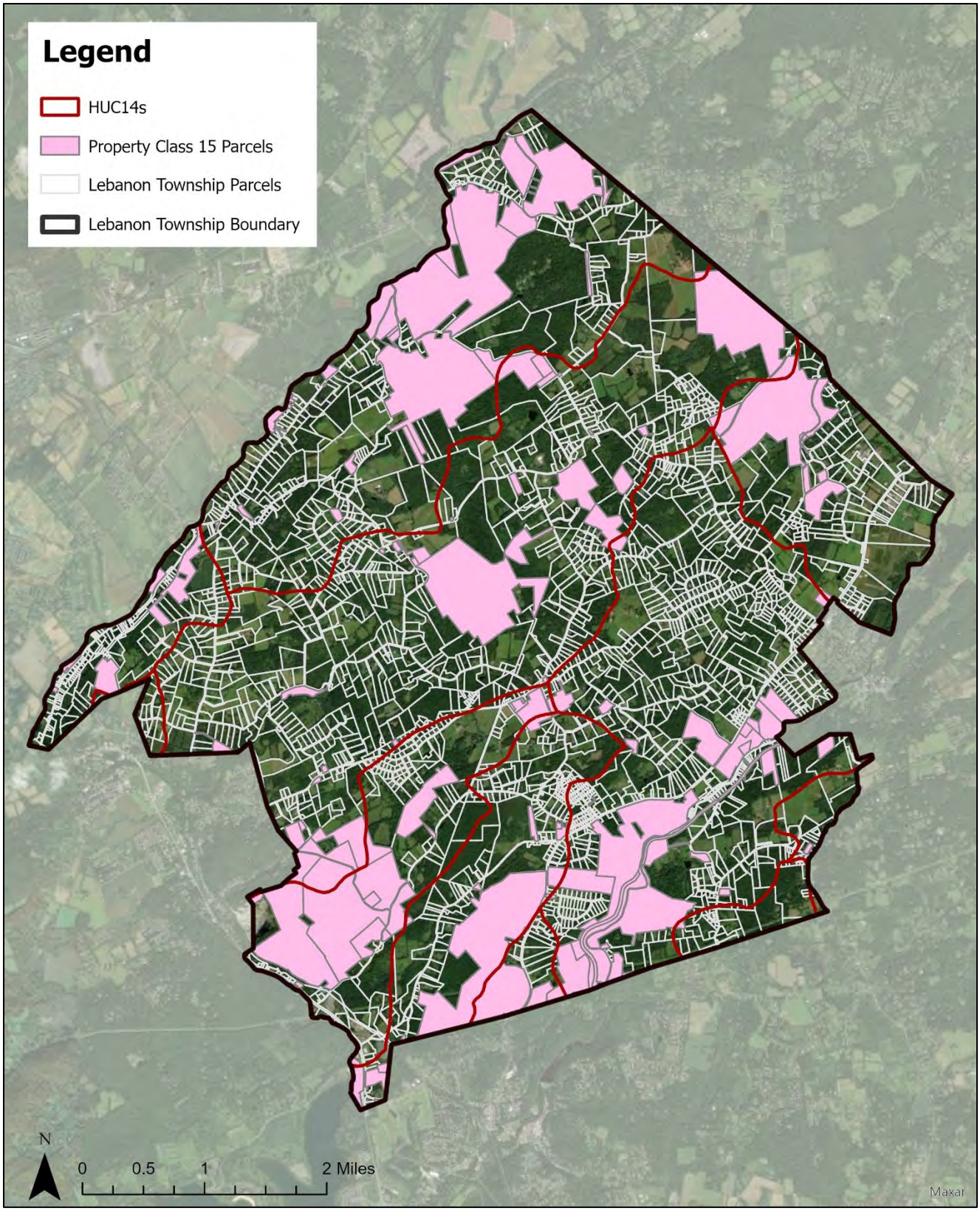


Figure 10: Property Class 15 Parcels in Lebanon Township

Table 9: Property Class 15 Parcels in Lebanon Township

Block	Lot	Prop Class	Location	Facility Type
12	44.01	15A	256 County Road 513	Voorhees H S
21	8	15A	400 Route 513	School
24	6	15A	70 Bunnvale Road	Schools
16	16	15B	104-105 Lockheed Road	Esc
16	20.01	15B	43 Hoffmans Crossing Road	Educational Facility
1	2	15C	171 Cregar Road	Golf Course
2	3	15C	1 Van Syckles Rd	Fish/Wildlife Offic
3	3	15C	Route 31	Reservoir
4	2	15C	2 Van Syckles Rd	Reservoir
4	3	15C	Route 31	Union Furnace Nature
5	1.01	15C	201 Poplar Road	Vacant Land
7	2	15C	2023 Route 31	Union Furnace Nature
7	8	15C	2045 Route 31	Green Acres
7	9.01	15C	2047 Route 31	Wildlife Management
7	10	15C	2057 Route 31	Wildlife Management
8	4	15C	2044 Route 31	Vacant Land
9	1	15C	230 Rocky Run Road	Highlands Greenway
9	7	15C	Sanatorium Road	Veterans Haven North
10	6	15C	231 Rocky Run Road	Highlands Greenway
10	31	15C	3 Bunnvale Road	Library
10	38	15C	214 Buffalo Hollow Road	Water Bldg
11	37	15C	201+251 Route 513	Voorhees State Park
11	45	15C	High Bridge-Califon	Vacant Land
12	1	15C	530 Cokesbury Rd	Conservation-Green
12	2	15C	200 Route 513	Voorhees State Park
12	56	15C	308 Route 513	Ken Lockwood Gorge
14	3	15C	Lockwood Gorge	Vacant Land
16	1	15C	Raritan River Rd So	Ken Lockwood Gorge
16	13	15C	Lockwood Gorge	Ken Lockwood Gorge
16	68	15C	Raritan River Rd	Open Space
17	5	15C	128 Mt Grove Road	Vacant Land
18	16	15C	Off Raritan Rvr Rd	Vacant Land
18	24	15C	Off Raritan Rvr Rd	Conservation
19	16	15C	139 Raritan River Road	Vacant Land
20	16	15C	139 Raritan River Road	Vacant Land
21	5	15C	High Bridge-Califon	Vacant Land
21	6	15C	366-382 Route 513	Vacant Land
24	17	15C	2-10 Hickory Run Road	Water Shed
24	43	15C	Windswept Lane	Vacant Land
29	32.01	15C	530 West Hill Road	Municipal Bldg/Park
29	32.03	15C	67 Bunnvale Road	Memorial Park
30	1	15C	Sanatorium/Skinner Rd	Vacant Land
30	2.01	15C	100 Sanatorium Road	Dedicated Open Space
30	46.01	15C	264 Rocky Run Rd	Raritan River Gree
33	4	15C	73 Mt Kipp Road	Residence
35	88	15C	97 Red Mill Road	Vacant Land

36	18.04	15C	669 Woodglen Road	Green Acres
36	26.03	15C	133 Anthony Road	Reservoir
36	27	15C	332 Newport Road	Vacant Land
36	28	15C	326 Newport Road	Miquoin Woods
40	39	15C	225-235 Maple Lane	Vacant Land
44	3	15C	19 Hollow Brook Road	Vacant Land
44	18	15C	Ravine Road	Vacant Land
44	24.03	15C	133 Hollow Brook Road	Vacant Land
45	2	15C	230 Maple Lane	Game Preserve
45	4.01	15C	236 Maple Lane	Vacant Land
46	7	15C	134 Hollow Brook Road	Vacant Land
46	10	15C	140 Hollow Brook Road	Vacant Land
46	34	15C	20-40 Pleasant Grove Road	Park
48	27	15C	31-39 Pleasant Grove Road	Park
49	4.02	15C	51-55 Anthony Road	Open Space
49	89.01	15C	16-24 Shady Lane	Green Acres
49	89.02	15C	16-24 Shady Lane	Green Acres
51	9	15C	21 Pleasant Grove Rd	Green Acres/Environ
54	14	15C	219 Old Turnpike	Park
55	1.01	15C	Old Turnpike Road	Vacant Land
56	1	15C	80 Point Mountain Rd	Game Preserve
56	15	15C	315 Turkey Top Road	Vacant Land
56	21	15C	409-419 Penwell Road	Vacant Land
56	30	15C	Penwell Road	Vacant Land
57	1	15C	272-278 Musconetcong Rive	Vacant Land
57	4	15C	132 Mountain Top Rd	Point Mountain
57	12	15C	11-29 Point Mountain Rd	Pitha Tract
57	13.01	15C	5 Point Mountain Road	Vacant Land
57	13.02	15C	3 Point Mountain Road	Vacant Land
57	43	15C	Off Mountain Top Road	Conservation/Recrea
58	6	15C	267-279 Musconetcong Rvr	Vacant Land
59	21	15C	248 Musconetcong River Rd	Vacant Land
59	71	15C	68 Hollow Road	Vacant Land
60	13	15C	9 Butlers Park Road	Green Acres
64	8	15C	339 Newport Road	Garage
69	29	15C	Off Musconetcong River Rd	Highlands Greenway
70	24.01	15C	135 Musconetcong River Rd	Vacant Land
71	1	15C	59 Musconetcong River Rd	Vacant Land
71	3	15C	57 Musconetcong River Rd	Historic Site
72	14	15C	39 Musconetcong River Rd	Vacant Land
73	55.09	15C	Pine Stone Drive	Vacant Land
77	7.02	15C	Off Penwell Along River	Vacant Land
77	9	15C	603-615 Hermit's Lane	Park
77	9.01	15C	Off Penwell Along River	Vacant Land
300	1	15C	Off Raritan River Road	Vacant Land
300	1.01	15C	Near Hoffmans Crossing	Vacant Land
300	1.02	15C	Near Hoffmans Crossing	Vacant Land
10	29	15D	11 Bunnvale Road	Pastor Residence
10	30	15D	285 Route 513	Church

12	15	15D	101 Voorhees Road	Church
21	6.01	15D	384 Route 513	Medical Offices
21	7	15D	398 Route 513	Church
21	7.02	15D	390 Route 513	Parsonage
30	11	15D	442 West Hill Road	Church
35	2	15D	447 West Hill Road	Parsonage
40	12	15D	2 Sliker Road	Parking & Playground
57	31	15D	110 Anthony Road	Swack Historic Site
69	46	15D	180 Musconetcong River Rd	Church
3	6.01	15F	2010 Route 31	Playground
9	7.01	15F	Sanatorium Rd	Hagadorn Preserve
10	7	15F	235 Rocky Run Road	Vacant Land
11	22	15F	175 Buffalo Hollow Road	100% Disabled Vet
18	40	15F	173 Mt Grove Road	Disabled Vet
24	5.04	15F	36 Hickory Run Road	Disabled Veteran
24	10.05	15F	5 Evergreen Lane	100% Disabled Vet
29	32.04	15F	532 West Hill Road	Firehouse
29	32.05	15F	528 West Hill Road	Rescue Sqd
30	1.01	15F	Sanatorium Rd	Vacant Land
33	5.01	15F	79 Mt Kipp Road	100% Widow Vet
35	31.15	15F	5 Whiteoak Ridge Road	Disabled Veteran
36	22.03	15F	71 Anthony Road	Disabled Veteran
37	3	15F	551 East Hill Road	Disabled Veteran
49	71	15F	107 Sliker Road	100% Disabled Vet
50	1	15F	36 Anthony Road	100% Disabled Vet
53	3	15F	334 Turkey Top Road	Camp
56	12	15F	97 Mt Lebanon Road	Grave Yard & Church
57	2	15F	65 Point Mountain Road	Disabled Veteran
58	4	15F	253 Musconetcong River Rd	100% Disabled Vet
59	41	15F	109 Mountain Top Road	Disabled Veteran
61	23.02	15F	5 Harber Drive	100% Disabled Vet
64	12	15F	143 Anthony Road	Firehouse
67	1	15F	37 Forge Hill Road	100% Disabled Vet
73	54	15F	41-43 Dutch Hill Road	Rehab Facility

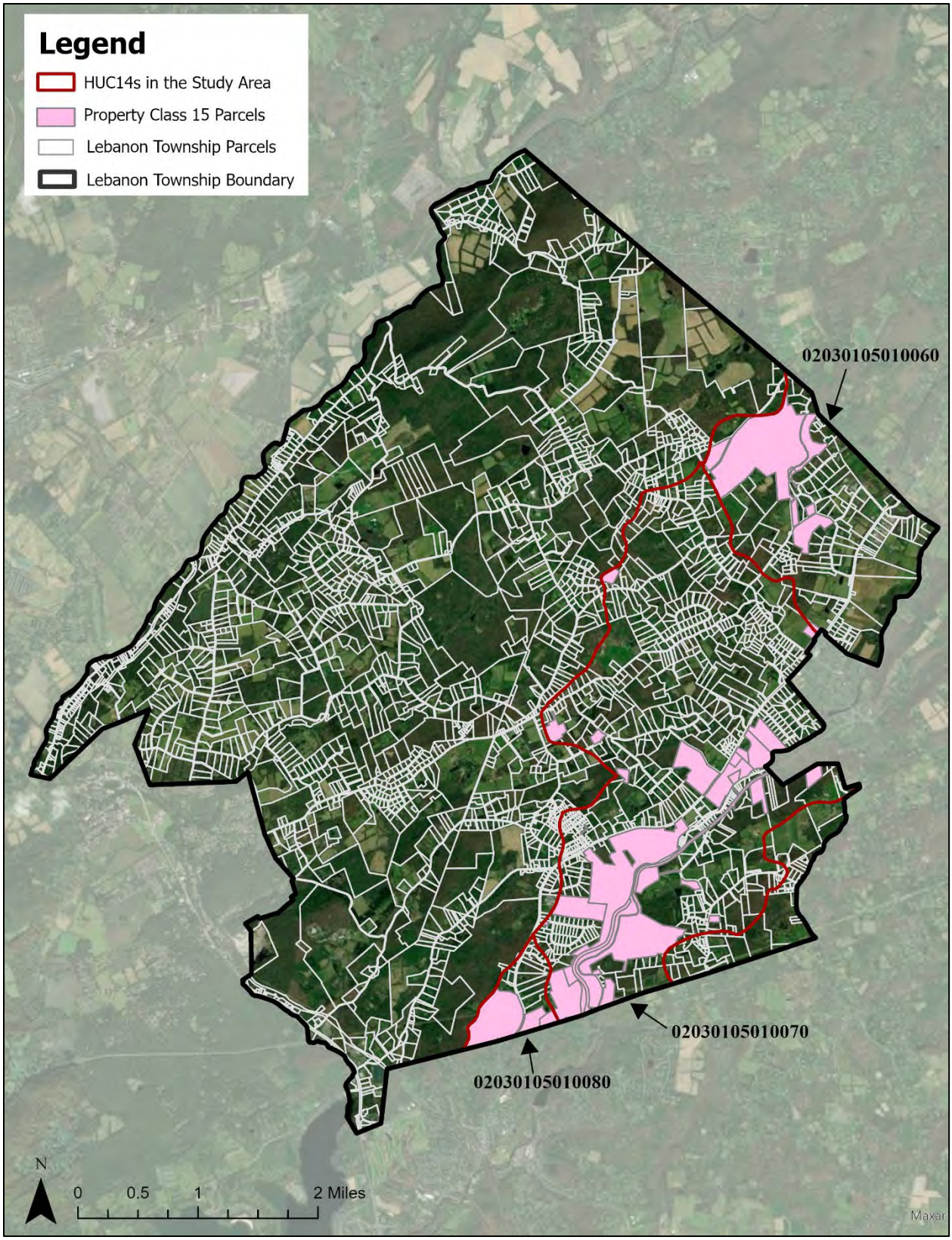


Figure 11: Property Class 15 parcels in the Study Area of Lebanon Township

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

Block	Lot	Prop Class	Location	Facility Type
***12[2]**	**44.01**	**15A**	**256 County Road 513**	**Voorhees H S**
21	8	15A	400 Route 513	School
24[2]	6	15A	70 Bunnvale Road	Schools
16	16	15B	104-105 Lockheed Road	Esc
16	20.01	15B	43 Hoffmans Crossing Road	Educational Facility
***10[2]**	**31**	**15C**	**3 Bunnvale Road**	**Library**
***11[2]**	**37**	**15C**	**201+251 Route 513**	**Voorhees State Park**
11	45	15C	High Bridge-Califon	Vacant Land
12	1	15C	530 Cokesbury Rd	Conservation-Green
12	2	15C	200 Route 513	Voorhees State Park
12	56	15C	308 Route 513	Ken Lockwood Gorge
14	3	15C	Lockwood Gorge	Vacant Land
16	1	15C	Raritan River Rd So	Ken Lockwood Gorge
16[2]	13	15C	Lockwood Gorge	Ken Lockwood Gorge
16	68	15C	Raritan River Rd	Open Space
17	5	15C	128 Mt Grove Road	Vacant Land
18	16	15C	off Raritan Rvr Rd	Vacant Land
18	24	15C	off Raritan Rvr Rd	Conservation
19	16	15C	139 Raritan River Road	Vacant Land
20	16	15C	139 Raritan River Road	Vacant Land
21	5	15C	High Bridge-Califon	Vacant Land
21	6	15C	366-382 Route 513	Vacant Land
24	17	15C	2-10 Hickory Run Road	Water Shed
24	43	15C	Windswept Lane	Vacant Land
40	39	15C	225-235 Maple Lane	Vacant Land
44	3	15C	19 Hollow Brook Road	Vacant Land
44	18	15C	Ravine Road	Vacant Land
44	24.03	15C	133 Hollow Brook Road	Vacant Land
45	2	15C	230 Maple Lane	Game Preserve
45	4.01	15C	236 Maple Lane	Vacant Land
46	7	15C	134 Hollow Brook Road	Vacant Land
46	10	15C	140 Hollow Brook Road	Vacant Land
46[2]	34	15C	20-40 Pleasant Grove Road	Park
48[2]	27	15C	31-39 Pleasant Grove Road	Park
49[2]	89.01	15C	16-24 Shady Lane	Green Acres
300	1	15C	Off Raritan River Road	Vacant Land
300	1.01	15C	Near Hoffmans Crossing	Vacant Land
300	1.02	15C	Near Hoffmans Crossing	Vacant Land
***10**	**30**	**15D**	**285 Route 513**	**Church**
***12[2]**	**15**	**15D**	**101 Voorhees Road**	**Church**
21	6.01	15D	384 Route 513	Medical Offices
***21[1]**	**7**	**15D**	**398 Route 513**	**Church**
***21[1]**	**7.02**	**15D**	**390 Route 513**	**Parsonage**
40	12	15D	2 Sliker Road	Parking & Playground
24	5.04	15F	36 Hickory Run Road	Disabled Veteran
24	10.05	15F	5 Evergreen Lane	100% Disabled Vet

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

Site includes two tax-exempt parcels

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

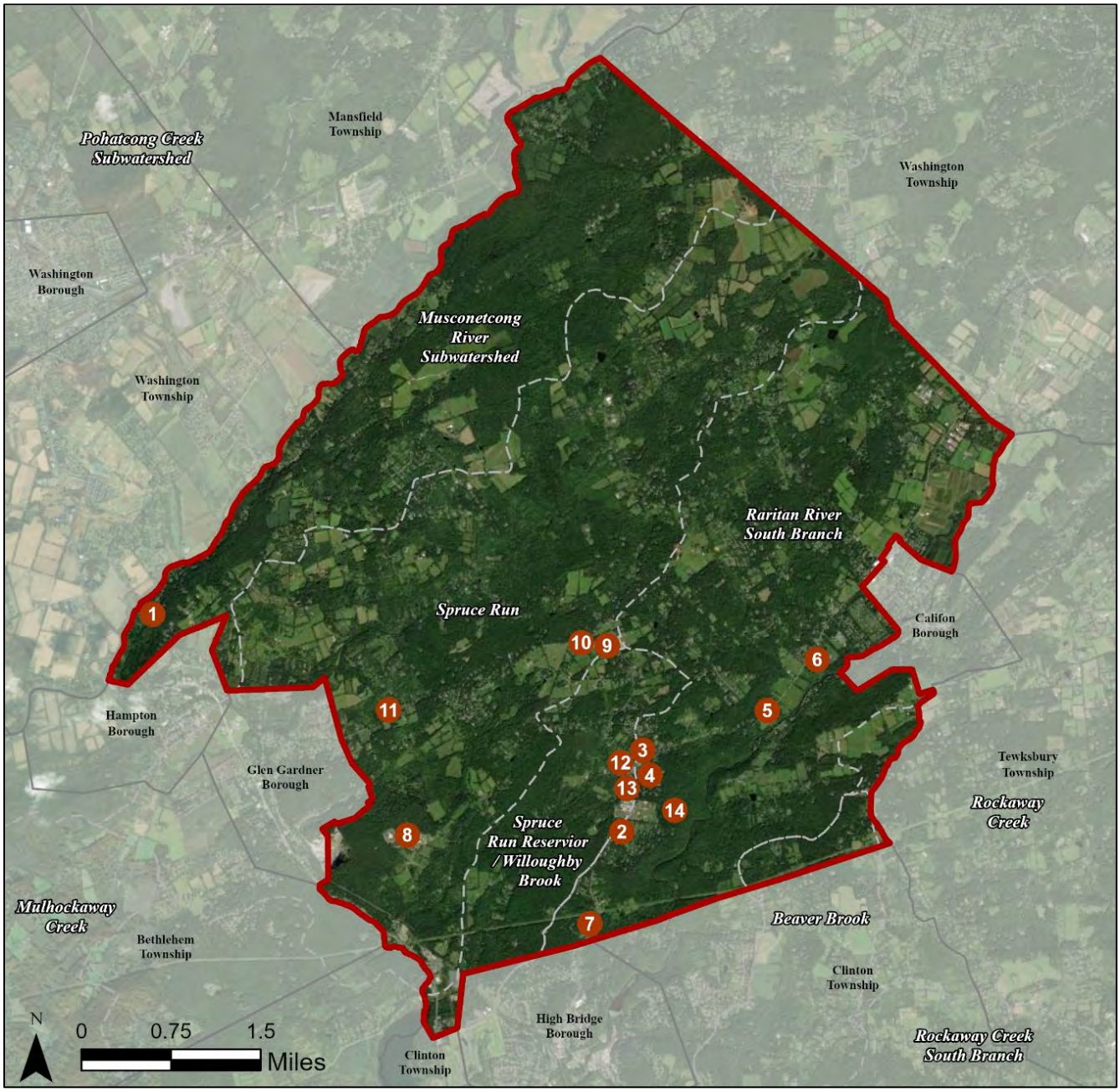


Figure 12: Sites with Green Infrastructure Opportunities in Lebanon Township

LEBANON TOWNSHIP MUSEUM

RAP ID: 1

Subwatershed: Musconetcong River

HUC14 ID: 02040105160030

Site Area: 20,970 sq. ft.

Address: 57 Musconetcong River Road
Hampton, NJ 08827

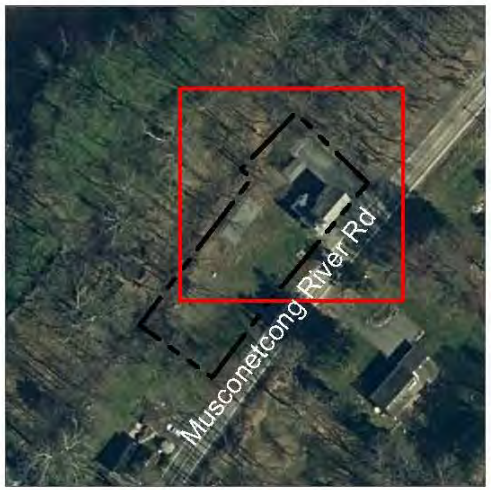
Block and Lot: Block 71, Lot 3

A rain garden can be installed to the southwest of the building using the existing disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. An additional rain garden can be constructed to the south of the western shed to capture, treat, and infiltrate the stormwater runoff from the rooftop. The existing gravel parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot, driveway, road, and northern shed. A gutter system can be installed on both sheds to maximize the drainage area being managed. A preliminary soil assessment suggests that the soils have suitable drainage characteristicsfor 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"
21	4,360	0.2	2.2	20.0	0.003	0.13

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	1,130	0.033	6	2,270	0.09	285	$2,850
Pervious pavement	3,200	0.094	13	6,420	0.24	1,345	$33,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



Lebanon Township Museum

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

0 15' 30'

BODY OF CHRIST MINISTRIES

RAP ID: 2

Subwatershed: Raritan River South Branch

Site Area: 205,769 sq. ft.

Address: 101 Voorhees Road
Glen Gardner, NJ 08826

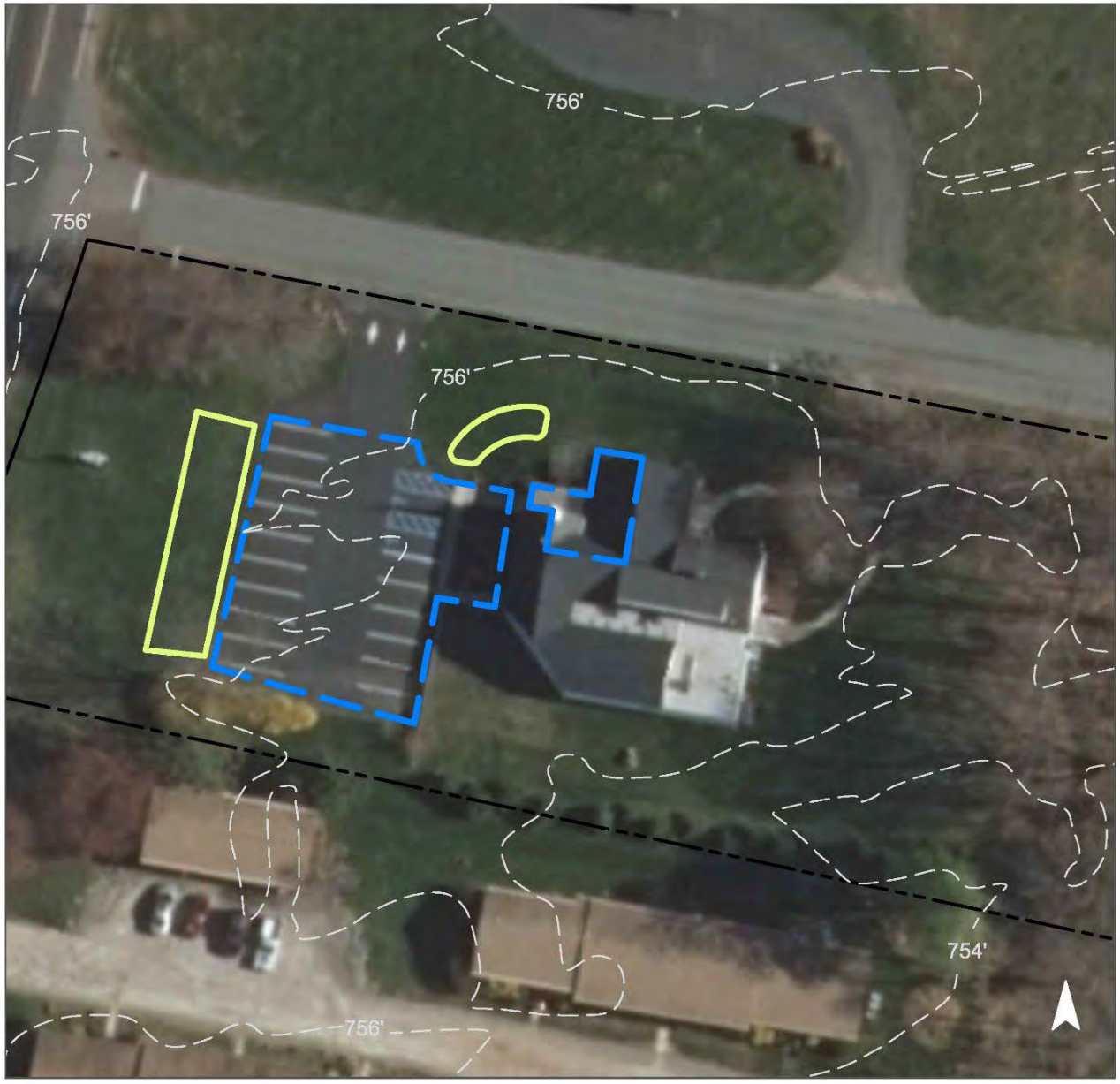
Block and Lot: Block 12, Lot 15

Two bioretention systems are proposed to infiltrate the water from the sloped lawn and a disconnected downspout. 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"
49	101,155	4.9	51.1	464.4	0.079	2.77

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	0.187	31	13,730	0.52	1,800	$9,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Body of Christ Ministries

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

0 25' 50'

BUNNVALE LIBRARY

RAP ID: 3

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010070

Site Area: 43,965 sq. ft.

Address: 7 Bunnvale Road
Califon, NJ 07830

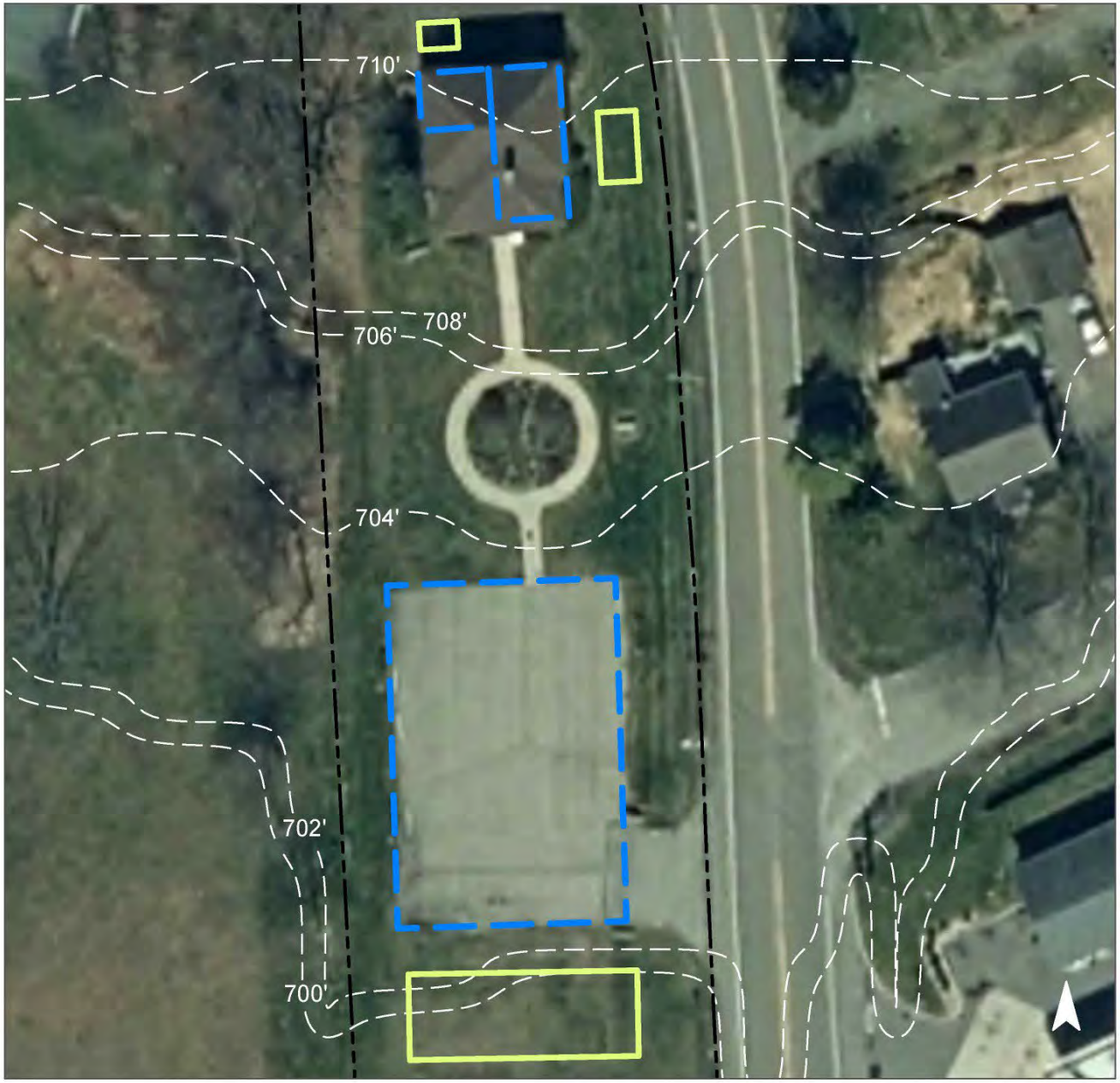
Block and Lot: Block 10, Lot 31

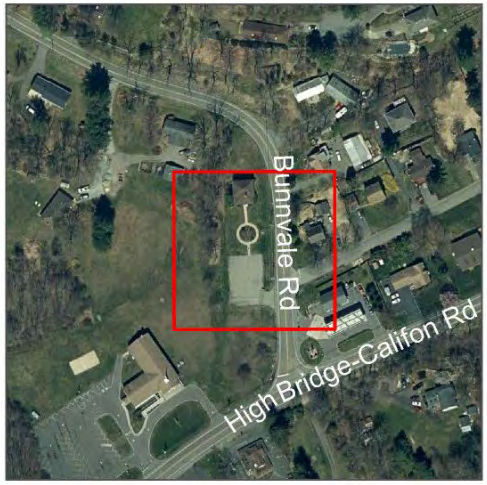
Rain gardens can be installed to the northeast and to the west of the building using the existing disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. Downspout redirection may be needed. An additional rain garden can be constructed to the south of the parking lot to capture, treat, 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 49.4"
31	13,775	0.7	7.0	63.2	0.011	0.42

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	6,420	0.188	29	12,870	0.48	1,605	$16,050

GREEN INFRASTRUCTURE RECOMMENDATIONS





Bunnvale Library

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

0 20' 40'

GROENDYKE ASSOCIATES

RAP ID: 4

Subwatershed: Raritan River South Branch

Site Area: 26,175 sq. ft.

Address: 295 County Road 513
Califon, NJ 07830

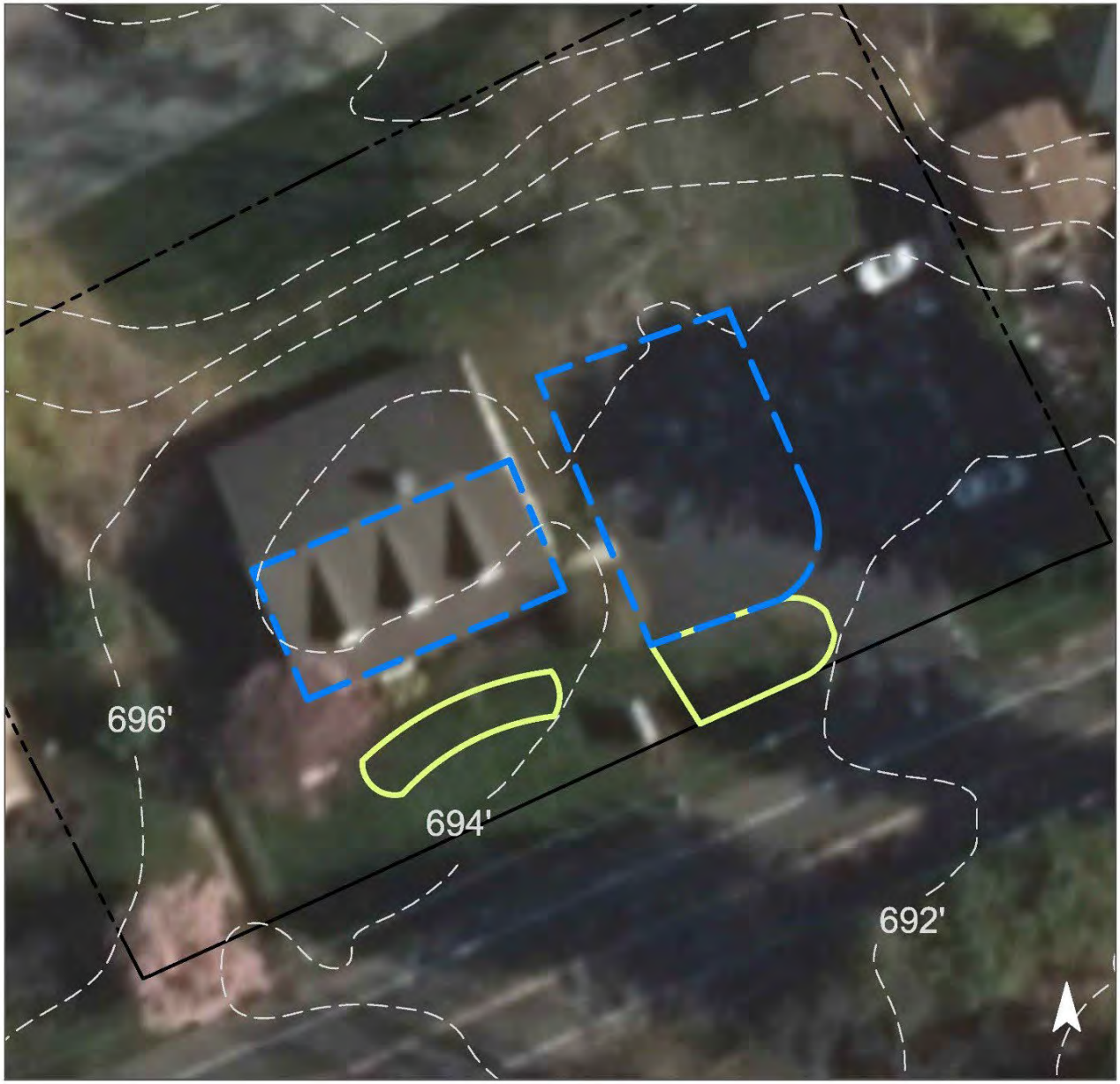
Block and Lot: Block 25, Lot 9

Two bioretention systems are proposed in the front of the building to infiltrate the water from the roof as well as the downspouts. 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"
57	15,042	0.7	7.6	69.1	0.012	0.41

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.093	16	6,800	0.26	890	$4,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Groendyke Associates

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

0 25' 50'

OLDWICK VILLAGE AUTO BODY

RAP ID: 5

Subwatershed: Raritan River South Branch

Site Area: 167,230 sq. ft.

Address: 363 County Road 513
Califon, NJ 07830

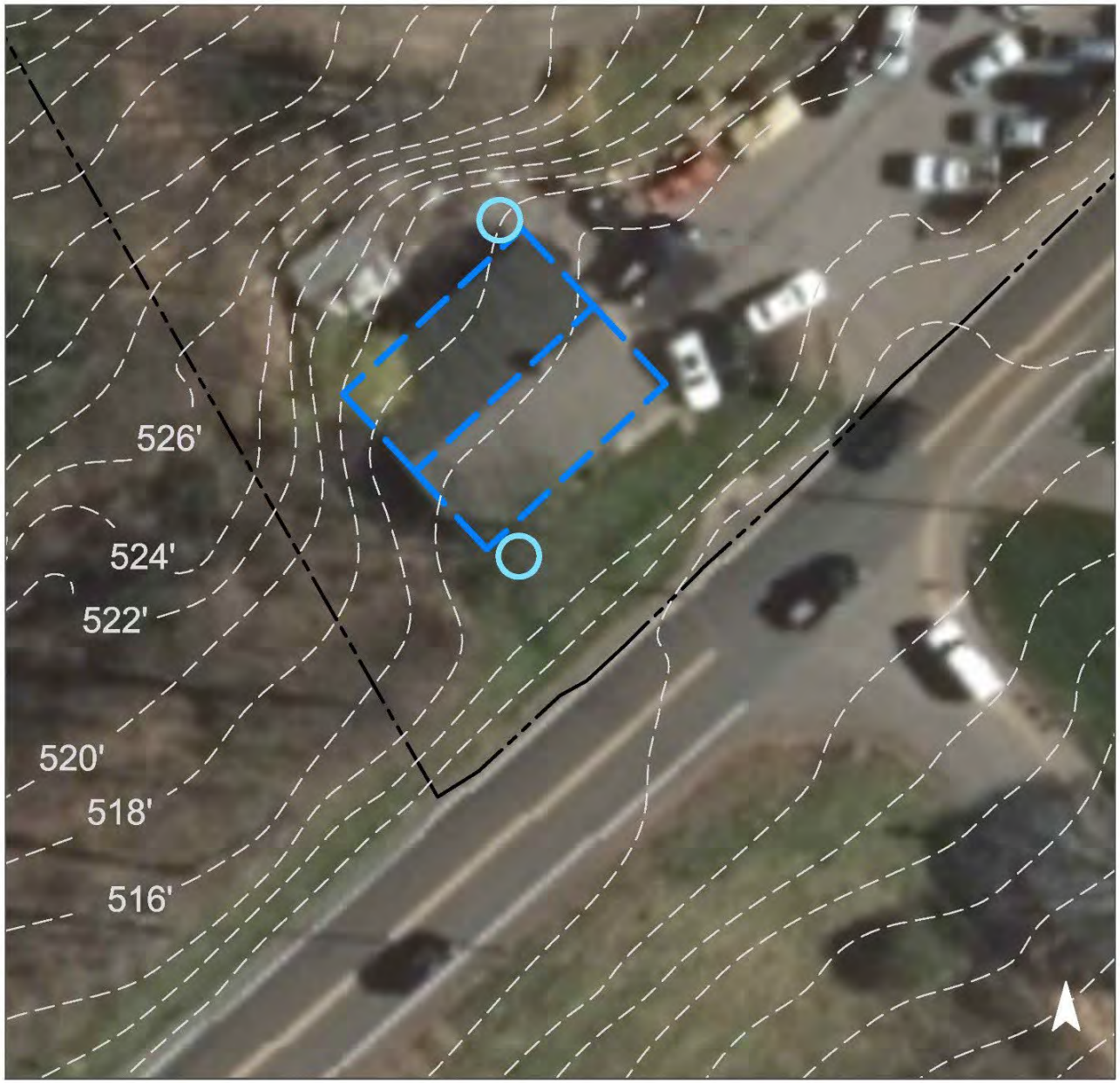
Block and Lot: Block 24, Lot 20

Two rainwater harvesting cisterns are proposed on opposite corners of the building to capture stormwater runoff from the roof. The water can be used for washing vehicles, watering plants, or other non-potable purposes. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
7	12,467	0.6	6.3	57.2	0.010	0.34

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
Rainwater harvesting	0.052	9	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oldwick Village Auto Body

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

0 25' 50'

ST. JOHN NEUMANN ROMAN CATHOLIC CHURCH

RAP ID: 6

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010070

Site Area: 1,350,160 sq. ft.

Address: 398 County Road 513
Califon, NJ 07830

Block and Lot: Block 21, Lots 7 & 7.02

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from various rooftops. This may require downspout redirections and disconnections, as well as trench drains. Existing parking spaces in the northern, southern, and western parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt, roadway, and sidewalks. This may require trench drains. 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"
9	122,936	5.9	62.1	564.4	0.096	3.79

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	9,830	0.288	44	19,710	0.74	2,460	$24,600
Pervious pavement	43,010	1.258	188	86,240	3.24	10,050	$251,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. John Neumann Roman Catholic Church

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

0 100' 200'

VOORHEES RESIDENTIAL COMMUNITY HOME

RAP ID: 7

Subwatershed: Raritan River South Branch

Site Area: 18,782,281 sq. ft.

Address: 201 County Road 513
Glen Gardner, NJ 08826

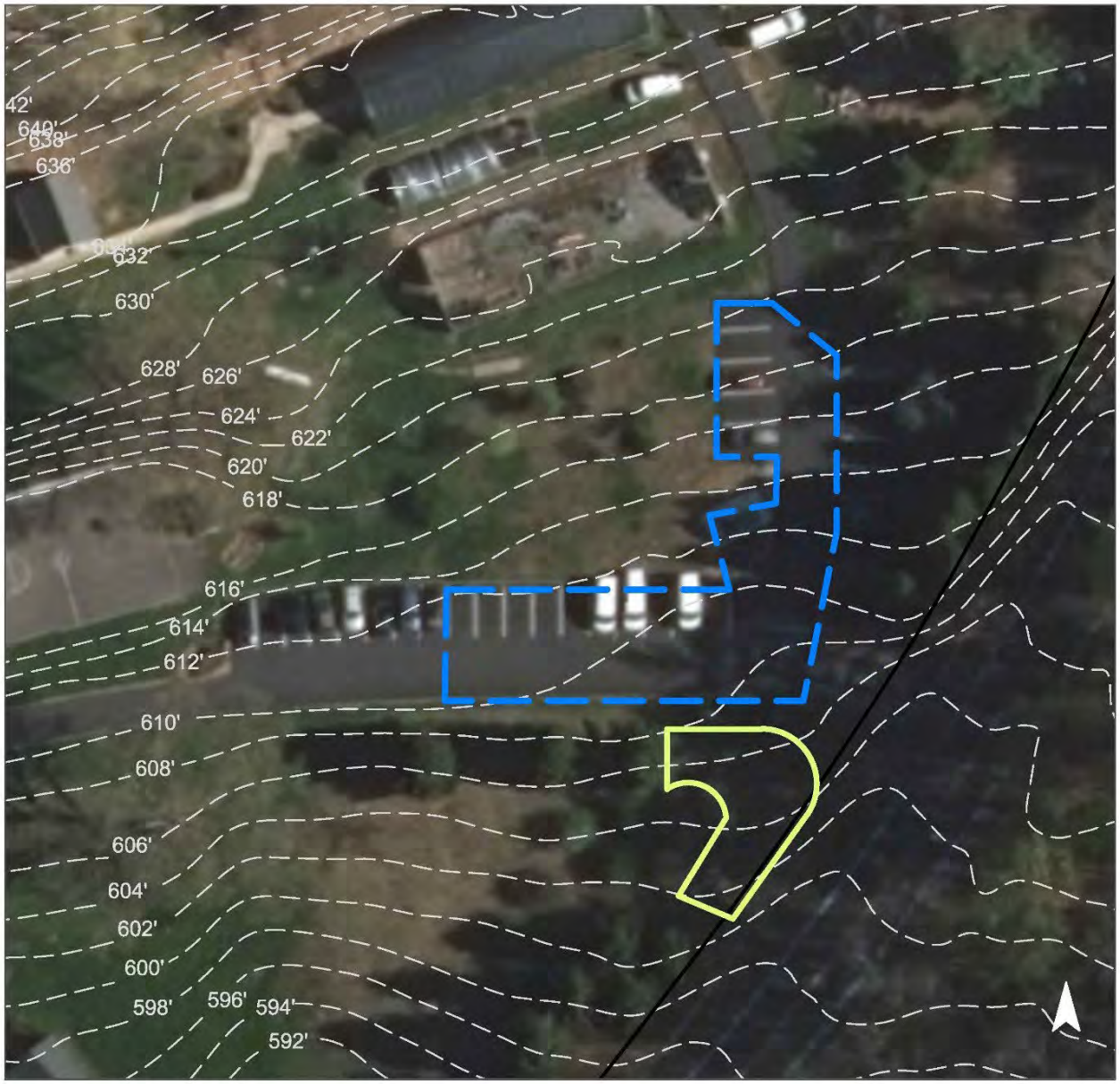
Block and Lot: Block 11, Lot 37

A bioretention system is proposed at the entrance of the property to reduce erosion and infiltrate the 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"
3	626,716	30.2	316.5	2,877.5	0.488	17.19

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	0.195	33	14,300	0.54	1,830	$9,150

GREEN INFRASTRUCTURE RECOMMENDATIONS



Voorhees Residential Community Home

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

0 25' 50'

FREEDOM HOUSE

RAP ID: 8

Subwatershed: Spruce Run

Site Area: 10,391,842 sq. ft.

Address: 3 Pavilion Road
Glen Gardner, NJ 08826

Block and Lot: Block 9, Lot 7

A bioretention system is proposed on the south side of the building to infiltrate the water from the downspouts of the building and to prevent erosion and flooding at the bottom of the hill. A rainwater harvesting cistern is proposed at the north side of the building to capture stormwater runoff from the roof. This water can be reused for non-potable purposes. 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	957,328	46.2	483.5	4,395.4	0.746	26.26

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	1,480	0.06	195	$975
Rainwater harvesting	0.026	4	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Freedom House

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

0 25' 50'

LEBANON TOWNSHIP MEMORIAL PARK

RAP ID: 9

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 1,560,808 sq. ft.

Address: 67 Bunnvale Road
Califon, NJ 07830

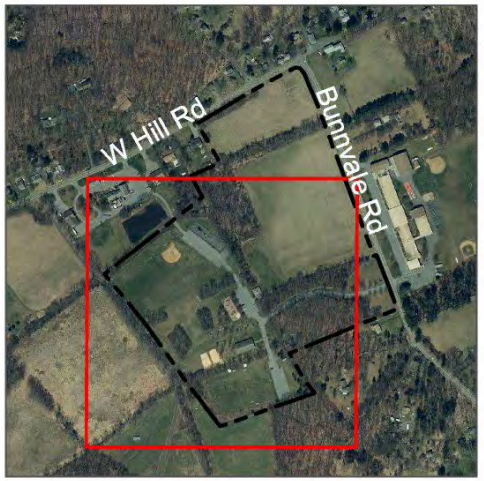
Block and Lot: Block 29, Lot 32.03

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from rooftops. Existing parking spaces in the middle and southern lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The tennis courts can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the courts and from the northern parking lot. Trench drains may be needed to intercept and redirect stormwater 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 49.4"
8	119,931	5.8	60.6	550.6	0.093	3.69

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	2,975	0.087	13	5,960	0.22	745	$7,450
Pervious pavement	53,200	1.556	232	106,660	4.01	17,105	$427,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



Lebanon Township Memorial Park

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

0 100' 200'

LEBANON TOWNSHIP MUNICIPAL BUILDING & FIRE DEPARTMENT

RAP ID: 10

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 284,800 sq. ft.

Address: 530 West Hill Road
Glen Gardner, NJ 08826

Block and Lot: Block 29, Lots 32.01, 32.04 & 32.05

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater ru noff from the rooftops, driveways, parking lots, and roadway. This may require downspout redirections and trench drains. Existing parking spaces to t he south and west in the eastern parking area can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt . Downspouts on the adjacent building can also be disconnected to direct rooftop runoff to the pervious pavement. A cistern can be installed to the west of the fire department 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 49.4"
36	102,155	4.9	51.6	469.0	0.080	3.15

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	6,485	0.190	29	13,000	0.49	1,625	$16,250
Pervious pavement	10,545	0.308	46	21,150	0.79	2,100	$52,500
Rainwater harvesting	850	0.025	4	700	N/A	700 (gal)	$2,100

GREEN INFRASTRUCTURE RECOMMENDATIONS

Lebanon Township Municipal Building & Fire Department

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

0 50' 100'

SPRUCE RUN LUTHERAN CHURCH

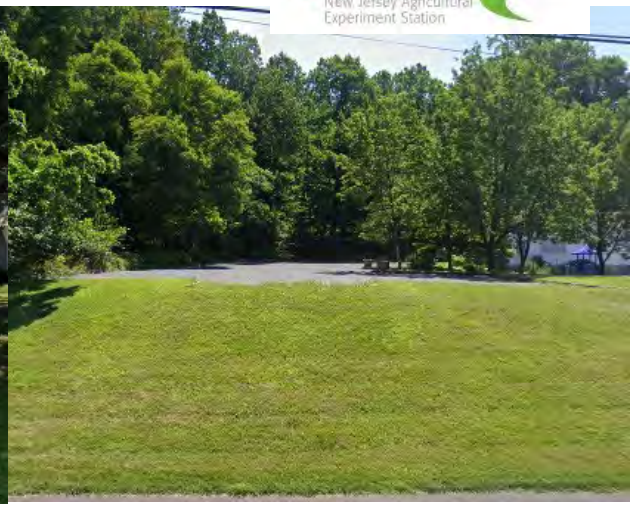
RAP ID: 11

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 73,543 sq. ft.

Address: 442 West Hill Road
Glen Gardner, NJ 08826



Block and Lot: Block 30, Lot 11

Rain gardens can be installed in multiple grass areas to capture, treat, and infiltrate the stormwater runoff from the driveway and parking lot. This may require trench drains and curb cuts. The existing asphalt playground can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the play area. The western gravel parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot and the shed rooftop. Building downspouts can be disconnected and redirected to both pervious pavement areas to increase the drainage area being managed. 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"
38	27,805	1.3	14.0	127.7	0.022	0.86

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	1,910	0.056	8	3,830	0.14	475	$4,750
Pervious pavement	8,745	0.256	38	17,530	0.66	4,335	$108,375

GREEN INFRASTRUCTURE RECOMMENDATIONS

Spruce Run Lutheran Church

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

0 25' 50'

BUNNVALE ASSEMBLY OF GOD

RAP ID: 12

Subwatershed: Spruce Run Reservoir / Willoughby Brook

HUC14 ID: 02030105020040

Site Area: 203,876 sq. ft.

Address: 285 County Road 513 #1
Glen Gardner, NJ 08826

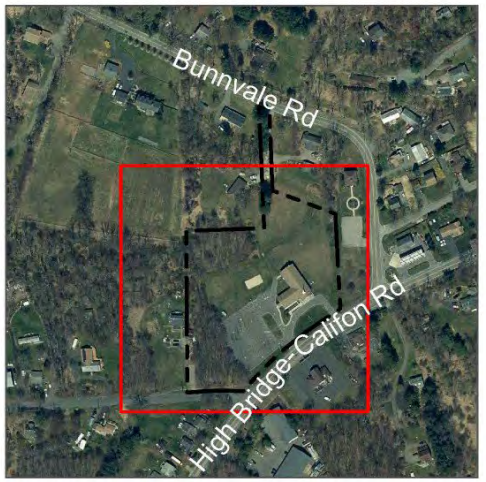
Block and Lot: Block 10, Lot 30

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftop, driveway, and parking lot. This may require downspout disconnections, redirections, and trench drains. A preliminarysoil 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"
27	55,863	2.7	28.2	256.5	0.044	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	32,895	0.962	144	65,960	2.48	8,230	$82,300

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bunnvale Assembly of God

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

0 50' 100'

ONO ROSA RESTAURANT

RAP ID: 13

Subwatershed: Spruce Run Reservoir / Willoughby Brook

Site Area: 36,744 sq. ft.

Address: 282 County Road 513
Glen Gardner, NJ 08826

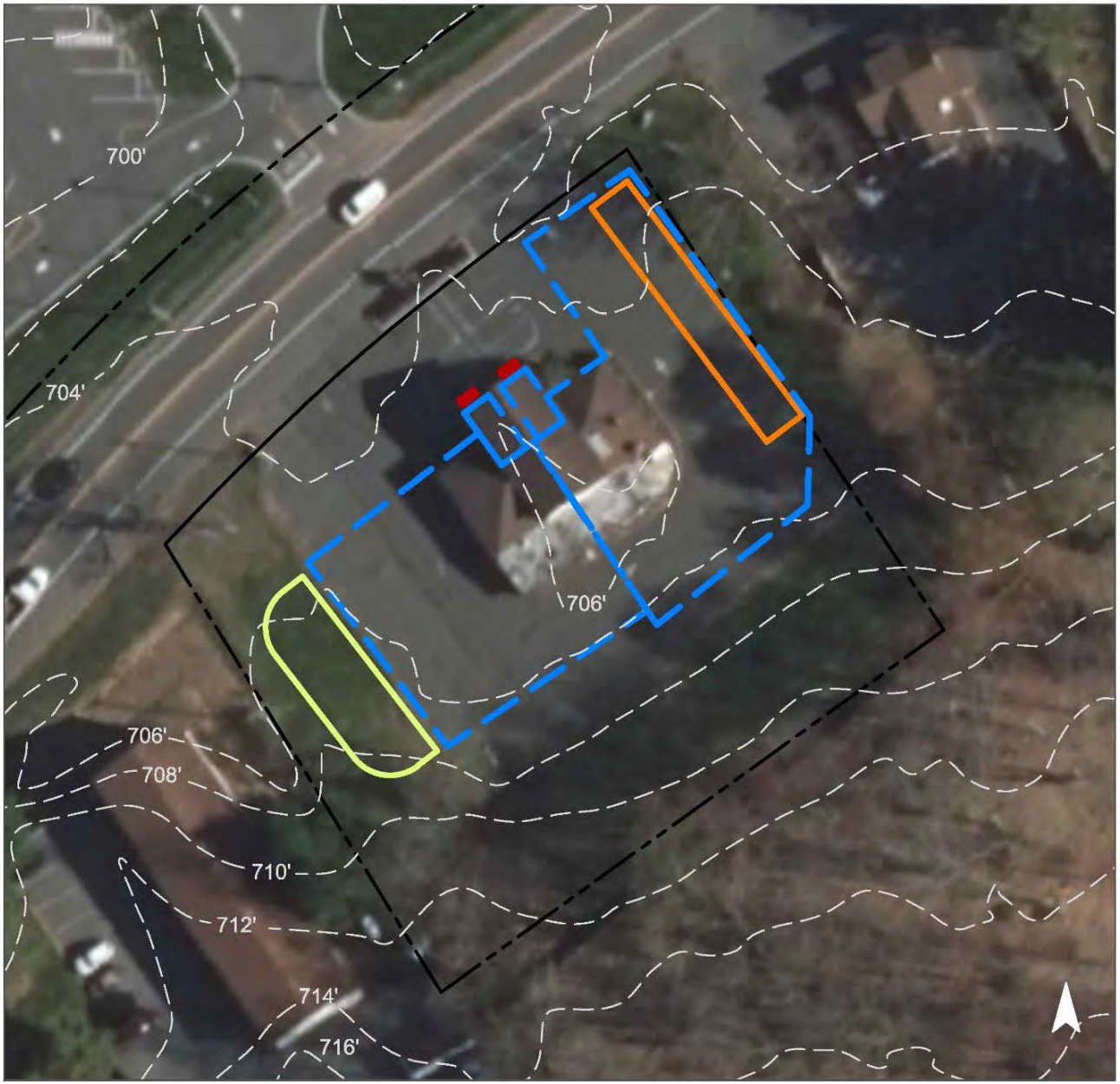
Block and Lot: Block 12, Lot 46

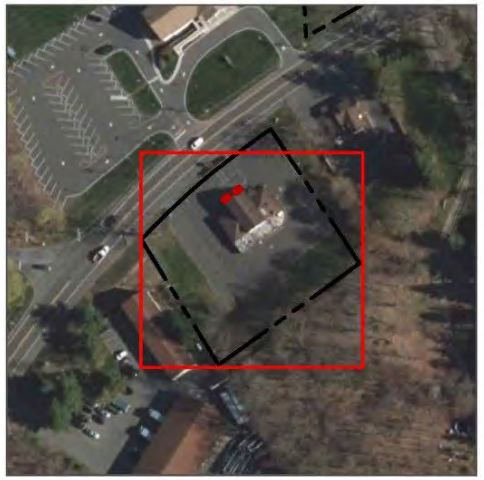
A bioretention system is proposed in the turfgrass to capture, treat, and infiltrate the west side of the parking lot and rooftop. Parking spaces on the east side of the parking lot can be converted to porous pavement to capture and infiltrate stormwater from the parking lot and rooftop. Planter boxes can be added to both entrances to capture runoff from the downspouts. 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"
69	25,259	1.2	12.8	116.0	0.020	0.69

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	11,700	0.44	1,530	$7,650
Pervious pavement	0.204	34	14,990	0.56	1,400	$35,000
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Ono Rosa Restaurant

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

0 25' 50'

VOORHEES HIGH SCHOOL

RAP ID: 14

Subwatershed: Spruce Run Reservoir / Willoughby Brook

Site Area: 2,417,193 sq. ft.

Address: 256 County Road 513
Glen Gardner, 08826

Block and Lot: Block 12, Lot 44.01

Two mowed detention basins at the east entrance can be retrofitted with rain gardens to capture, treat, and infiltrate stormwater runoff from the driveway and enhance pollinator habitat. Two sections 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"
25	596,442	28.8	301.2	2,738.5	0.465	16.36

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	0.366	61	26,890	1.01	3,515	$17,575
Pervious pavement	1.811	303	132,870	4.99	12,140	$303,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Voorhees High School

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

0 100' 200'

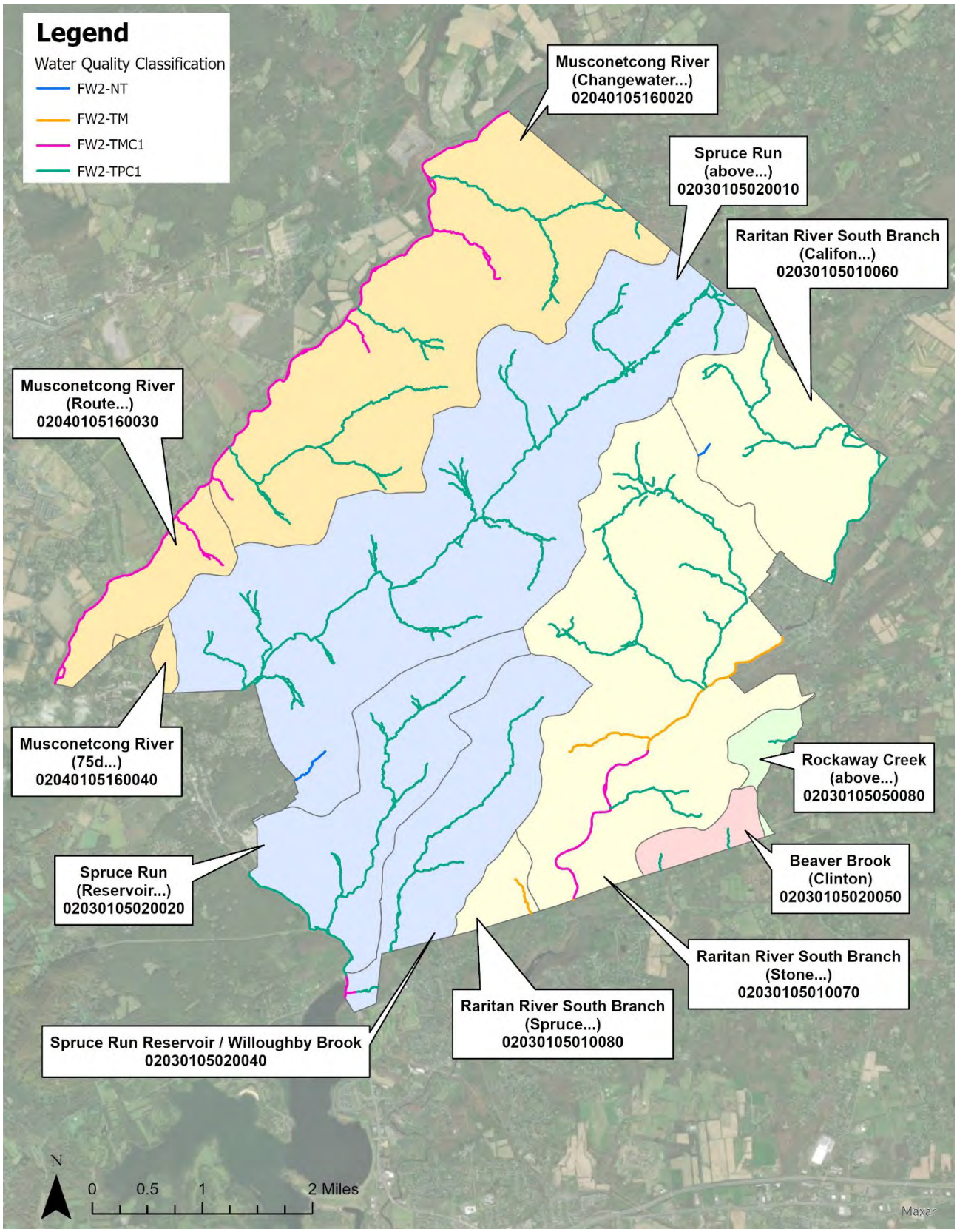


Figure 13. Water Quality Classification of Surface Waters in Lebanon Township

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

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	0.6	0.7%
Freshwater 2, trout production, Category One	FW2-TPC1	61.4	78.7%
Freshwater 2, trout maintenance	FW2-TM	3.0	3.9%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	13.0	16.7%

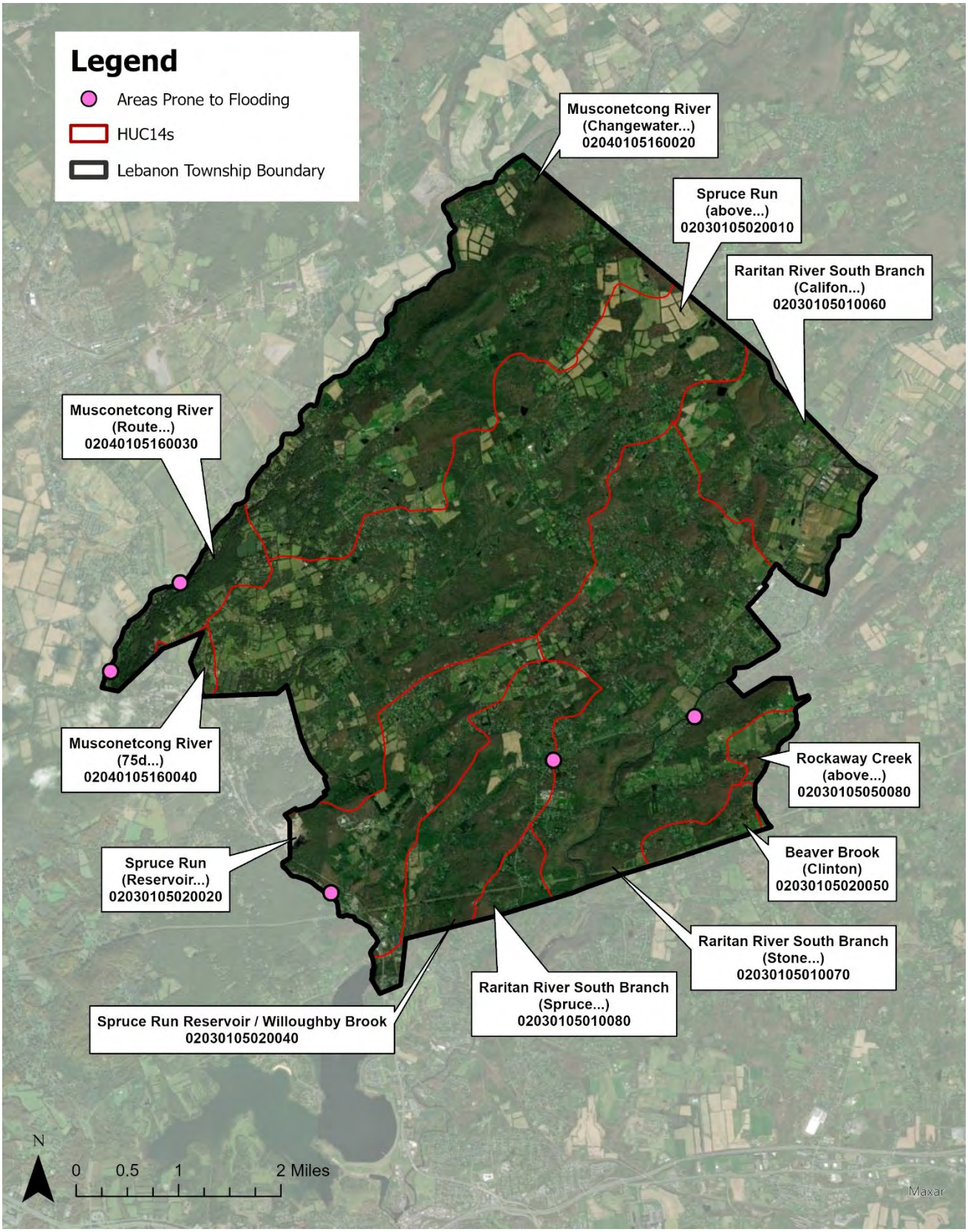


Figure 14. Areas Prone to Flooding in Lebanon Township

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.

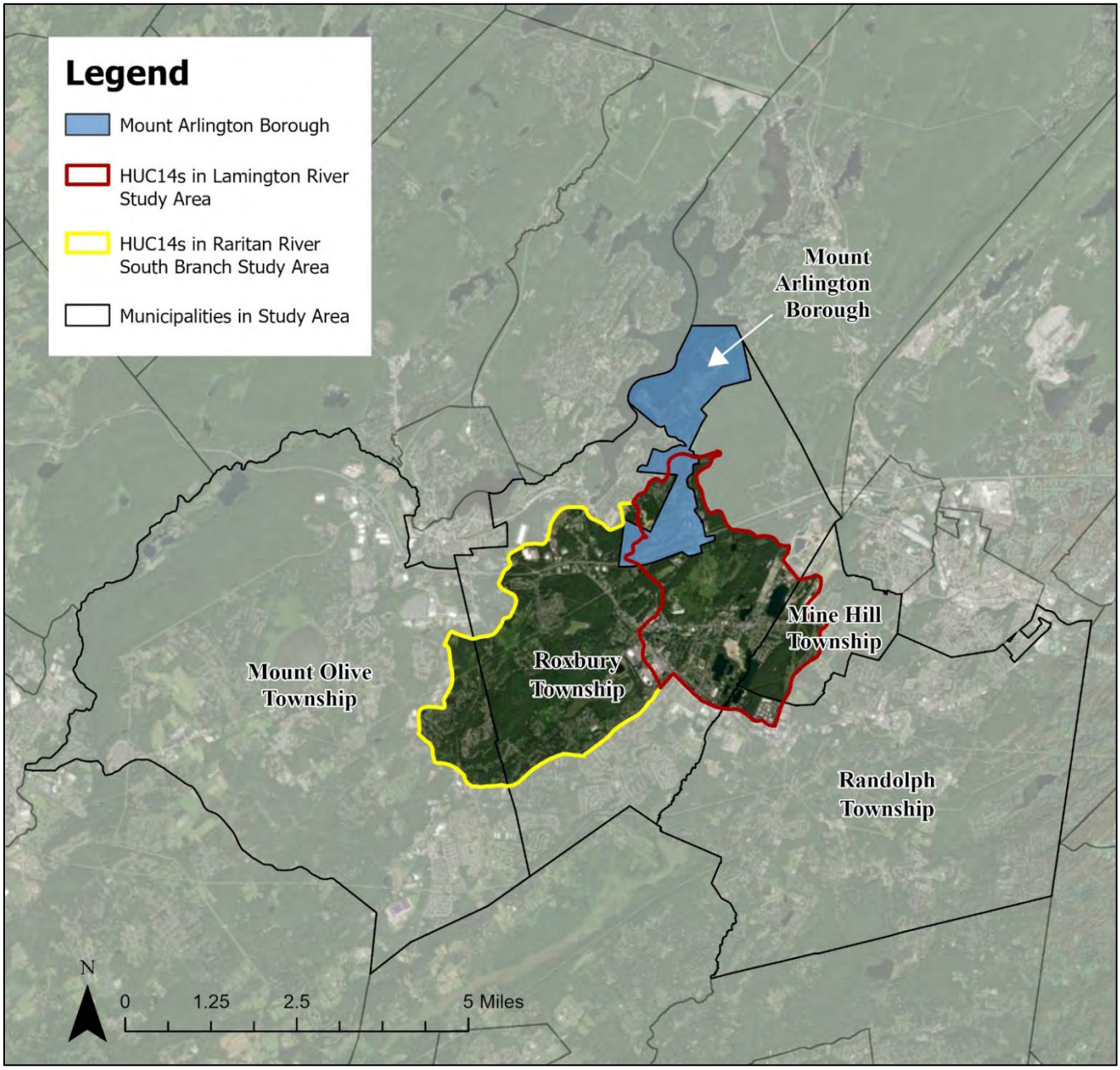


Figure 1: Municipalities in the Study Area

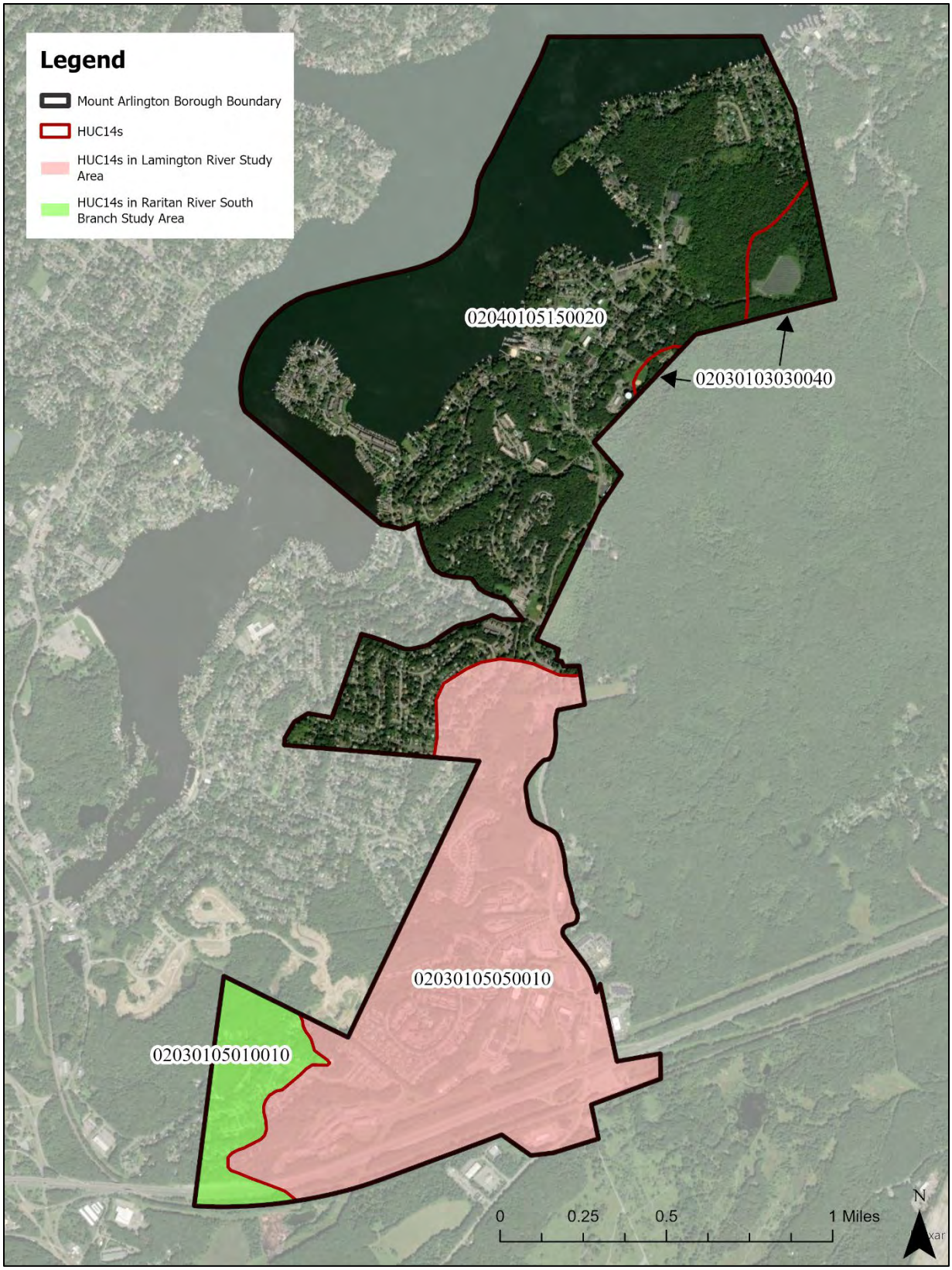


Figure 2: Portions of four HUC14s are in Mount Arlington Borough

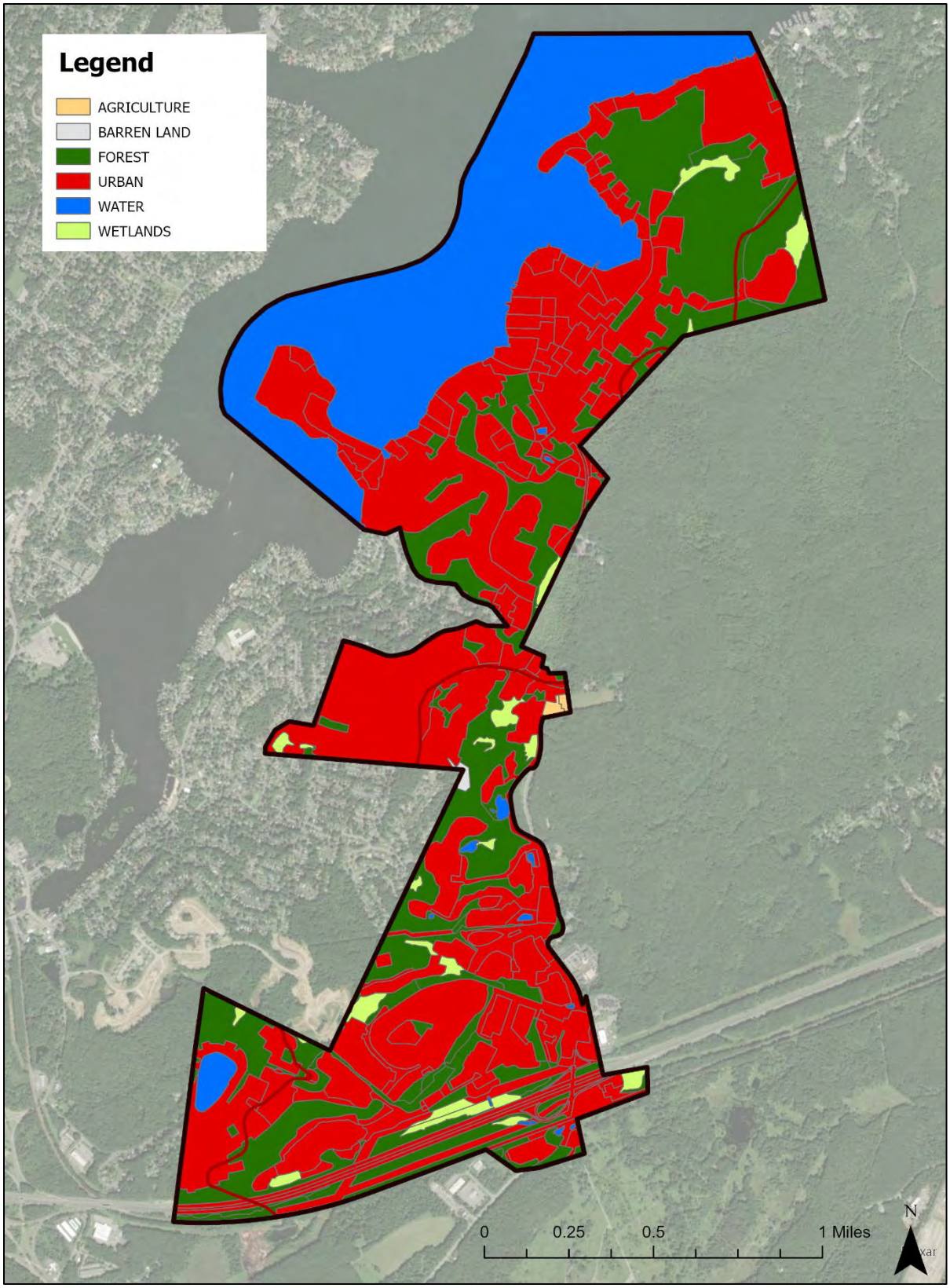


Figure 3: Land Use in Mount Arlington Borough

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.

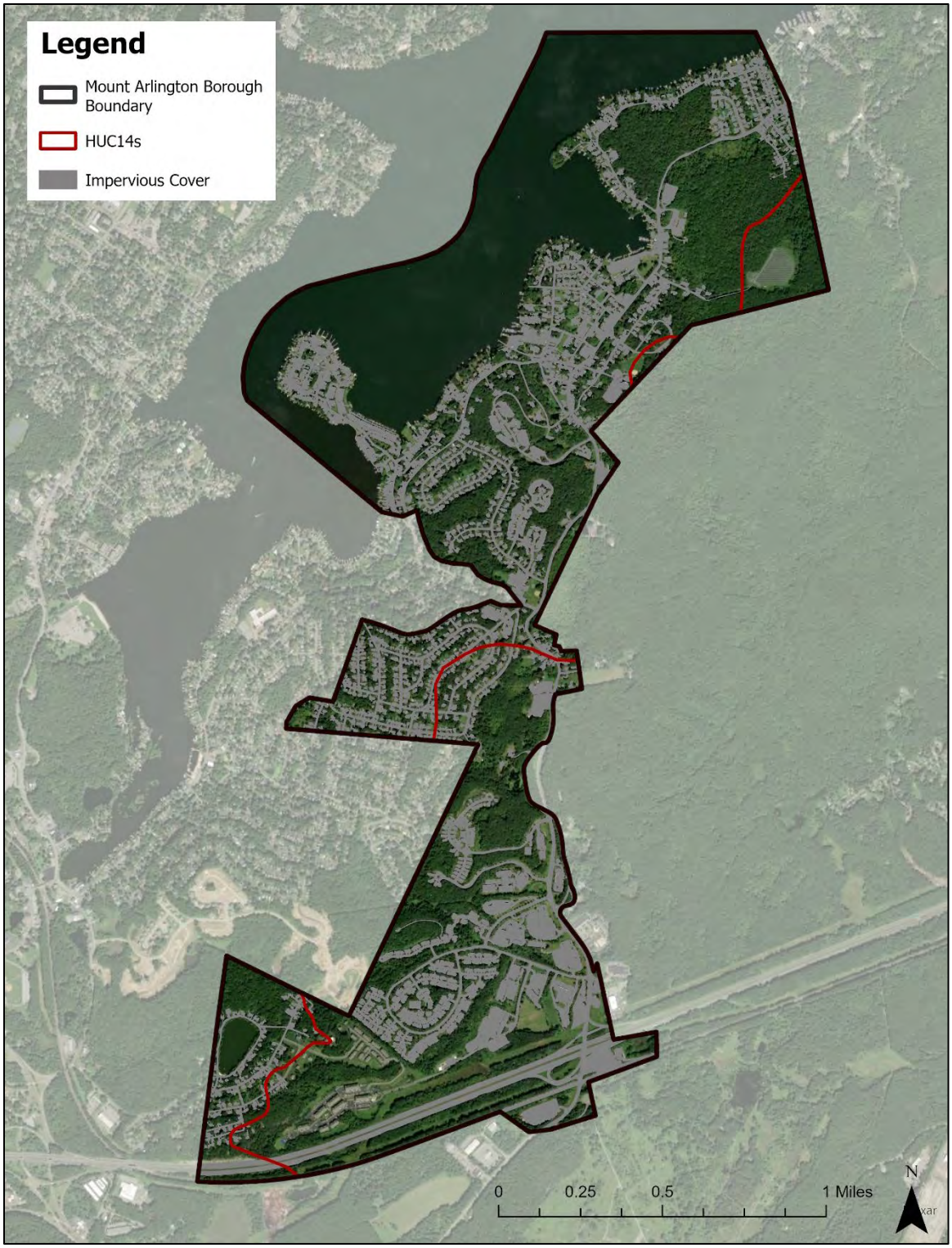


Figure 4: Impervious Cover in Mount Arlington Borough

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%**

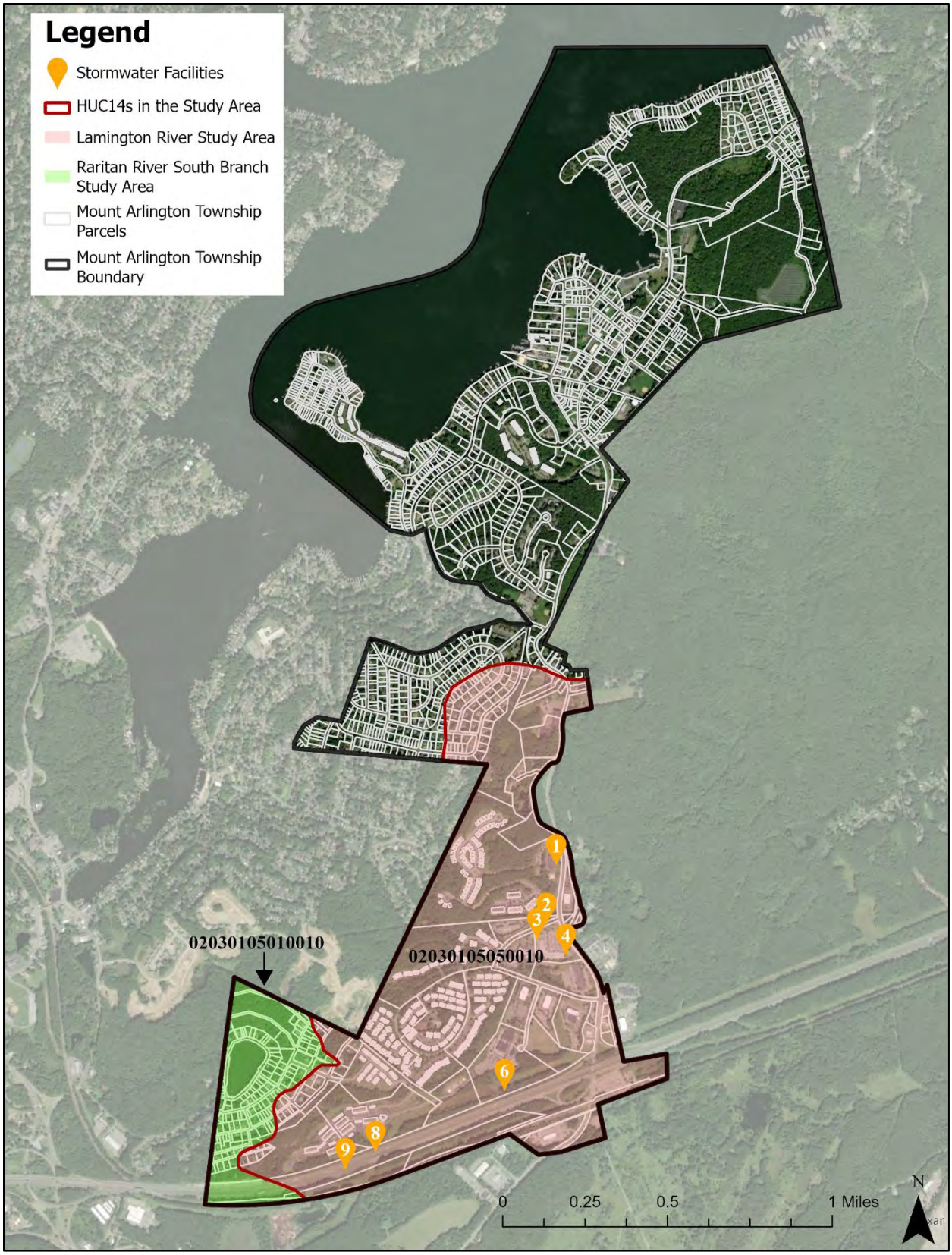


Figure 5: Stormwater Facilities in the Study Area of Mount Arlington Borough

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

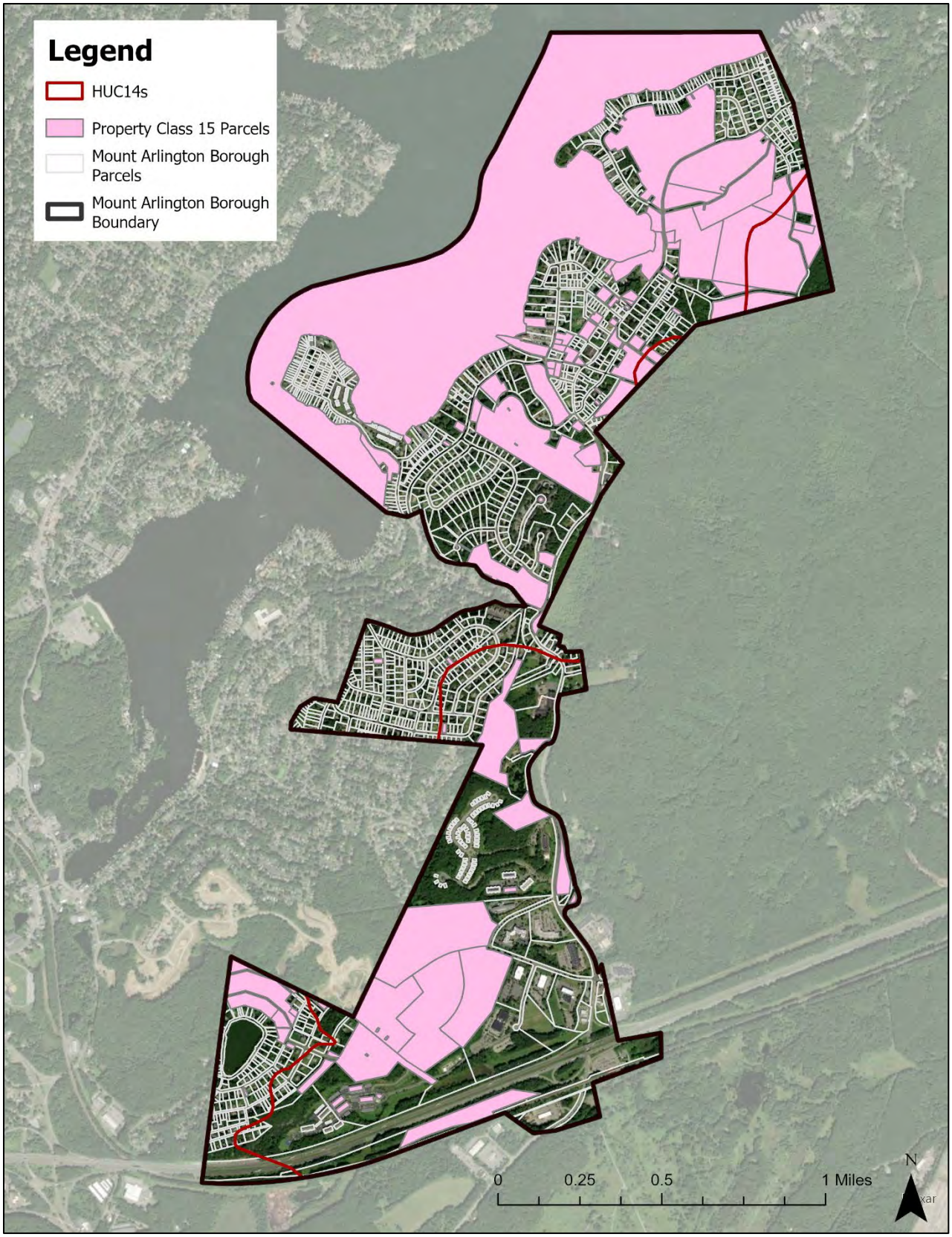


Figure 6: Property Class 15 Parcels in Mount Arlington Borough

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

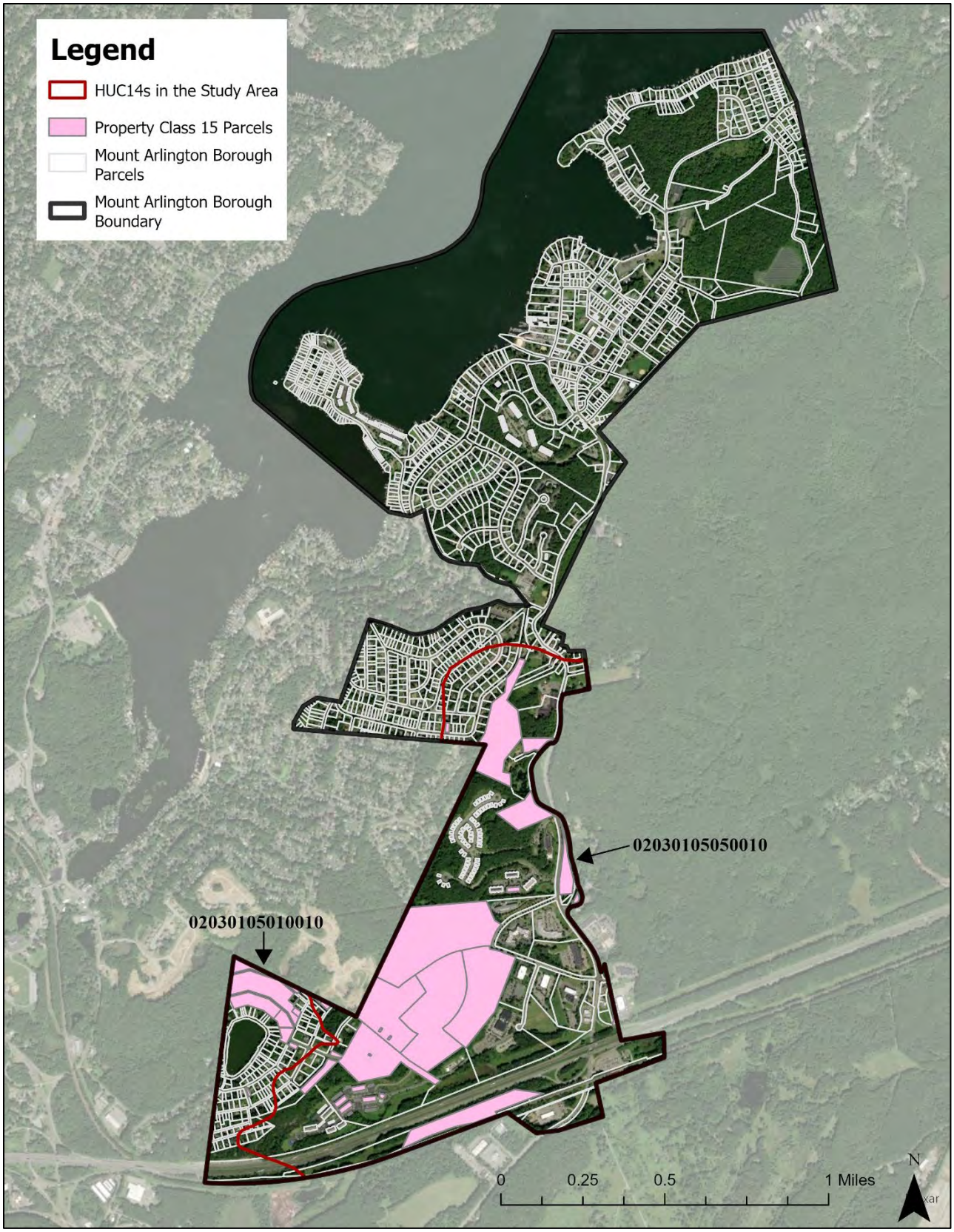


Figure 7: Property Class 15 parcels in the Study Area of Mount Arlington Borough

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**

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

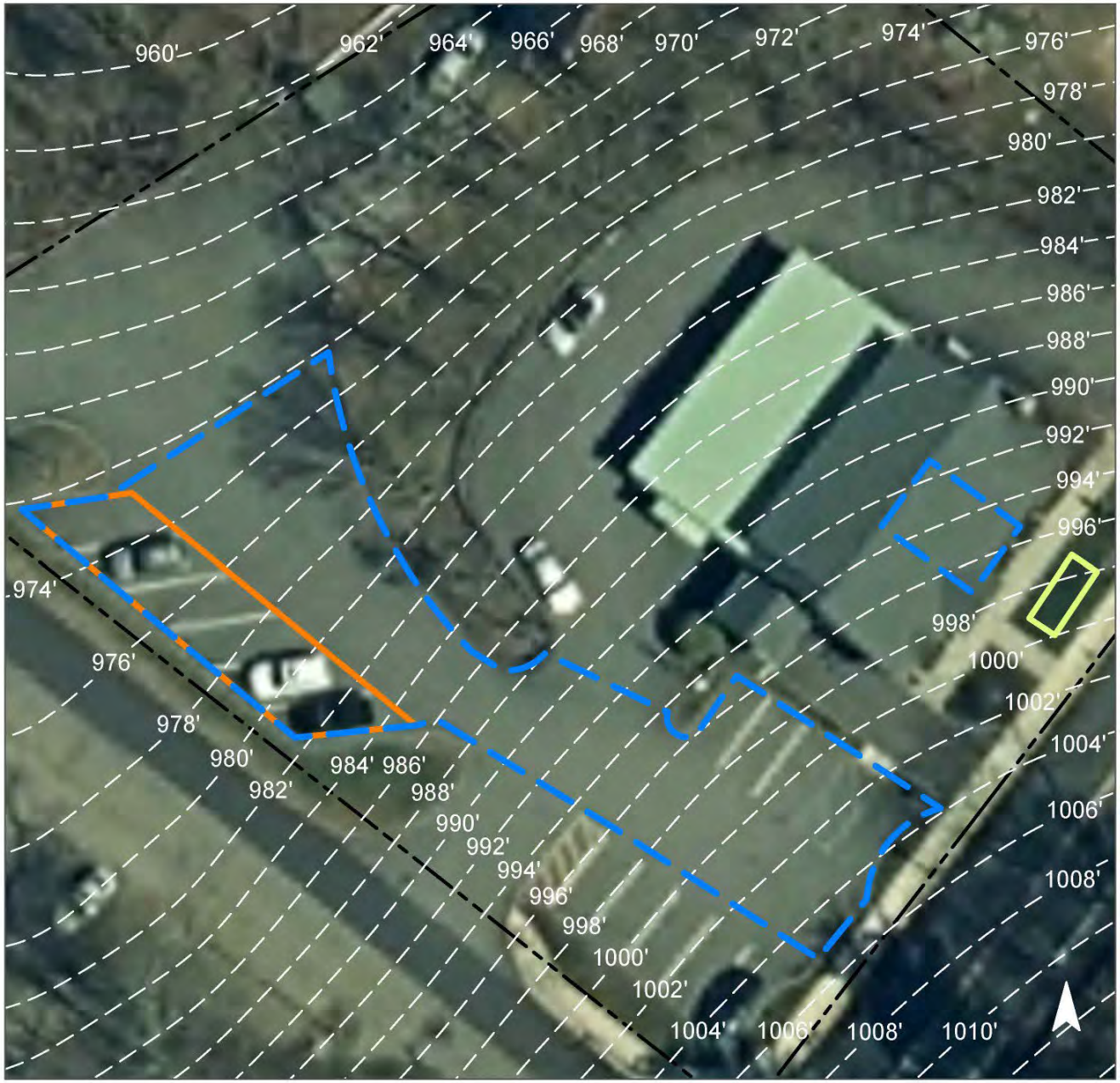
Block and Lot: Block 10, Lots 77 & 78

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

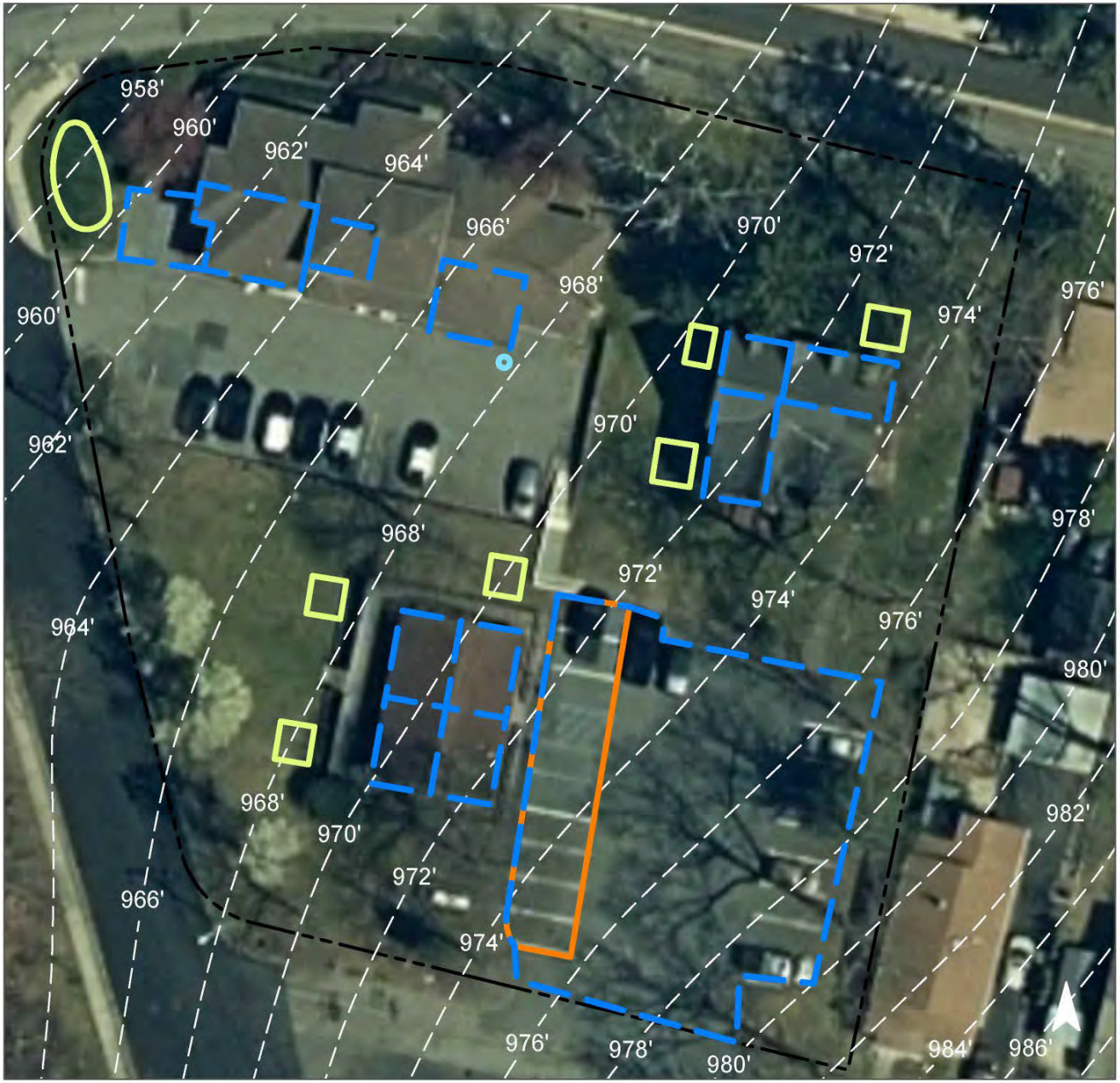
Block and Lot: Block 33, Lots 1, 2, 4

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

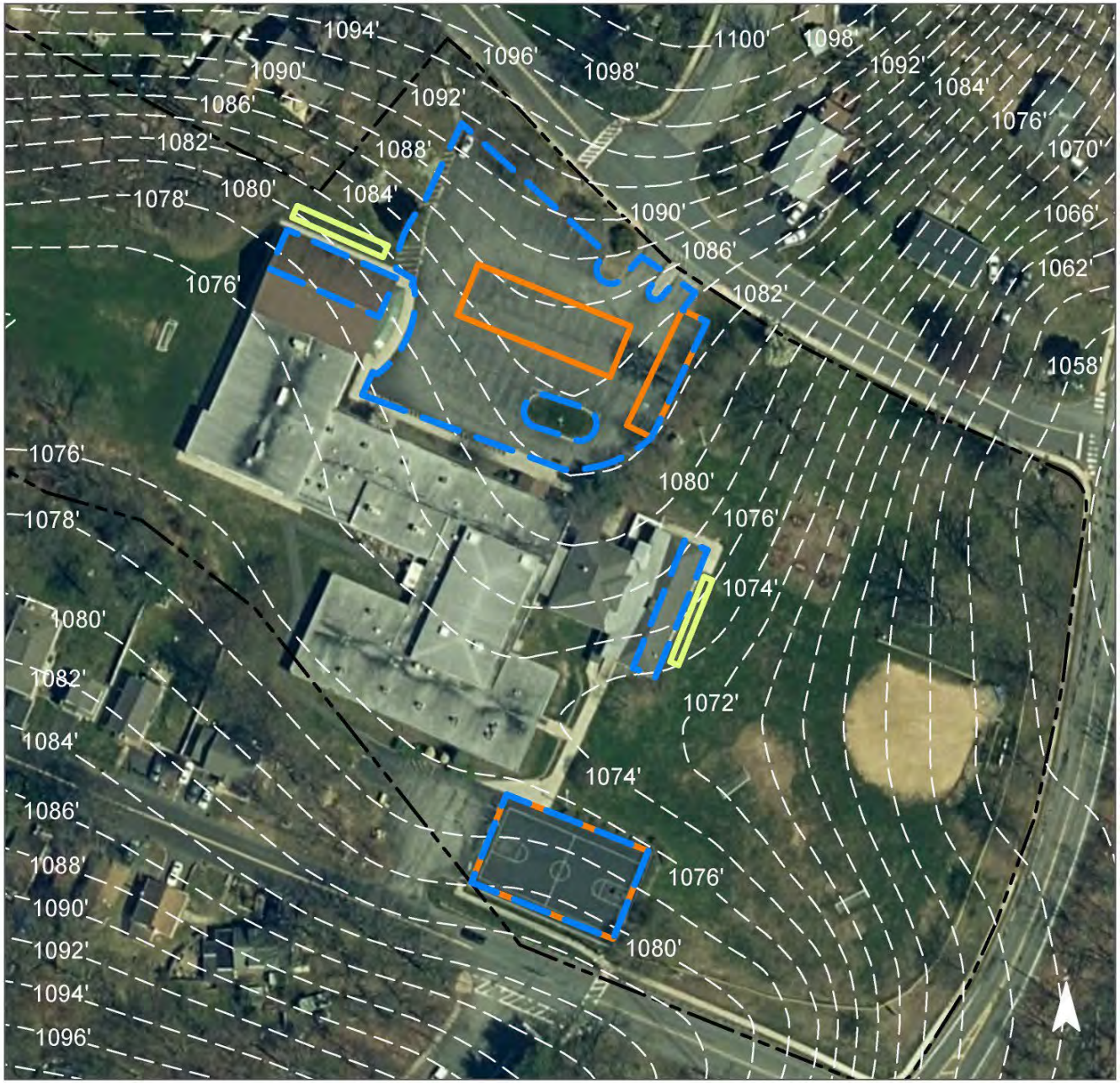
Block and Lot: Block 121, Lot 59

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

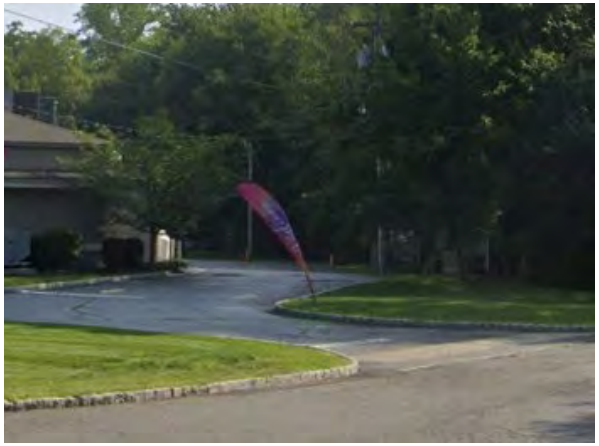
RAP ID: 8

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'

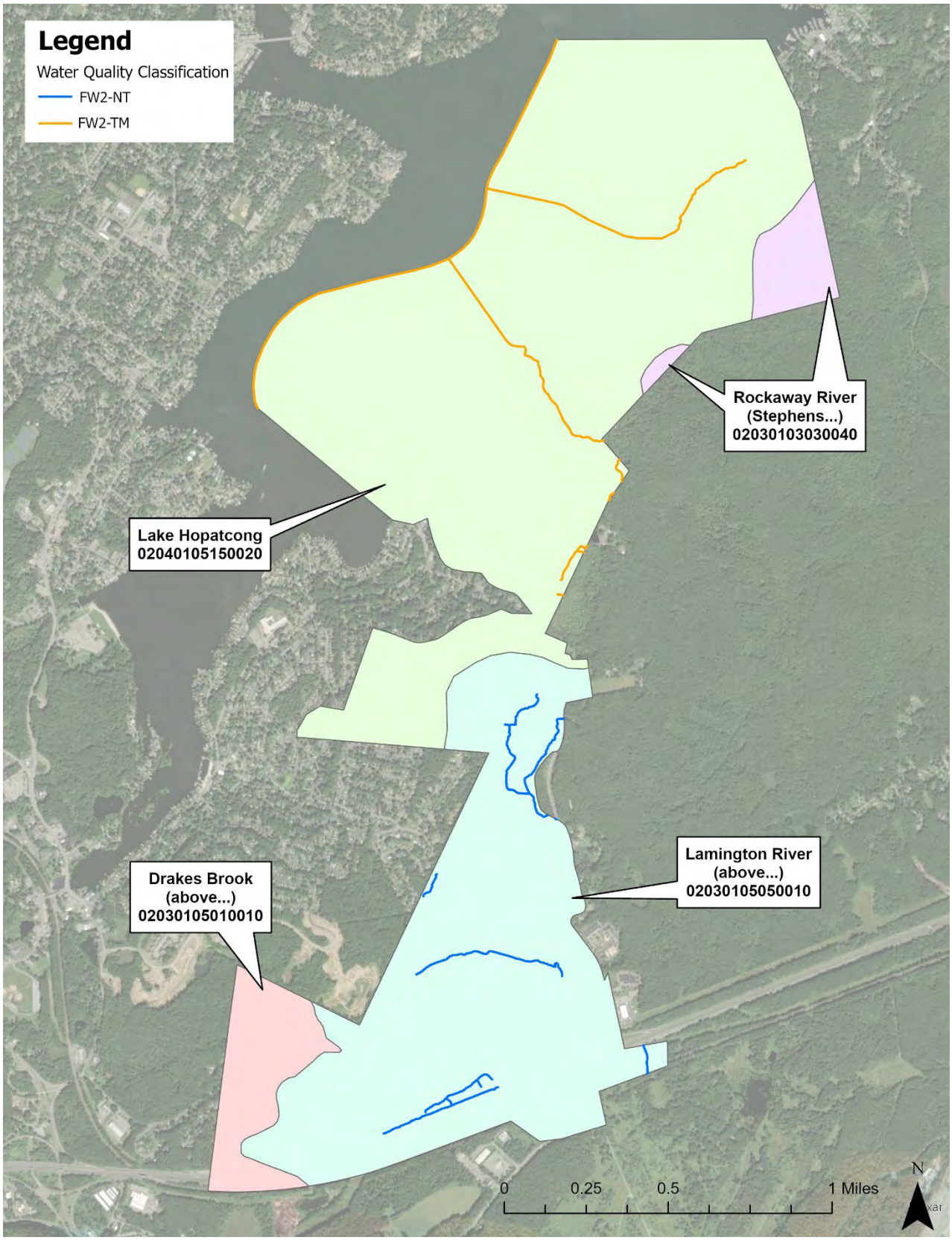


Figure 9. Water Quality Classification of Surface Waters in Mount Arlington Borough

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%

Mount Olive Township

Introduction

Located in Morris County in New Jersey, Mount Olive Township covers about 31.2 square miles. With a population of 28,886 (2020 United States Census), Mount Olive Township consists of 34.0% of urban land uses by area. Of that urban land use, approximately 22.1% 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 approximately 60.0% of Mount Olive Township.

Mount Olive Township contains portions of eleven subwatersheds (Table 1). There are approximately 98.3 miles of rivers and streams within the municipality; these include tributaries to Budd Lake, Drakes Brook and its tributaries, Flanders Brook and its tributaries, Krueger's Brook and its tributaries, Kurtenbachs Brook, Mine Brook and its tributaries, Morris Canal, the Musconetcong River and its tributaries, South Branch Raritan River and its tributaries, Sun Valley Brook and its tributaries, Turkey Brook and its tributaries, Wills Brook and its tributaries, and several uncoded tributaries. Mount Olive 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 Mount Olive Township

Subwatershed	HUC14
Drakes Brook (above Eyland Avenue)	02030105010010
Drakes Brook (below Eyland Avenue)	02030105010020
Raritan River South Branch (above Route 46)	02030105010030
Raritan River South Branch (74d 44m 15s to Route 46)	02030105010040
Raritan River South Branch (Long Valley bridge to 74d44m15s)	02030105010050
Musconetcong River (Wills Brook to Lake Hopatcong)	02040105150030
Musconetcong River (above Waterloo)	02040105150070
Musconetcong River (Saxton Falls to Waterloo)	02040105150080
Mine Brook (Morris County)	02040105150090

Musconetcong River (Trout Brook to Saxton Falls)	02040105150100
Musconetcong River (Waterloo)	02040105150110

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

The Q-Farms in Mount Olive 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 Mount Olive 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 925.2 acres of agricultural land use in Mount Olive Township, of which, 645.8 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 66 Q-Farms and portions of three Q-Farms in the study area portion of Mount Olive Township, totaling 2,043.5 acres. Within the 66 Q-Farms and portions of three Q-Farms, there are approximately 512.6 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 Mount Olive 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, 02030105010040, 02030105010050). Within these four HUC14s, there are 290.6 acres of buildings and 359.5 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 Olive Township, approximately 18.2 acres of rooftop runoff would be managed with 3.63 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Mount Olive Township, approximately 36.0 acres of roadway would be managed, or 9.9 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 Olive 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. Eleven 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 Mount Olive Township. Figure 13 depicts the water quality classifications of surface waters throughout Mount Olive Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

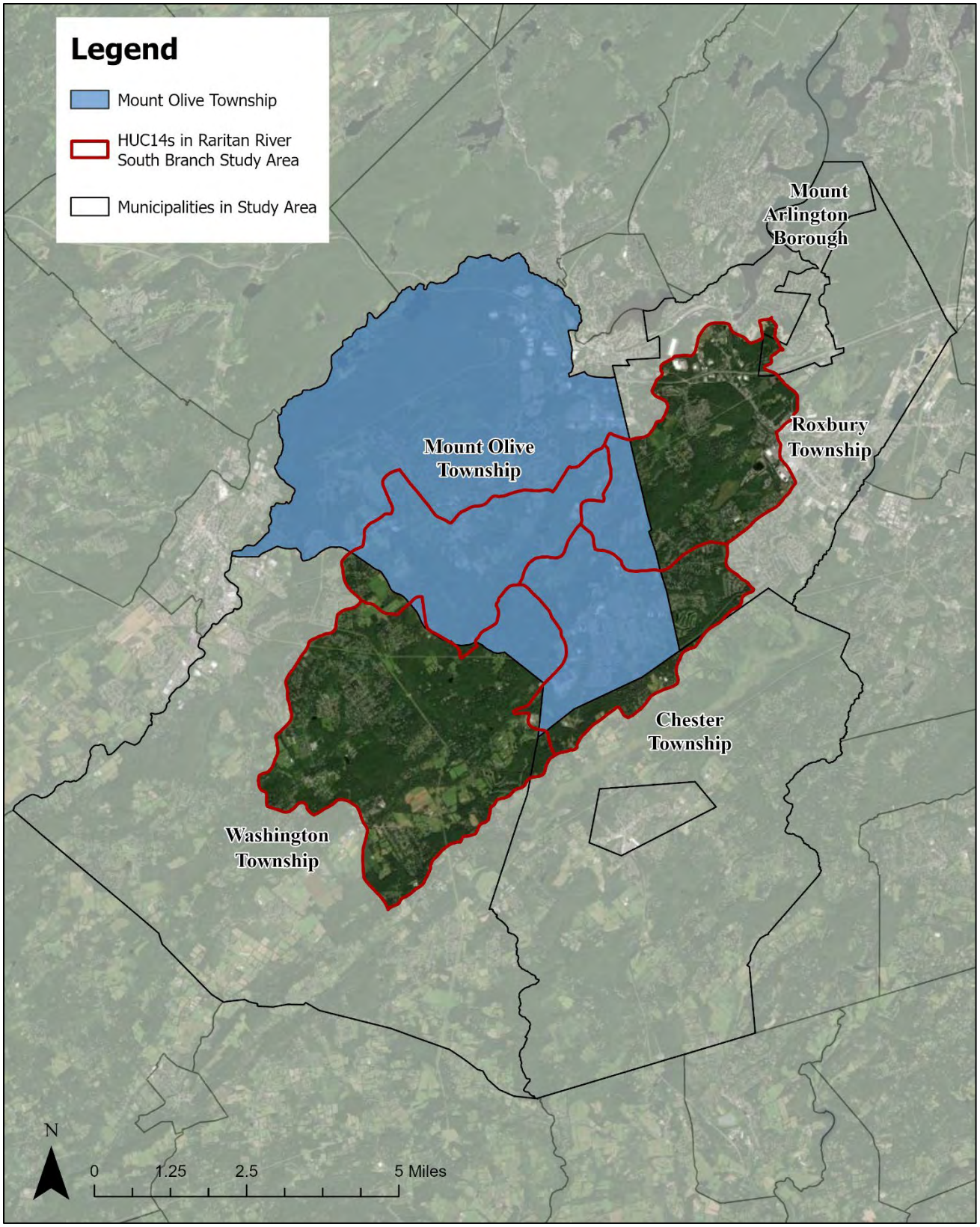


Figure 1: Municipalities in the Study Area

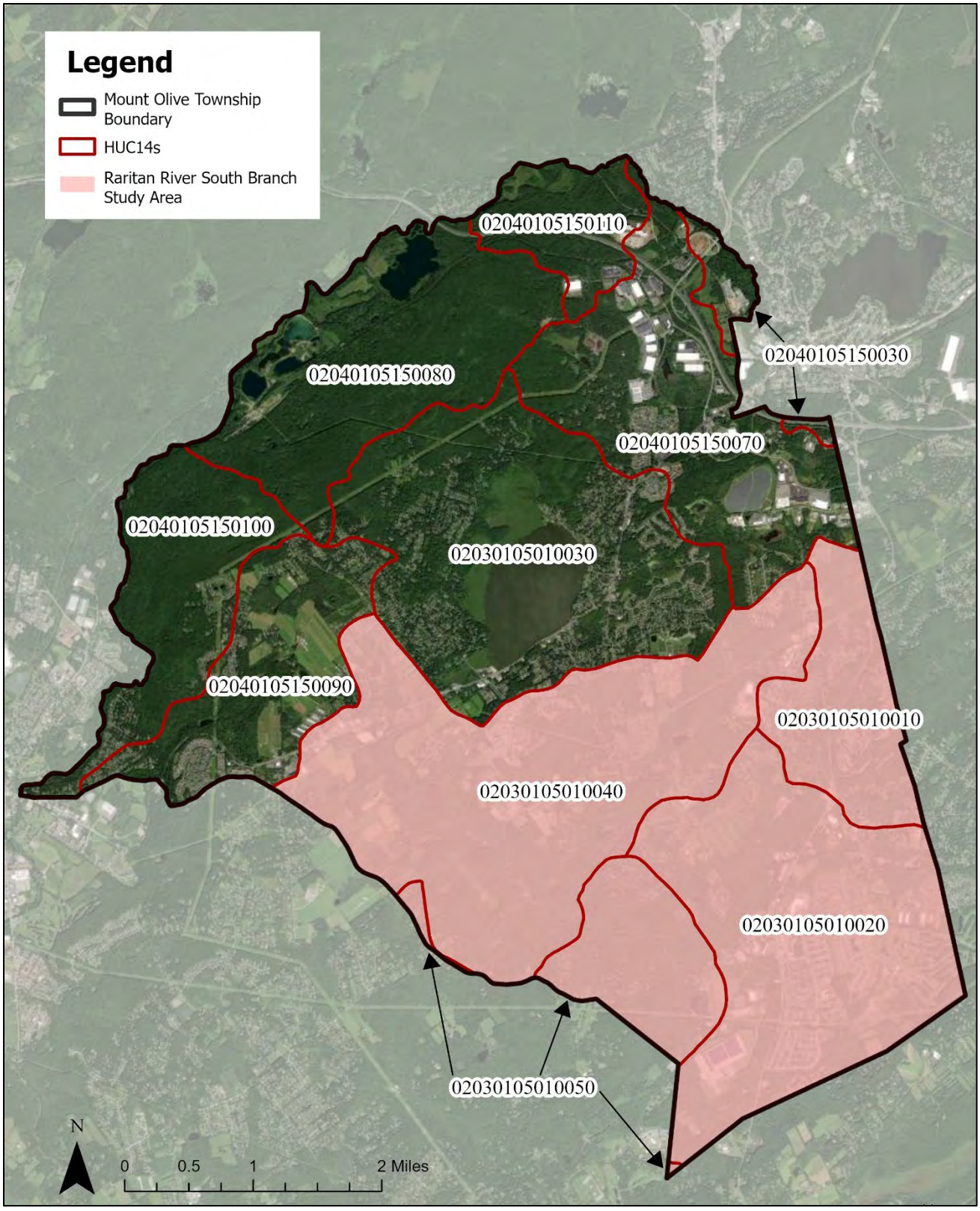


Figure 2: Portions of eleven HUC14s are in Mount Olive Township

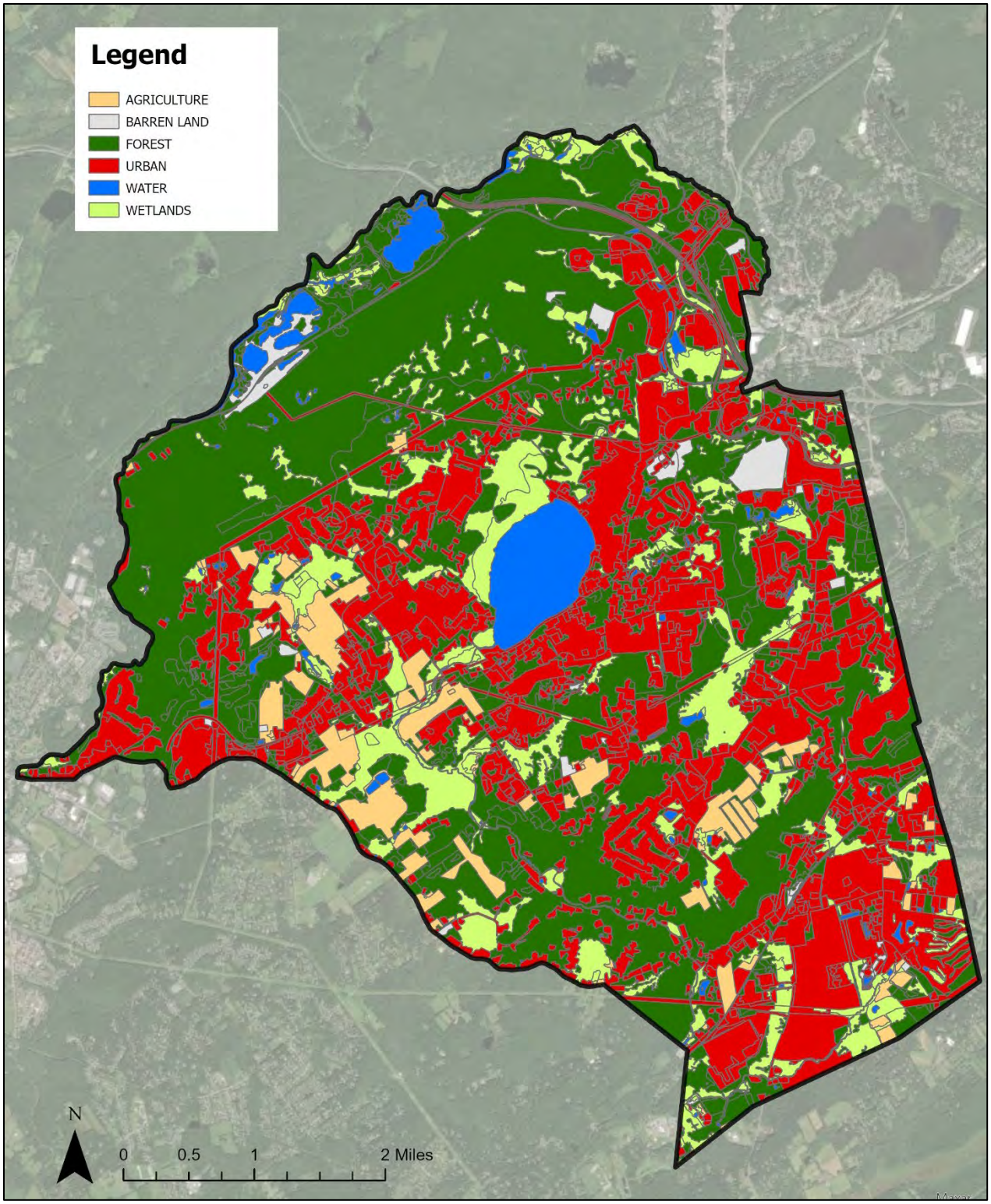


Figure 3: Land Use in Mount Olive Township

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010010				
Agriculture	15.3	19.9	153.0	4,590.7
Barren Land	5.5	2.8	27.6	331.7
Forest	379.9	38.0	1,139.6	15,194.8
Urban	530.0	742.0	7,949.7	74,197.2
Water	1.3	0.1	4.0	53.2
Wetlands	62.5	6.3	187.5	2,500.2
TOTAL =	**994.5**	**809.0**	**9,461.5**	**96,867.7**
02030105010020				
Agriculture	186.5	242.5	1,865.5	55,963.9
Barren Land	16.3	8.2	81.7	980.4
Forest	767.5	76.8	2,302.6	30,700.9
Urban	1,528.8	2,140.3	22,931.9	214,031.1
Water	37.3	3.7	112.0	1,493.5
Wetlands	445.1	44.5	1,335.2	17,802.7
TOTAL =	**2,981.6**	**2,516.0**	**28,628.9**	**320,972.5**
02030105010030				
Agriculture	22.9	29.8	229.3	6,879.1
Barren Land	17.7	8.8	88.3	1,059.1
Forest	968.1	96.8	2,904.3	38,724.1
Urban	1,359.8	1,903.8	20,397.4	190,376.2
Water	401.3	40.1	1,203.8	16,051.2
Wetlands	448.8	44.9	1,346.3	17,950.5
TOTAL =	**3,218.6**	**2,124.2**	**26,169.4**	**271,040.2**
02030105010040				
Agriculture	391.0	508.2	3,909.5	117,285.4
Barren Land	13.7	6.8	68.4	821.3
Forest	1,580.9	158.1	4,742.6	63,234.2
Urban	1,209.2	1,692.8	18,137.4	169,282.0
Water	39.0	3.9	117.1	1,561.5
Wetlands	652.6	65.3	1,957.7	26,103.3
TOTAL =	**3,886.3**	**2,435.1**	**28,932.7**	**378,287.6**
02030105010050				
Agriculture	53.0	68.9	530.1	15,902.8
Barren Land	0.3	0.1	1.5	17.9
Forest	498.0	49.8	1,494.1	19,921.4
Urban	257.4	360.4	3,860.9	36,035.0
Water	13.0	1.3	39.1	521.5
Wetlands	80.7	8.1	242.2	3,229.6

TOTAL =	**902.5**	**488.6**	**6,167.9**	**75,628.2**
02040105150030				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	7.4	3.7	37.1	445.3
Forest	112.3	11.2	336.9	4,491.7
Urban	82.2	115.1	1,233.2	11,509.8
Water	6.7	0.7	20.0	267.2
Wetlands	9.3	0.9	27.8	371.0
TOTAL =	**217.9**	**131.6**	**1,655.0**	**17,084.9**
02040105150070				
Agriculture	1.7	2.2	16.9	505.6
Barren Land	111.0	55.5	555.1	6,661.5
Forest	909.6	91.0	2,728.9	36,384.9
Urban	916.3	1,282.8	13,744.6	128,282.9
Water	44.6	4.5	133.8	1,784.4
Wetlands	280.4	28.0	841.1	11,215.3
TOTAL =	**2,263.6**	**1,464.0**	**18,020.4**	**184,834.6**
02040105150080				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	83.8	41.9	419.0	5,027.6
Forest	1,706.5	170.7	5,119.6	68,261.0
Urban	55.8	78.2	837.5	7,816.6
Water	221.7	22.2	665.2	8,869.7
Wetlands	127.3	12.7	381.9	5,092.0
TOTAL =	**2,195.2**	**325.6**	**7,423.2**	**95,066.8**
02040105150090				
Agriculture	243.7	316.8	2,436.9	73,107.9
Barren Land	14.1	7.0	70.3	843.1
Forest	449.7	45.0	1,349.0	17,986.1
Urban	537.0	751.8	8,055.0	75,180.1
Water	20.9	2.1	62.6	834.6
Wetlands	132.5	13.3	397.6	5,301.2
TOTAL =	**1,397.8**	**1,135.9**	**12,371.3**	**173,253.0**
02040105150100				
Agriculture	11.1	14.5	111.3	3,337.6
Barren Land	0.0	0.0	0.0	0.0
Forest	978.9	97.9	2,936.7	39,155.7
Urban	235.2	329.2	3,527.3	32,921.8
Water	20.4	2.0	61.2	816.3
Wetlands	40.5	4.0	121.4	1,619.3
TOTAL =	**1,286.1**	**447.7**	**6,757.9**	**77,850.6**
02040105150110				
Agriculture	0.0	0.0	0.0	0.0

Barren Land	0.0	0.0	0.0	0.0
Forest	441.5	44.2	1,324.6	17,661.3
Urban	87.7	122.8	1,315.5	12,277.6
Water	22.1	2.2	66.3	883.6
Wetlands	96.6	9.7	289.9	3,864.9
TOTAL =	**647.9**	**178.8**	**2,996.2**	**34,687.4**
All HUCs				
Agriculture	925.2	1,202.8	9,252.4	277,573.0
Barren Land	269.8	134.9	1,349.0	16,187.9
Forest	8,792.9	879.3	26,378.7	351,716.3
Urban	6,799.4	9,519.1	101,990.4	951,910.3
Water	828.4	82.8	2,485.2	33,136.5
Wetlands	2,376.2	237.6	7,128.7	95,049.8
TOTAL =	**19,992.0**	**12,056.6**	**148,584.5**	**1,725,573.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Mount Olive 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 Mount Olive Township. Based upon the NJDEP impervious surface data, Mount Olive Township has impervious cover totaling 13.5%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Mount Olive 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, Mount Olive 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.

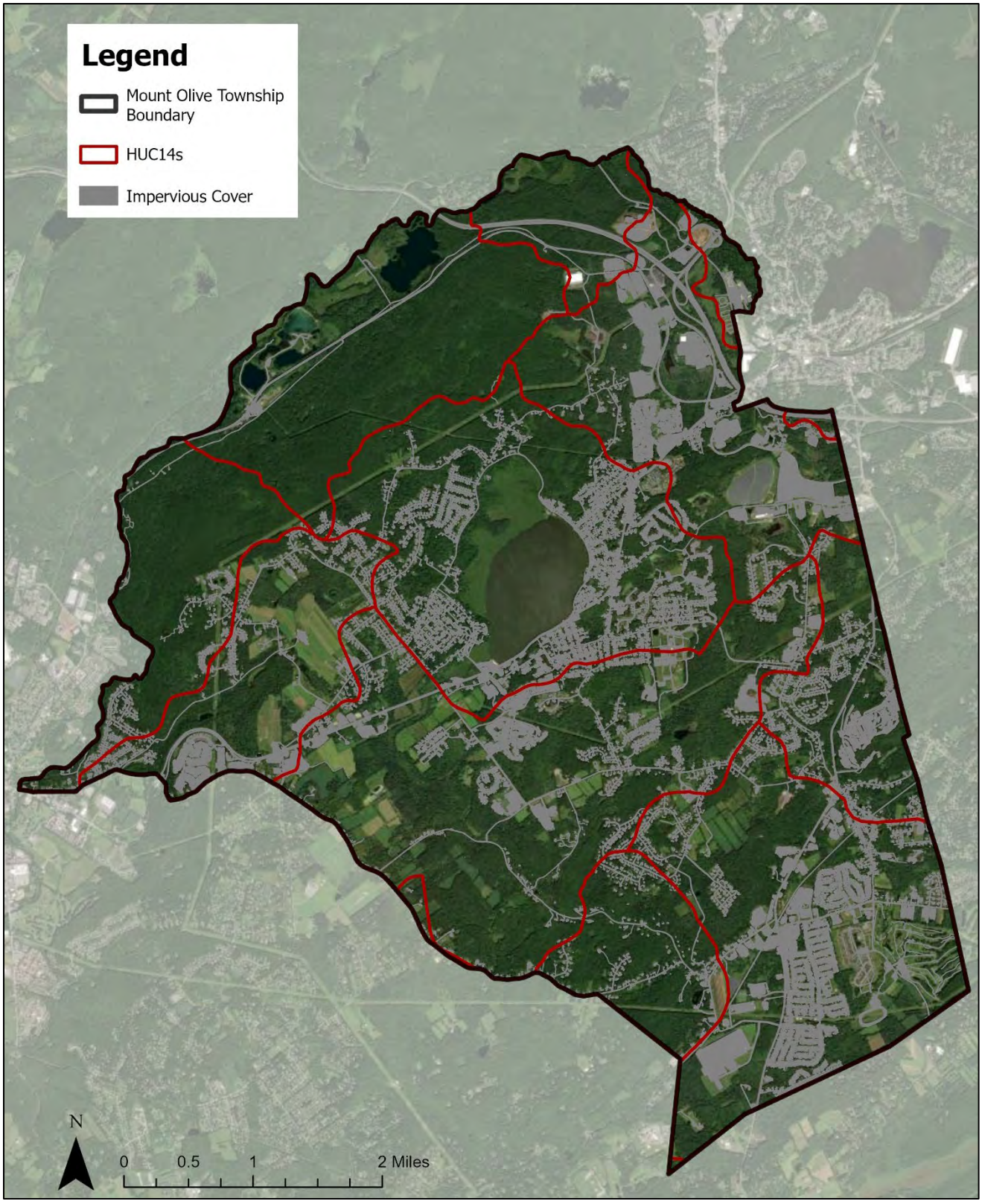


Figure 4: Impervious Cover in Mount Olive Township

Table 3: Impervious Cover Analysis by HUC14 for Mount Olive Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010010		
Building	42.92	
Other	80.32	
Road	67.73	
TOTAL =	**191.0**	**19.2%**
02030105010020		
Building	146.70	
Other	303.05	
Road	140.05	
TOTAL =	**589.8**	**19.8%**
02030105010030		
Building	105.84	
Other	207.65	
Road	192.39	
TOTAL =	**505.9**	**15.7%**
02030105010040		
Building	87.62	
Other	214.71	
Road	125.39	
TOTAL =	**427.7**	**11.0%**
02030105010050		
Building	13.31	
Other	24.02	
Road	26.34	
TOTAL =	**63.7**	**7.1%**
02040105150030		
Building	3.72	
Other	16.26	
Road	18.01	
TOTAL =	**38.0**	**17.4%**
02040105150070		
Building	116.68	
Other	254.93	
Road	138.14	
TOTAL =	**509.7**	**22.5%**
02040105150080		
Building	1.21	
Other	31.48	
Road	20.83	
TOTAL =	**53.5**	**2.4%**
02040105150090		
Building	43.79	
Other	92.15	
Road	68.74	
TOTAL =	**204.7**	**14.6%**

02040105150100		
Building	12.84	
Other	29.03	
Road	20.20	
TOTAL =	**62.1**	**4.8%**
02040105150110		
Building	9.20	
Other	16.18	
Road	27.15	
TOTAL =	**52.5**	**8.1%**
All HUCs		
Building	583.82	
Other	1269.76	
Road	844.98	
TOTAL =	**2,698.6**	**13.5%**

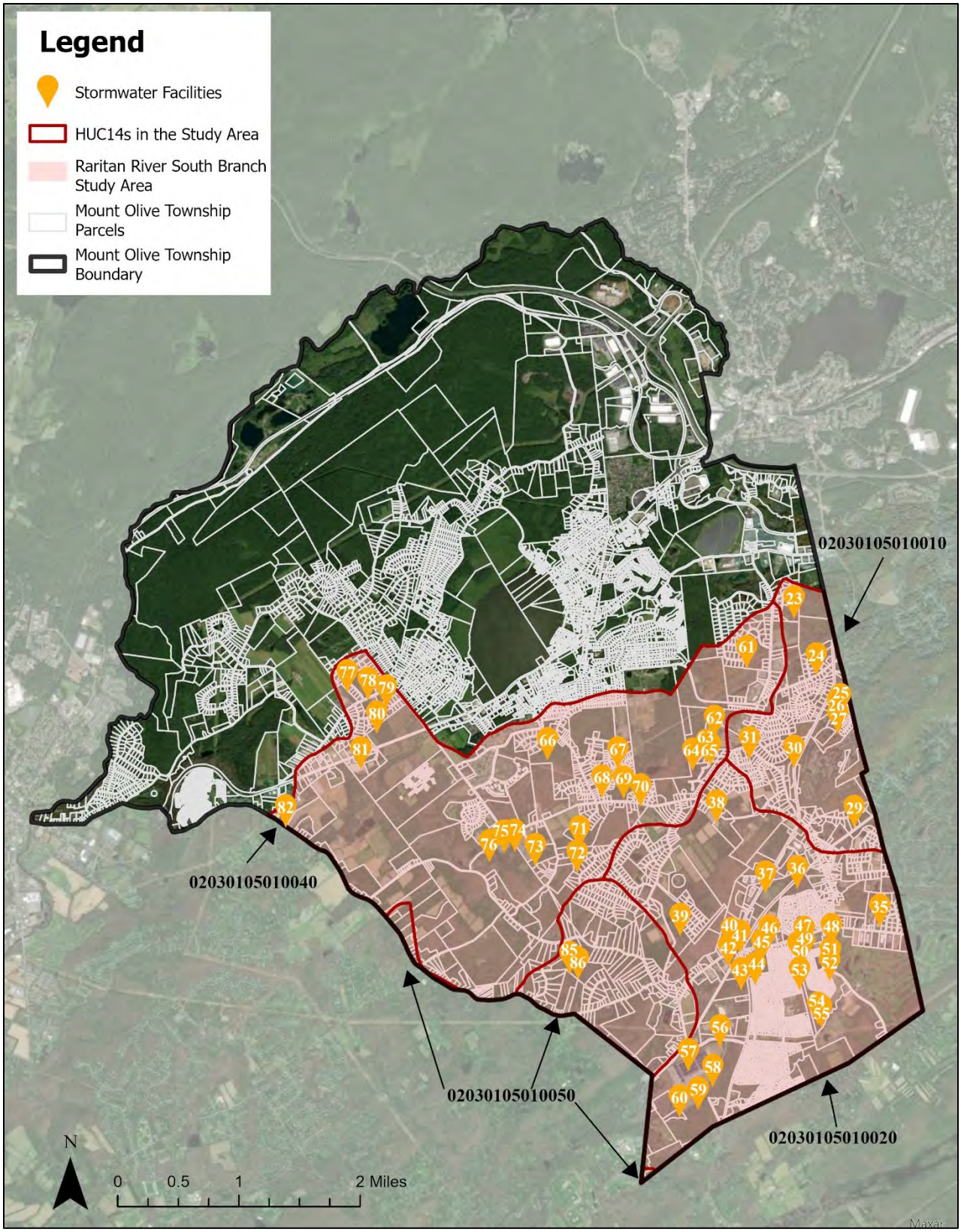


Figure 5: Stormwater Facilities in the Study Area of Mount Olive Township

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

Raritan River South Branch Study Area		
ID	**Address**	**Type**
23	8 Southwind Dr	N
24	12 Arrow Ct	N
25	131 Route 206	D
26	131 Route 206	D
27	97 Route 206	D
29	24 Mountain Ave	D
30	17 Warwick Rd	D
31	239 Flanders-Netcong Rd	D
35	24 St Andrews Ct	D
36	5 Laurel Dr	N
37	230 Us-206	D
38	65 Flanders-Drakestown Rd	N
39	6 Courtney Dr	N
40	90 Bartley-Flanders Rd	D
41	270 Route 206	D
42	90 Bartley-Flanders Rd	D
43	286 Route 206	N
44	293 Route 206	D
45	62 Flanders-Bartley Rd	D
46	62 Flanders-Bartley Rd	D
47	1 W.Det Basin,Fl Crossing	D
48	40 Flanders-Bartley Rd	D
49	49-51 Flanders Bartley Rd	N
50	49-51 Flanders Bartley Rd	D
51	70 Pleasant Hill Rd	D
52	2 Drake Way	D
53	70 Pleasant Hill Rd	N
54	70 Drake Way	R
55	70 Drake Way	D
56	700 Bartley Chester Rd	N
57	703 Bartley-Chester Rd	D
58	703 Bartley-Chester Rd	D
59	703 Bartley-Chester Rd	D
60	703 Bartley-Chester Rd	D
61	152 Flanders-Netcong Rd	N
62	18 Corey Rd	D
63	18 Corey Rd	D
64	13 School House Ln	N
65	18 Corey Rd	I

66	Mt. Olive Rd	N
67	12 Fernwood Ct Rear	N
68	55 Vista Dr Open Space	N
69	173 Flanders-Drakestown R	N
70	173 Flanders-Drakestown R	RB
71	13 Natures Ct	D
72	23 Whispering Woods Dr	RB
73	202 Flanders-Drakestown R	D
74	204 Flanders-Drakestown R	D
75	160 Wolfe Rd	D
76	160 Wolfe Rd	D
77	11 Meadow Ln	D
78	376 Sand Shore Rd	N
79	369 Sand Shore Rd	D
80	6 Kobert Ave	N
81	354 Route 46	D
82	399 Route 46	D
85	1 Twin Brook Ln	N
86	1 Twin Brook Ln	N

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

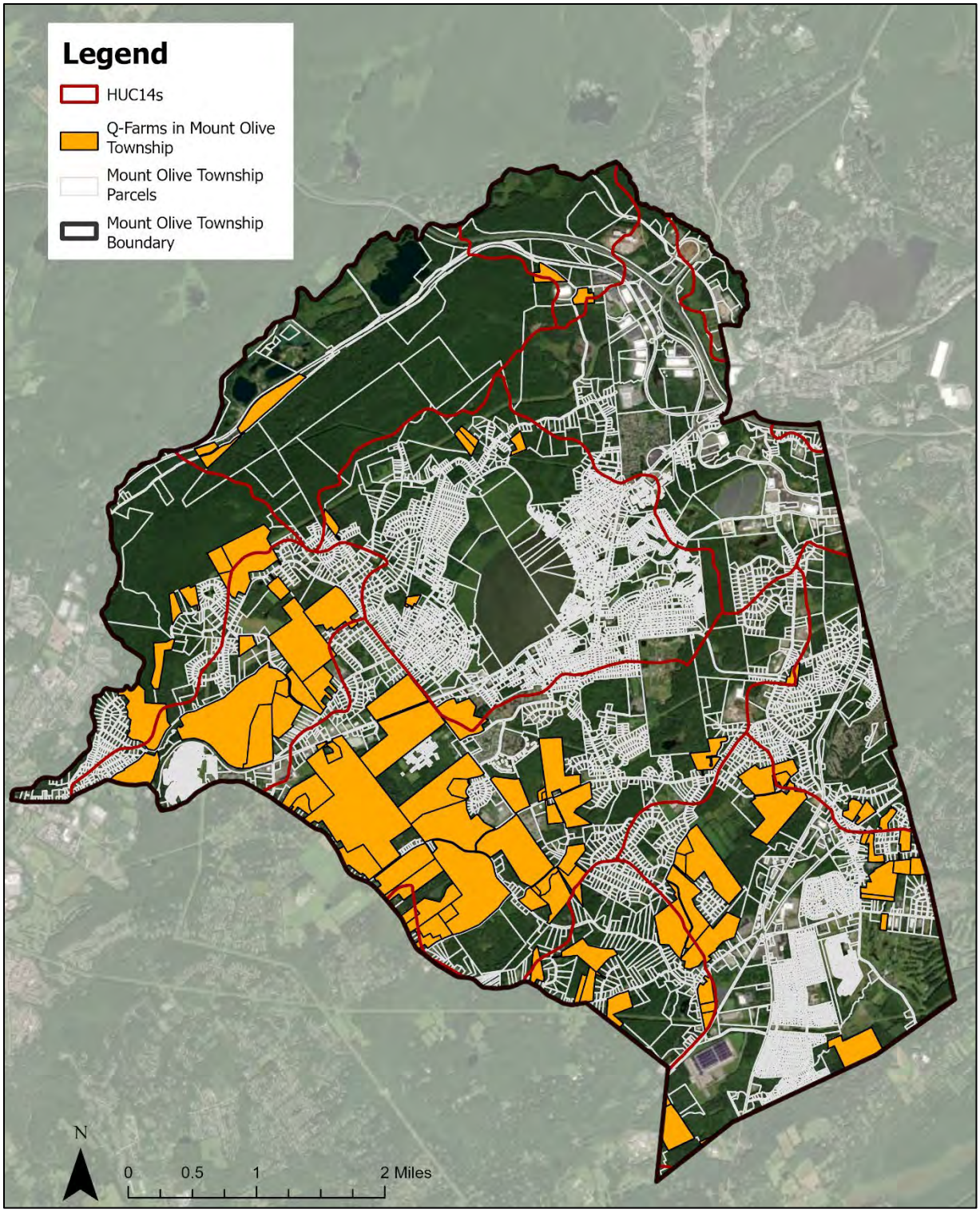


Figure 6: Q-Farm Parcels in Mount Olive Township

Table 5: Q-Farm Parcels in Mount Olive Township

Block	Lot	Q-Code	Prop Class	Location
400	1	QFARM	3B	217 Waterloo Valley Rd
500	1	QFARM	3B	207 Waterloo Valley Rd
701	4	QFARM	3B	66 Waterloo Valley Rd
701	6	QFARM	3B	42 Waterloo Valley Rd
800	15	QFARM	3B	131 Smithtown Rd
800	16	QFARM	3B	131 Smithtown Rd Rear
800	37	QFARM	3B	164 Stephens Park Rd
800	39.02	QFARM	3B	190 Stephens Park Rd
800	40	QFARM	3B	39 Waterloo Valley Rd
900	1	QFARM	3B	40 Stephens Park Rd
900	3	QFARM	3B	416 Sand Shore Rd
900	11	QFARM	3B	60 Old Mine Hill Rd
900	39	QFARM	3B	230 Smithtown Rd
900	49	QFARM	3B	172 Smithtown Rd
1101	2	QFARM	3B	21 Bridle Ln
1300	55	QFARM	3B	7 Ike Rd
1300	55.01	QFARM	15C	Ike Rd Rear
2100	12	QFARM	3B	8 Academy Ln
2100	14	QFARM	3B	12 Academy Ln
2801	1	QFARM		Firetower Rd
4600	29	QFARM	3B	16 North Rd
4600	30	QFARM	3B	26 North Rd
4701	6	QFARM	3B	65 Drakedale Rd
5002	10	QFARM	3B	47 Flanders-Drakestown Rd
5002	10.01	QFARM	3B	26 Flanders-Drakestown Rd
5201	10	QFARM	15C	44-1 Corey Rd
5300	10	QFARM	3B	51 Flanders-Drakestown Rd
5300	38	QFARM	3B	126 Bartley-Flanders Rd
5300	54	QFARM	3B	137 Tinc Rd
5300	56	QFARM	3B	71 Tinc Rd
5300	57	QFARM	3B	71 Tinc Rd
5300	58	QFARM	3B	60 Tinc Rd
5600	5	QFARM	3B	12 Hillside Ave
5702	3	QFARM	3B	25 Hillside Ave
5800	17	QFARM	3B	19 W Grover St Rear
5800	23	QFARM	3B	19 W Grover St
5800	28	QFARM	3B	9 Park Pl
5800	29	QFARM	3B	9 Park Pl
5800	52	QFARM	3B	Main Rd
5800	53	QFARM		Main St
5900	4	QFARM	3B	21 Ironia Rd

6000	4	QFARM	3B	150 Pleasant Hill Rd
6600	7	QFARM	1	0-1 Route 206 Rear
6600	10	QFARM	3B	273 Old Bartley Rd
6600	13	QFARM	3B	0-3 Bartley Rd Rear
6801	10	QFARM	3B	139 Bartley-Chester Rd
6801	10.01	QFARM	3B	153 Bartley-Chester Rd
6801	10.02	QFARM	3B	157 Bartley-Chester Rd
6900	6	QFARM	3B	515-523 Drakestown Rd
7000	18	QFARM	3B	514 Drakestown Rd
7000	19	QFARM	3B	500 Drakestown Rd
7000	28	QFARM	3B	1 Twin Brook Ln
7000	32	QFARM	3B	464 Drakestown Rd
7100	16	QFARM	3B	162 Tinc Rd
7100	36	QFARM	3B	140 River Rd
7100	39	QFARM	3B	150 River Rd
7100	40	QFARM	3B	77 Stephens Mill Rd
7100	41	QFARM	3B	75 Stephens Mill Rd
7100	42	QFARM	3B	73 Stephens Mill Rd
7100	43	QFARM	3B	52 Stephens Mill Rd
7100	48	QFARM	3B	190 Flanders-Drakestown R
7702	1	QFARM	15C	18 Wolfe Rd
7801	6	QFARM	3B	44 Wolfe Rd
7801	9	QFARM	3B	155 Flanders-Drakestown R
7801	10	QFARM	3B	153 Flanders-Drakestown R
7801	11	QFARM	3B	145 Flanders-Drakestown R
7900	2	QFARM	3B	10 Stephens Mill Rd
7900	7	QFARM	3B	400 Flanders-Drakestown R
8000	2	QFARM	3B	308-310 Drakestown Rd
8000	6	QFARM	3B	300 River Rd
8000	7	QFARM	3B	300 River Rd Rear
8000	8	QFARM	15C	10 Shop Ln
8000	9	QFARM	3B	358 Drakestown Rd
8000	14	QFARM	3B	342-248 Drakestown Rd
8000	15	QFARM	3B	340 Drakestown Rd
8000	18	QFARM	3B	324-326 Drakestown Rd
8100	10	QFARM	3B	218-224 Drakestown Rd
8100	11	QFARM	3B	244-282 Drakestown Rd
8100	26	QFARM	3B	210 Drakestown Rd
8100	28	QFARM	3B	200-206 Drakestown Rd
8100	45	QFARM	3B	377 Route 46
8100	47	QFARM	3B	373 Route 46
8100	61	QFARM	15C	427 Route 46
8101	7	QFARM	3B	40 Wolfe Rd
8101	8	QFARM	3B	14 Aldersgate Cir

8101	9	QFARM	3B	499 Flanders-Drakestown R
8200	1	QFARM	15C	342 Route 46
8300	2	QFARM	3B	458 Route 46
8300	3	QFARM	3B	69 Stephens Park Rd
8300	4	QFARM	3B	21 Stephens Park Rd
8300	13	QFARM	3B	500 Route 46
8300	16	QFARM	3B	50 Drakestown Rd
8800	3	QFARM	3B	169 Stephens Park Rd
8800	29	QFARM	3B	107 Stephens Park Rd
8800	44	QFARM	3B	60 Mine Hill Rd

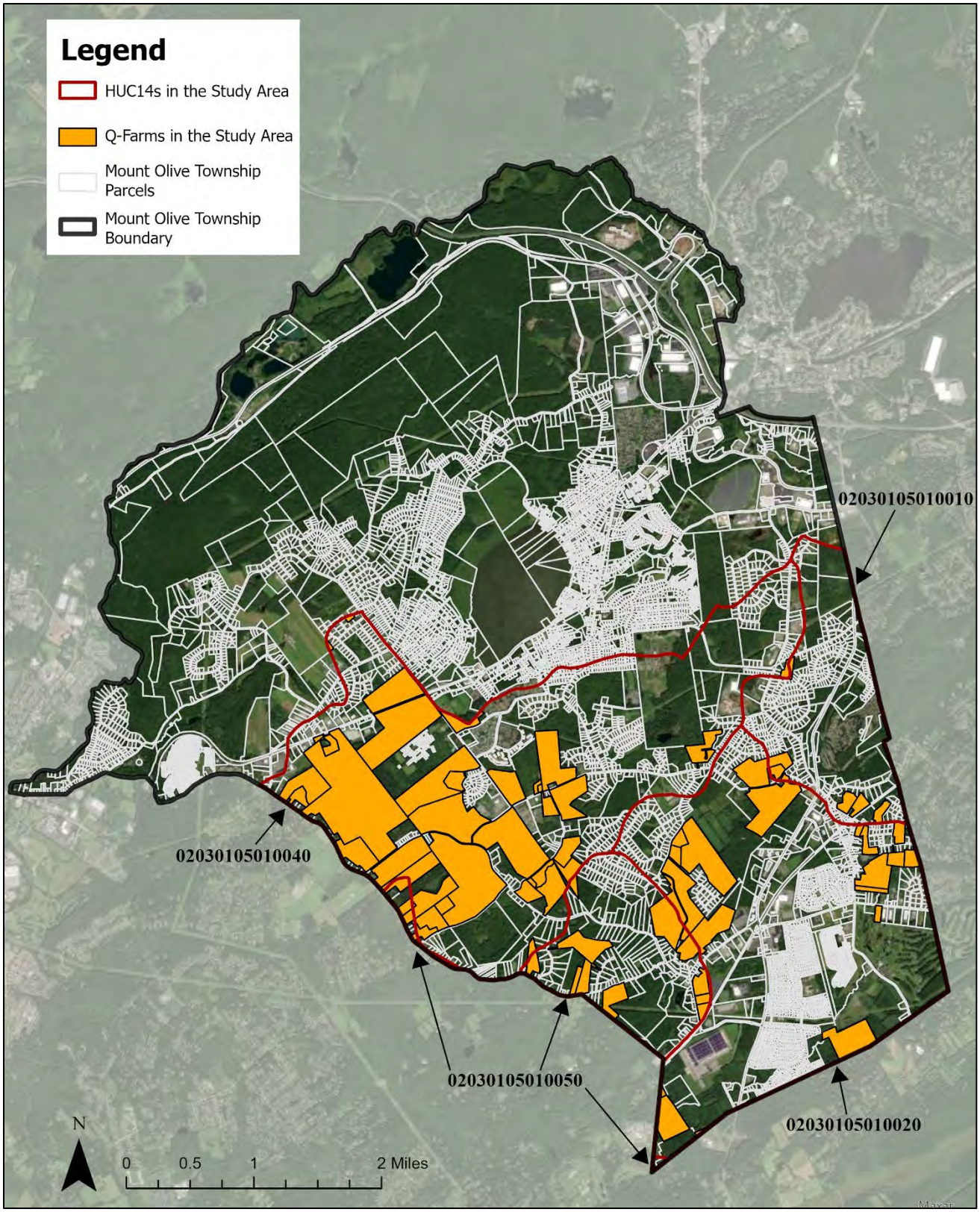


Figure 7: Q-Farm Parcels in the Study Area of Mount Olive Township

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

Block	Lot	Q-Code	Prop Class	Location
6600	7	QFARM	1	0-1 Route 206 Rear
6801	10.02	QFARM	3B	157 Bartley-Chester Rd
6801	10.01	QFARM	3B	153 Bartley-Chester Rd
7000	18	QFARM	3B	514 Drakestown Rd
7000	19	QFARM	3B	500 Drakestown Rd
7000	32	QFARM	3B	464 Drakestown Rd
8000	8	QFARM	15C	10 Shop Ln
8000	9	QFARM	3B	358 Drakestown Rd
5900	4	QFARM	3B	21 Ironia Rd
5300	38	QFARM	3B	126 Bartley-Flanders Rd
8000	15	QFARM	3B	340 Drakestown Rd
8000	7	QFARM	3B	300 River Rd Rear
5800	53	QFARM		Main St
8000	14	QFARM	3B	342-248 Drakestown Rd
7100	39	QFARM	3B	150 River Rd
7100	40	QFARM	3B	77 Stephens Mill Rd
7100	16	QFARM	3B	162 Tinc Rd
7100	36	QFARM	3B	140 River Rd
5800	23	QFARM	3B	19 W Grover St
7100	41	QFARM	3B	75 Stephens Mill Rd
5300	54	QFARM	3B	137 Tinc Rd
7100	42	QFARM	3B	73 Stephens Mill Rd
5800	52	QFARM	3B	Main Rd
8000	18	QFARM	3B	324-326 Drakestown Rd
5800	17	QFARM	3B	19 W Grover St Rear
7100	43	QFARM	3B	52 Stephens Mill Rd
8100	11	QFARM	3B	244-282 Drakestown Rd
5702	3	QFARM	3B	25 Hillside Ave
8000	2	QFARM	3B	308-310 Drakestown Rd
8000	6	QFARM	3B	300 River Rd
5300	58	QFARM	3B	60 Tinc Rd
7900	7	QFARM	3B	400 Flanders-Drakestown R
5600	5	QFARM	3B	12 Hillside Ave
7900	2	QFARM	3B	10 Stephens Mill Rd
8101	9	QFARM	3B	499 Flanders-Drakestown R
4600	30	QFARM	3B	26 North Rd
4600	29	QFARM	3B	16 North Rd
7801	9	QFARM	3B	155 Flanders-Drakestown R
8100	26	QFARM	3B	210 Drakestown Rd
7801	10	QFARM	3B	153 Flanders-Drakestown R
7100	48	QFARM	3B	190 Flanders-Drakestown R

5300	10	QFARM	3B	51 Flanders-Drakestown Rd
8101	8	QFARM	3B	14 Aldersgate Cir
7801	6	QFARM	3B	44 Wolfe Rd
8100	28	QFARM	3B	200-206 Drakestown Rd
8101	7	QFARM	3B	40 Wolfe Rd
8100	47	QFARM	3B	373 Route 46
8100	45	QFARM	3B	377 Route 46
7801	11	QFARM	3B	145 Flanders-Drakestown R
8100	10	QFARM	3B	218-224 Drakestown Rd
8100	61	QFARM	15C	427 Route 46
8200	1	QFARM	15C	342 Route 46
4701	6	QFARM	3B	65 Drakedale Rd
7000	28	QFARM	3B	1 Twin Brook Ln
5300	57	QFARM	3B	71 Tinc Rd
5300	56	QFARM	3B	71 Tinc Rd
6801	10	QFARM	3B	139 Bartley-Chester Rd
5800	28	QFARM	3B	9 Park Pl
5800	29	QFARM	3B	9 Park Pl
*7702	1	QFARM	15C	18 Wolfe Rd
5002	10.01	QFARM	3B	26 Flanders-Drakestown Rd
5002	10	QFARM	3B	47 Flanders-Drakestown Rd
6600	10	QFARM	3B	273 Old Bartley Rd
6600	13	QFARM	3B	0-3 Bartley Rd Rear
6900	6	QFARM	3B	515-523 Drakestown Rd
5201	10	QFARM	15C	44-1 Corey Rd
*900	11	QFARM	3B	60 Old Mine Hill Rd
*900	39	QFARM	3B	230 Smithtown Rd
6000	4	QFARM	3B	150 Pleasant Hill Rd

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

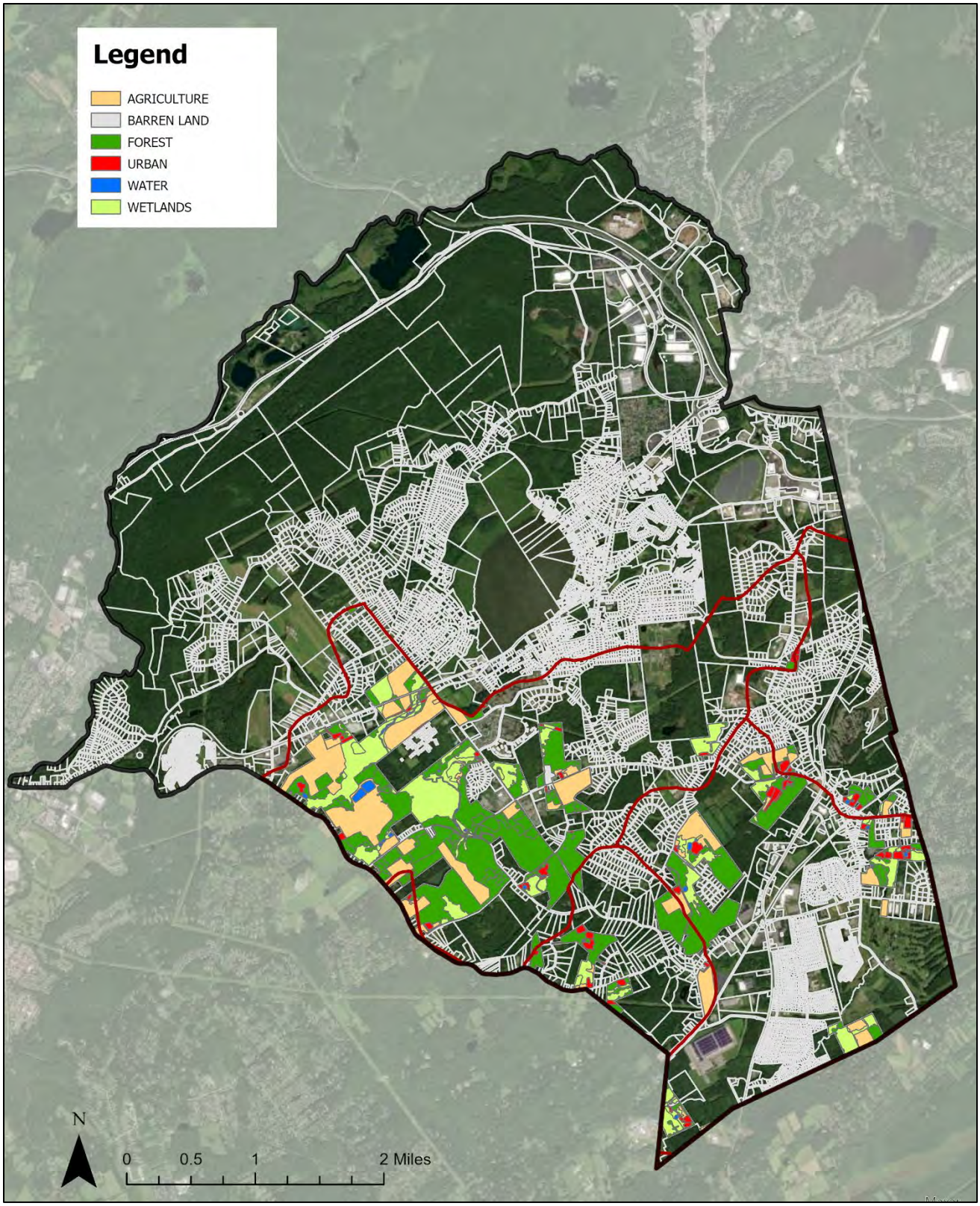


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Mount Olive Township

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

Land Use	Area (acres)
Agriculture	512.6
Barren Land	6.9
Forest	953.8
Urban	103.2
Water	28.4
Wetlands	438.7
Total:	**2,043.5**

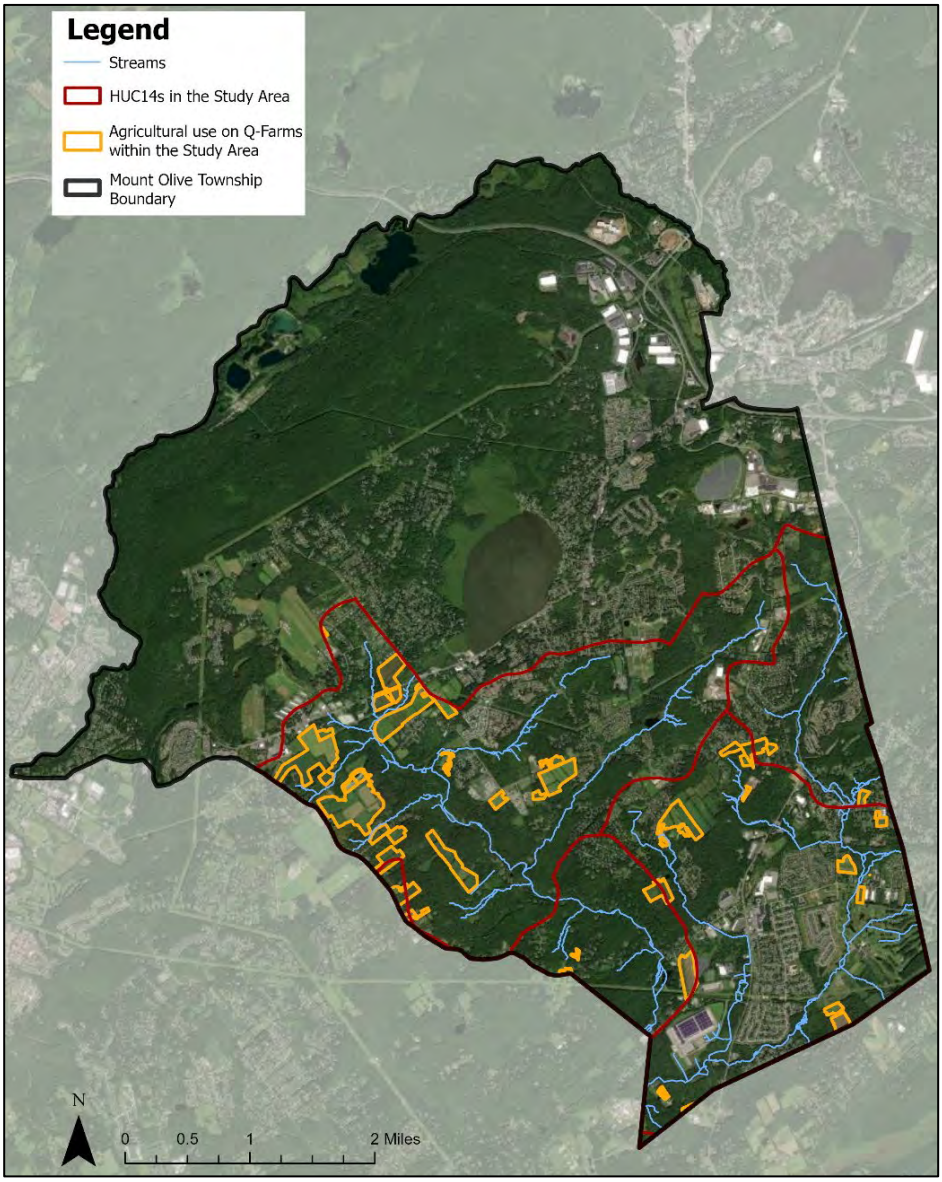


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Mount Olive Township

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

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.**
8000	6	QFARM	X					
8100	10	QFARM	X					
8100	47	QFARM				X		X
8200	1	QFARM	X					

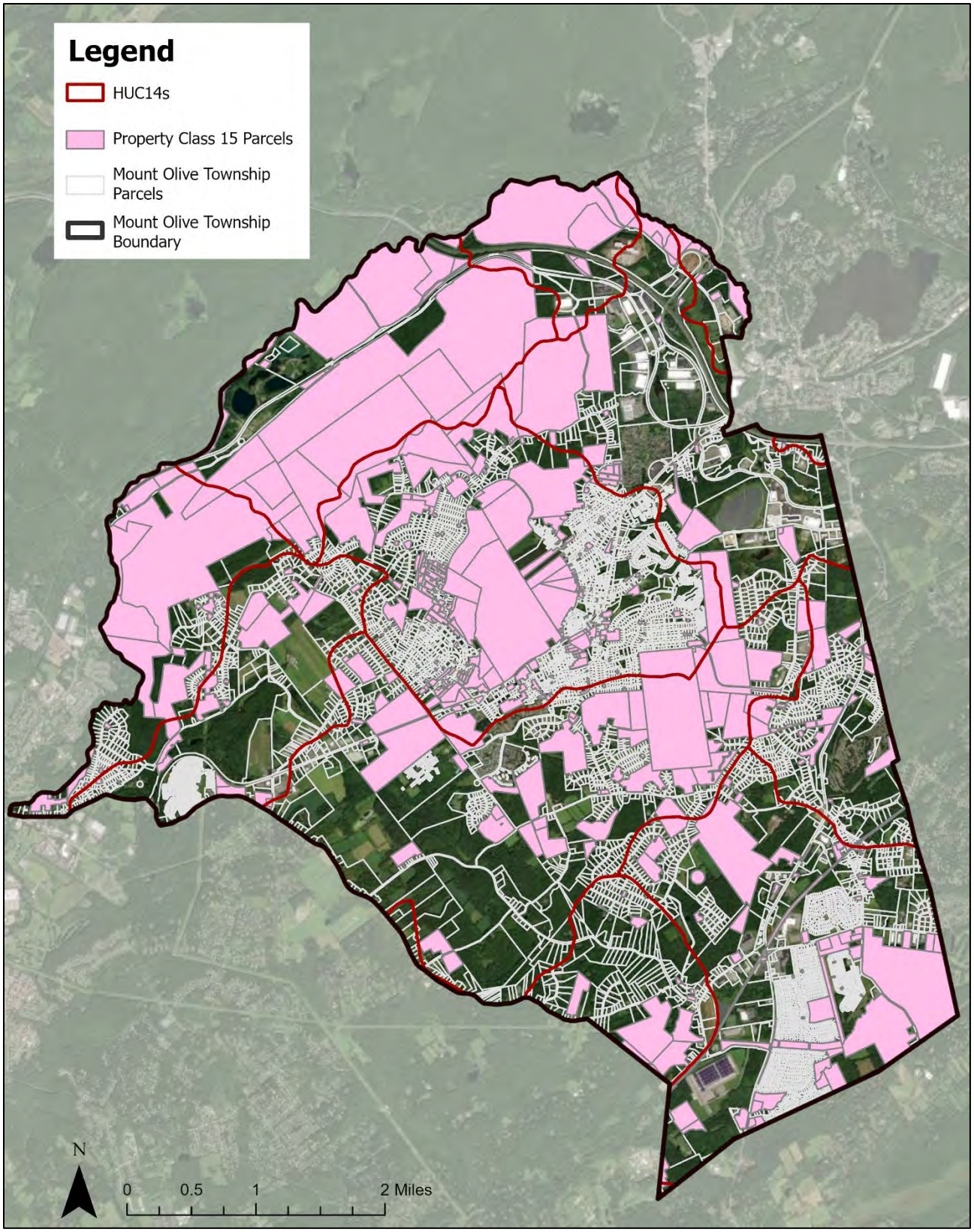


Figure 10: Property Class 15 Parcels in Mount Olive Township

Table 9: Property Class 15 Parcels in Mount Olive Township

Block	Lot	Prop Class	Location	Facility Type
900	12	15A	386 Sand Shore Rd	Sandshore School
5401	21	15A	227 Route 206	Schools
6208	24	15A	120 Clover Hill Dr	Mt View & Mt View N
6600	10.01	15A	0-1 Fourbridges Rd	High School
7100	67	15A	24 Tinc Rd	Tinc Road School
7600	70	15A	20 Sunset Dr	Upper Elementary
7600	86	15A	18 Corey Rd	High School
8101	22	15A	160 Wolfe Rd	Vehicle Terminal
5401	9	15B	26 Main Rd	Flanders School
2	17	15C	North Rd	Railroad
3	1	15C	North Rd	Railroad
3	2	15C	Class 11 Rr Longwood Br	Railroad
4	1	15C	Bartley Flanders Rd	Railroad
5	1	15C	Bartley Chester Rd	Railroad
6	1	15C	Bartley-Long Valley Rd	Railroad
104	3	15C	702 International Dr	Route 80
105	4	15C	250-1 Continental Dr Rear	Vacant Land
106	2.01	15C	26 Continental Dr	Well/Pump
106	4	15C	40 Continental Dr	Vacant Land
106	6	15C	2011 International Dr	Medial Strip
106	7	15C	1 Route 206	Vacant Land
106	8	15C	3 Route 206	Ftz Land Swap
201	1	15C	120 Continental Dr	Park
201	2	15C	120 Continental Dr	Vacant Land
201	3	15C	110 Continental Dr	Sewerage
201	4	15C	2011 International Dr	Thoroughfare
300	1	15C	200 Continental Dr	Park
301	1	15C	5000 Continental Dr	Park
301	4	15C	3100 Continental Dr	Vacant Land
400	4	15C	28/42 Camp Pulaski Rd	Former Mua
401	1	15C	3-85 Old Waterloo Rd	Former Mua
403	1	15C	180 Waterloo Valley Rd	Park
403	3	15C	204-1 Waterloo Valley Rd	Vacant Land
403	4	15C	204-2 Waterloo Valley Rd	Park
403	5	15C	204-3 Waterloo Valley Rd	Park
404	1	15C	201 Waterloo Valley Rd	Park
500	4	15C	Waterloo Valley Rd	Park/Firetower
500	6	15C	65 Station Rd	Park
500	7	15C	43-63 Station Rd	Park
500	8	15C	97 Waterloo Valley Rd	Muscon Riv Greenway
500	10	15C	64 Station Rd	Park
501	2	15C	105 Waterloo Valley Rd	Vacant Land
501	3	15C	111 Waterloo Valley Rd	Vacant Land
600	1	15C	1 Kinney Rd	Forest
600	2	15C	130 Waterloo Valley Rd	Vacant Land
600	3	15C	140 Waterloo Valley Rd	Vacant Land

700	1	15C	100 Waterloo Valley Rd	Park
700	6	15C	98-4 Waterloo Valley Rd	Park
700	7	15C	98-5 Waterloo Valley Rd	Allamuchy State Park
700	9	15C	18-1 Waterloo Valley Rd	Park
700	10	15C	18-2 Waterloo Valley Rd	Un-Recorded Deed
701	1	15C	96 Waterloo Valley Rd	Tax Lien Foreclosure
701	2	15C	94 Waterloo Valley Rd	Land
701	3	15C	90 Waterloo Valley Rd	Park
701	7	15C	20 Waterloo Valley Rd	Park
701	7.01	15C	18 Waterloo Valley Rd	Park
701	8	15C	14 Waterloo Valley Rd	Park
701	12	15C	2 Waterloo Valley Rd	Park
800	1	15C	3 Waterloo Valley Rd	Park
800	2	15C	27 Waterloo Valley Rd	Park
800	4	15C	49 Waterloo Valley Rd	Musc River Greenway
800	5	15C	49-1 Waterloo Valley Rd	Musc River Greenway
800	6	15C	10-1 Natalie Dr	Farm
800	7	15C	11-1 Waterloo Valley Rd	Vacant Land
800	32	15C	1 Dorset Dr	Tax Lien Foreclosure
800	32.05	15C	11 Dorset Dr	Tax Lien Foreclosure
800	32.11	15C	23 Dorset Dr	Tax Lien Foreclosure
801	1	15C	10 Dorset Dr	Tax Lien Foreclosure
900	42	15C	198 Smithtown Rd	Park/Wetlands
900	44	15C	12 Hemlock Dr	Park
900	52	15C	134 Smithtown Rd	Vacant Land
900	59	15C	78 Stephens Park Rd	Park/Newfane
910	6	15C	11 Meadow Ln	Detention Basin
910	7	15C	376 Sand Shore Rd	Greenhills South
1103	6	15C	10 Natalie Dr	Park
1200	1	15C	104 Crease Rd	Park
1200	2	15C	102 Crease Rd	Park
1200	9	15C	28 Station Rd	Park
1201	1	15C	91 Crease Rd	Park
1201	8	15C	67 Crease Rd	Park
1201	9	15C	41 Crease Rd	Park
1300	18	15C	5 Brook St (Paper)	Tax Lien Foreclosure
1300	28	15C	20 Budd Lake Heights Rd	Park
1300	29	15C	51 Station Rd	Park
1300	40	15C	18-1 Lozier Rd	Park
1300	55.01	15C	Ike Rd Rear	Park
1300	56	15C	36 Firetower Rd	Park
1300	65	15C	46 Lozier Rd	Park
1300	67	15C	52 Lozier Rd	Park
1300	68	15C	54 Lozier Rd	Park
1300	69	15C	56 Lozier Rd	Park
1400	21	15C	11 Budd Lake Heights Rd	Park
1400	26	15C	39 Budd Lake Heights Rd	Park
1402	11	15C	30 Alcrest Ave	Stream Corridor
1402	23	15C	11 Camelot Dr	Well Site

1500	6	15C	11 Glenside Dr Rear	Well
1500	28	15C	222 Sand Shore Rd	Foreclosure
1503	19	15C	4 Arrowhead Trl	Tax Lien Foreclosure
1600	2	15C	12 Wampum Trl	Wetlands
1600	3	15C	9 Iroquois Trl	Wetlands
1600	4	15C	7 Iroquois Trl	Tax Lien Foreclosure
1600	7	15C	1 Iroquois Trl	Wetlands
1600	8	15C	258 Sand Shore Rd	Park
1600	9	15C	260 Sand Shore Rd	Wetlands
1600	10	15C	8 Wampum Trl	Wetlands
1600	11	15C	16 Wampum Trl	Wetlands
1601	1	15C	17 Wampum Trl	Wetlands
1601	4	15C	7 Wampum Trl	Wetlands
1601	5	15C	5 Wampum Trl	Wetlands
1601	6	15C	3 Wampum Trl	Wetlands
1601	7	15C	1 Wampum Trl	Park
1601	10	15C	35 Iroquois Trl	Tax Lien Foreclosure
1602	1	15C	9 Deer Skin Trl	Wetlands
1602	2	15C	3 Deerskin Trl	Wetlands
1602	3	15C	1 Deer Skin Trl	Wetlands
1602	6	15C	8 Algonquin Trl	Open Space
1602	8	15C	16 Algonquin Trl	Park
1602	9	15C	39 Iroquois Trl	Park
1603	1	15C	5 Algonquin Trl	Wetlands
1603	2	15C	7 Algonquin Trl	Wetlands
1603	4	15C	272 Sand Shore Rd	Wetlands
1604	2	15C	9 Sioux Trl	Wetlands
1604	6	15C	6 Erie Trl	Park
1605	1	15C	24 Mohawk Trl	Wetlands
1605	6	15C	280 Sand Shore Rd	Tax Lien Foreclosure
1606	2	15C	48 Iroquois Trl	Wetlands
1606	3	15C	52 Iroquois Trl	Wetlands
1606	6	15C	64 Mohawk Trl	Foreclosure
1607	4	15C	14 Lenape Trl	Wetlands
1607	6	15C	20 Lenape Trl	Vacant Land
1607	7	15C	22 Lenape Trl	Wetlands
1800	15	15C	12 Cardinal Ln	Water Supply
1800	37	15C	131 Crease Rd	Drainage
1801	1	15C	17 Lenape Trl	Wetlands
1801	3	15C	9 Lenape Trl	Wetlands
1801	6	15C	17-1 Lenape Trl	Park
1801	21	15C	35 Camelot Dr	Water Tower/Wooded
2000	8	15C	70-1 Smithtown Rd Path	10 Ft Walkway
2001	6	15C	35-1 Ridge Rd	10 Ft Walkway
2100	3	15C	29 Mohawk Trl	Wetlands
2100	13	15C	10 Academy Ln	Well
2100	33	15C	34 Indian Spring Rd	Park
2200	26	15C	27 Wilstow Rd	Drainage
2200	33	15C	25-1 Tamarack Rd	Drainage

2209	5	15C	6 Whippoorwill Rd	Tax Lien Foreclosure
2209	6	15C	8 Whippoorwill Rd	Tax Lien Foreclosure
2210	7	15C	18 Chickadee Rd	Tax Lien Foreclosure
2211	4	15C	11-1 Chickadee Rd	Drainage
2212	3	15C	47 Falcon Dr	Land
2212	7	15C	55 Falcon Dr	Steep Slopes
2213	6	15C	50 Manor House Rd	Steep Slopes
2300	2	15C	6 Smithtown Rd	Tax Lien Foreclosure
2300	3	15C	9 Myrtle Rd	Park
2300	4	15C	5 Myrtle Rd	Park
2300	6	15C	1 Myrtle Rd	Park
2300	7	15C	60 Manor House Rd	Park
2300	8	15C	376 Route 46	Wetlands
2301	7	15C	11 Ridgewood Rd	Wooded
2301	8	15C	9 Ridgewood Rd	Wooded
2301	9	15C	Ridgewood Rd	Wooded
2301	10	15C	Ridgewood Rd	Wooded
2301	16	15C	13 Ridgewood Rd	Park
2302	3	15C	10 Essex Rd	Park
2305	3	15C	16 Myrtle Rd	Wetlands
2305	4	15C	21 Stonehouse Rd	Park
2305	6	15C	19 Stonehouse Rd	Wetlands
2306	1	15C	10 Myrtle Rd	Wetlands
2400	1	15C	2 St James Rd	Vacant Land
2403	7	15C	5 St James Rd	Land
2404	2	15C	16 St James Rd	Tax Lien Foreclosure
2404	3	15C	14 St James Rd	Land
2408	1	15C	4 St Pauls Rd	Vacant Land
2408	2	15C	6 St Pauls Rd	Park
2409	1	15C	3 St Pauls Rd	Park
2410	3	15C	6 St James Rd	Vacant Land
2411	1	15C	3 St James Rd	Park
2412	1	15C	4 St James Rd	Park
2413	1	15C	1 St Pauls Rd	Park
2507	2	15C	6 Pine Grove Rd	Park
2507	7	15C	31 Dogwood Dr	Foreclosure
2508	1	15C	295 Sand Shore Rd	Park
2509	1	15C	5 Lake Shore Dr	Park
2510	2	15C	49 Lake Shore Dr	Park
2510	3	15C	45 Lake Shore Dr	Park
2514	1	15C	54 Babs Rd	Tax Lien Foreclosure
2600	1	15C	289 Sand Shore Rd	Park
2601	1	15C	6 Thirty Third St	Park
2602	2	15C	7 Thirty Third St	Park
2603	2	15C	6 Thirty First St	Park
2604	3	15C	7 Warren Dr	Forest
2604	4	15C	9 Warren Dr	Forest
2700	4	15C	300 Route 46	Mun Bldg/Beach
2700	4.01	15C	300-1 Route 46	Park

2700	5	15C	20 Lake Shore Dr	Bog
2700	13	15C	18 Toboggan Hill Rd	Park
2700	14	15C	7 Lake Shore Dr	Park
2700	16	15C	4 Warren Dr	Park
2700	17	15C	2 Warren Dr	Park
2700	19	15C	275 Sand Shore Rd	Park
2700	20	15C	267 Sand Shore Rd	Open Space
2700	21	15C	267 Sand Shore Rd	Park
2700	23	15C	205 Sand Shore Rd	Tax Lien Foreclosure
2700	25	15C	201 Sand Shore Rd	Park
2700	26	15C	183 Sand Shore Rd	Park
2700	27	15C	163 Sand Shore Rd	Park
2700	50	15C	100 Sand Shore Rd	Park
2700	52	15C	92 Sand Shore Rd	Park
2700	55	15C	76 Sand Shore Rd	Water & Land
2700	63	15C	52 Sand Shore Rd	Tax Lien Foreclosure
2700	66	15C	10-4 Sand Shore Rd	Water-Land
2700	75	15C	280 Route 46	Lake And Bog
2700	76	15C	290 Route 46	Lake & Beach
2801	15.01	15C	78-1 Lozier Rd	Park
2801	29	15C	65 Waterloo Rd	Park
2801	34	15C	178 Sand Shore Rd	Park
2801	40	15C	27 Waterloo Rd	Park
2801	41	15C	25 Waterloo Rd	Park
2801	48	15C	5 Fourth St	Park
2801	49	15C	1 Fourth St	Park
2801	51	15C	13 Hume Dr	Drainage
2801	52	15C	9 Hume Dr	Tax Lien Foreclosure
2801	55	15C	110 Sand Shore Rd	Park
2801	55	15C	110 Sand Shore Rd	Park
2801	66	15C	8 Lakeview Ave	Park
2801	68	15C	120 Sand Shore Rd	Park
2802	19	15C	6 Mohawk Trl	Park
2900	3	15C	64 Waterloo Rd	Park
2901	1	15C	1 Oneida Trl	Park
2902	1	15C	1 Seneca Trl	Park
2903	2	15C	58 Waterloo Rd	Park
2903	3	15C	1 Ononaga Trl	Park
2904	1	15C	2 Seneca Trl	Park
2905	1	15C	56 Waterloo Rd	Park
2905	3	15C	8 Cayuga Trl	Park
2905	11	15C	7-1 Eisenhower Dr	Park
2906	1	15C	62 Third St	Park
3003	7	15C	25 Third St	Drainage
3102	22	15C	3 N Rose Ln	Tax Lien Foreclosure
3103	1	15C	2 Hume Dr	Sewer Project
3103	3	15C	4 Hume Dr	Sewer Project
3103	5	15C	6 Hume Dr	Sewer Project
3203	21	15C	20 Stonewald Ct Dr	Vacant Land

3203	28	15C	23 Stonewald Ct Dr	Residence
3207	12	15C	12 S Rose Ln	Park
3305	15	15C	220 Route 46	Foreclosure
3305	18	15C	226 Route 46	Foreclosure
3305	25	15C	55 Center St Rear	Tax Lien Foreclosure
3305	30	15C	38 High St	Tax Lien Foreclosure
3306	9	15C	3 Baker Ln Rear	Foreclosure
3309	12	15C	11 Anderson Pl	Tax Lien Foreclosure
3501	4	15C	64-86 Mt Olive Rd	Vacant Land
3501	33	15C	4 Evergreen Pkwy	Water Tower
3507	1	15C	35 Timberline Rd	Foreclosure
3509	11	15C	35 Tulip Ave	Tax Lien Foreclosure
3513	9	15C	56-1 Mt Olive Rd	Foreclosure
3606	2	15C	1 Wilson St	Vacant Land
3607	11	15C	23 Carson Rd	Well Site
3700	5	15C	245 Route 46	Park
3700	15	15C	243 Route 46	Open Space
3700	16	15C	241 Route 46	Open Space
3700	17	15C	3 Spring St	Open Space
3700	20	15C	225 Route 46	Park
3700	26	15C	215 Route 46	Park
3700	31	15C	8-1 Mt Olive Rd	Park
3700	35	15C	16 Mt Olive Rd	Park
3700	41	15C	8 Colonial Rd	Park
3700	42	15C	5 Spring St	Park
3700	42.01	15C	4 Spring St	Park
3700	55	15C	30 Foothill Ave	Park
3700	56	15C	2 Tulip Ave	Tulip Park
3700	73	15C	26 Foothill Ave	Park
3700	74	15C	24 Foothill Ave	Park
3700	82	15C	5 Kingden St	Park
3700	83	15C	1 Kingden St	Park
3700	89	15C	6 Brook St	Park
3700	90	15C	16 Brook St	Park
3701	1	15C	2 Cove St	Island
3801	9	15C	38 Stokes Ave	Vacant Land
3802	9	15C	40 Woodbine Ave	Vacant Land
3804	3	15C	45 Madison Ave	Vacant Land
3808	3	15C	5 Flanders Rd	Vacant Land
3809	1	15C	209 Route 46	Traffic Triangle
3905	4	15C	73 Madison Ave	Tax Lien Foreclosure
3906	1	15C	2 Kishpaugh Ave	Park
4003	12.01	15C	43 Gold Mine Rd	Tax Lien Foreclosure
4100	11	15C	111 Gold Mine Rd	Park
4100	12.33	15C	3 Tanglewood Way	Open Space
4100	77	15C	21 Chamberlain Ln	Vacant Land
4100	89	15C	44 Old Budd Lake Rd	Park
4100	113	15C	21 Ringenbach Ln	Vacant Land
4101	1	15C	45 Route 46	Route 46 & Old Budd

4117	24	15C	1 Gold St	Park
4117	42	15C	14 E Forest Rd	Park
4300	8	15C	33 Old Ledgewood Rd	Vacant Land
4400	4	15C	175 Flanders Rd	Vacant Land
4400	9	15C	161 Flanders Rd	Turkey Brook Park
4400	10	15C	157 Flanders Rd	Tax Lien Foreclosure
4400	18	15C	74 Stokes Ave Rear	Well Site
4400	26	15C	159 Flanders Rd	Turkey Brook Pk
4400	45	15C	3 Madison Ave	Park
4400	49	15C	7 Mt Olive Rd	Park
4400	51	15C	1 Mt Olive Rd	Post Office
4400	69	15C	32 Gold Mine Rd	Park
4400	70	15C	32 Gold Mine Rd	Park
4400	82	15C	100 Gold Mine Rd	Park
4400	86.02	15C	47 Sovereign Dr	Vacant Land
4400	111	15C	86 Gold Mine Rd	Vacant Land
4500	8	15C	155 Flanders-Netcong Rd	Open Space Purchase
4500	29	15C	48 Drakedale Rd	Vacant Land
4500	31.06	15C	12 Arrow Ct	Detention Basin
4500	34	15C	110 Route 206	Park
4600	1	15C	117 Route 206	Park
4600	1.01	15C	1 Patricia Dr	Park
*4600	2	15C	123 Route 206	Park
4600	8	15C	135 Route 206	Tax Lien Foreclosure
4600	12	15C	0 Roxbury Border	N.A.
4600	15	15C	1 Oakwood Dr	Water Plant
4600	32	15C	Roxbury Border	Vacant Land
4600	34	15C	185-1 Route 206 Rear	Tank Site
4701	12	15C	221-1 Flanders-Netcong Rd	Water Treatment Plnt
4701	27.01	15C	4 Fells Ln	Well
5000	1	15C	17 Warwick Rd	Park
5000	7	15C	186 Route 206	Island
5000	11	15C	158 Route 206	Park
5000	12	15C	148 Route 206	Park
5000	26	15C	116 Route 206	Vacant Land
5000	94	15C	239 Flanders-Netcong Rd	Drainage
5002	2	15C	65 Flanders-Drakestown Rd	Drainage
5010	15	15C	10 Warwick Rd	Drainage
5200	4	15C	43 Corey Rd	Park
5201	10	15C	44-1 Corey Rd	Park
5201	10	15C	44-1 Corey Rd	Park
5202	11	15C	44-1 Corey Rd	Park
5300	8	15C	222 Route 206	Park
5300	8.01	15C	222 Route 206	Park
5300	51	15C	175 Tinc Rd	Vacant Land
5300	55.22	15C	6 Courtney Dr	Detention Basin
5401	9.01	15C	26-1 Main Rd	Schools
5401	24	15C	201 Route 206	Vacant Land
5900	1	15C	121 Pleasant Hill Rd	Vacant Land

5900	2	15C	1 Pleasant Hill Rd	Golf Course
5900	6.01	15C	33 Ironia Rd	Park
5900	9	15C	39 Ironia Rd	Vacant Land
5900	10	15C	41 Ironia Rd	Open Space
6000	1	15C	22 Pheasant Ct	Park
6000	2	15C	1 Fox Pl	Tax Lien Foreclosure
6000	3	15C	22-1 Pheasant Ct	Park
6000	5.3	15C	70 Pleasant Hill Rd	
6000	6	15C	90 Pleasant Hill Rd	Land Sale
6000	12	15C	40 Flanders-Bartley Rd	Park
6000	12.03	15C	40 Flanders-Bartley Rd	Recreation
6000	12.04	15C	40 Flanders-Bartley Rd	Recreation
6100	29	15C	293 Route 206	Pumping Station
6106	1	15C	280 Route 206	Island
6208	48	15C	47-1 Biscay Dr	10 Ft Walkway
6208	66	15C	102 Clover Hill Dr	Park
6208	76	15C	17-1 Burnham Pl	10 Ft Walkway
6208	79	15C	17-2 Burnham Pl Rear	Tax Lien Foreclosure
6300	13	15C	335 Route 206	Vacant Land
6300	14	15C	5 Glendale Rd	Park
6300	15	15C	335 Route 206	Vacant Land
6304	33	15C	95 Clover Hill Dr	Dan Jordan Park
6400	22	15C	349 Route 206	Vacant Land
6500	37	15C	355 Route 206	Park
6500	38	15C	363 Route 206	Sewerage Disposal
6502	6	15C	8 Hermanne Dr	Tax Lien Foreclosure
6502	7	15C	371 Route 206	Park
6600	3	15C	105 Duffy Rd	Park
6600	11	15C	0-1 Bartley Rd Rear	Park
6600	12	15C	0-2 Bartley Rd Rear	Park
6600	14	15C	0 Class 11 R.R.	Railroad
*6700	1	15C	681 Bartley-Long Valley R	Vacant Land
6700	10	15C	693 Bartley Rd	Railroad
6800	1	15C	284 Route 206	Pumping Station
6800	13	15C	650 Bartley-Chester Rd	Vacant Land
6802	1	15C	282 Route 206	N.A.
6803	1	15C	278 Route 206	Island
6900	9.01	15C	531-553 Drakestown Rd	Park
6900	26	15C	22 Bartley Rd	Tax Lien Foreclosure
6900	33	15C	36 Bartley Rd	Park
6900	36	15C	0-3 Bartley Rd	Park
6900	37	15C	0-4 Bartley Rd	Vacant Land
7000	21	15C	496 Drakestown Rd	Park
7000	63	15C	9 Shop Ln	Vacant Land
7100	4	15C	186 Tinc Rd	Tax Lien Foreclosure
7100	9	15C	172 Tinc Rd	Tax Lien Foreclosure
7100	53	15C	13 Natures Ct	Park
7102	7	15C	23 Whispering Woods Dr	Drainage
7200	21	15C	12 David Pl	Detention Basin

7200	27.03	15C	6 Deborah Ct	Drainage
7201	19	15C	0 Pedestrian Walkway	20 Ft. R.O.W.
7400	19	15C	5-1 Sharon Ct	Walkway
7400	23	15C	75 Kevin Dr	Park
7400	33	15C	7 Bennington Dr	Park
7500	6	15C	5 Gail Dr	Central Water System
7501	7	15C	72-1 Kevin Dr	Walkway
7600	3	15C	93 Flanders-Drakestown Rd	Tax Lien Foreclosure
7600	48	15C	Open Space Lot	Park
7600	64	15C	113 Mt Olive Rd	Park
7600	65	15C	109 Mt Olive Rd	Park
7600	71	15C	30 Flanders Rd	Turkey Brook Park
7600	74	15C	100 Flanders Rd	Turkey Brook Park
7600	87.12	15C	13 School House Ln	Park & Drainage
7600	87.17	15C	20-1 Corey Rd Rear	Park
7600	89	15C	100-2 Flanders Rd Rear	Park
7600	114	15C	173 Flanders-Drakestown R	Pumping Station
7600	147	15C	12 Fernwood Ct Rear	Water Plant
7610	4	15C	55 Vista Dr Open Space	Park
7700	6	15C	381 Route 46	Park
7701	4	15C	345 Route 46	Vacant Land
7702	1	15C	18 Wolfe Rd	Vacant Land
7702	9	15C	10 Carteret Ave	Well Site
7702	15	15C	0-2 Carteret Ave	Tax Lien Foreclosure
7702	16	15C	7 Salmon Ct Open Space	Vacant Land
7702	16.01	15C	0-2 Open Space	Vacant Land
7702	16.32	15C	14 Mckelvie St Det Basin	Vacant Land
7702	16.35	15C	17 Mckelvie St Open Spac	Vacant Land
7702	26	15C	Detention Basin A	Vacant Land
7703	10	15C	7 Elwell Ave Open Space	Vacant Land
7704	41	15C	337 Route 46	Tax Lien Foreclosure
7801	5	15C	54 Wolfe Rd	Park
7801	8	15C	157 Flanders-Drakestown R	Park
7801	13	15C	191 Flanders-Drakestown R	Park
7801	14	15C	131 Flanders-Drakestown R	Hist/Church/Cemetery
7801	41	15C	Mt. Olive Rd	Park
7900	3.01	15C	202 Flanders-Drakestown R	Government Owned
7900	18	15C	204 Flanders-Drakestown R	Municipal Bldg
8000	8	15C	10 Shop Ln	Vacant Land
8100	3.01	15C	355 River Rd	Vacant Land
8100	54	15C	441 Route 46	Park
8100	55	15C	439 Route 46	Park
8100	61	15C	427 Route 46	Vacant Land
8101	28	15C	150 Wolfe Rd	Mt Olive Library
8200	1	15C	342 Route 46	Vacant Land
8200	39	15C	6 Kobert Ave	Open Space
8300	12	15C	444 Sand Shore Rd	Vacant Land
8300	15	15C	508 Mine Hill Rd	Park
8300	17.01	15C	200 Mine Hill Rd	Park

8400	21	15C	497 Route 46	Tax Lien Foreclosure
8500	22	15C	105 Mine Hill Rd	Park
8500	23	15C	8 River Dr	Park
8500	27	15C	32 Parkway Dr	Park
8601	6	15C	173 Mine Hill Rd	Foreclosure
8800	1	15C	230 Stephens Park Rd	Park
8800	2	15C	171 Stephens Park Rd	Park
8800	22	15C	44 Mine Hill Rd	Park
8800	36.24	15C	31 Saunders Ln	Park
8800	36.45	15C	65 Saunders Ln Op Space	Park
8802	9	15C	28 Saunders Ln Op Space	Park
1500	9	15D	17 Glenside Dr	Group Home
2407	2	15D	23 Lake Shore Dr	Pax Amicus
2700	72	15D	54 Sand Shore Rd	Parsonage
2911	3	15D	32 Waterloo Rd	Parsonage
3306	1	15D	54 Sand Shore Rd	Budd Lake Union Chap
3306	8	15D	48 Sand Shore Rd	Parsonage
3307	1	15D	54 Sand Shore Rd	Chapel
3400	12	15D	305 Route 46	Church
3807	1	15D	17 Mt Olive Rd	Church
3807	2	15D	21 Mt Olive Rd	Rectory
3807	4	15D	27 Mt Olive Rd	Residence
4100	109	15D	12 Ringenbach Ln	Nursing Home
4400	75	15D	44 Gold Mine Rd	Residence
4500	27	15D	58 Drakedale Rd	Church
5300	18	15D	240 Route 206	Administrative Bldg.
5300	31	15D	104 Bartley-Flanders Rd	Parsonage
5300	58	15D	60 Tinc Rd	Rectory
5400	22	15D	76 Main Rd	Church
5400	24	15D	50 Flanders-Bartley Rd	Hope Baptist Church
5501	17.01	15D	4 Park Pl	Church
5501	19	15D	8 Park Pl	Parsonage
5800	39	15D	59-61 Main Rd	Parish/Rectory Hse
5800	41	15D	59-61 Main Rd	Park
6000	11	15D	58 Pleasant Hill Rd	Synagogue
7100	1	15D	6 River Rd	Mental Health Facili
7600	84	15D	208 Flanders-Netcong Rd	Camp
7900	3	15D	200 Flanders-Drakestown R	Church
8200	4	15D	354 Route 46	Church
8200	4	15D	354 Route 46	Church
8200	19	15D	369 Sand Shore Rd	Church
8400	3	15D	6 Naughright Rd	Church
8400	4	15D	8 Naughright Rd	Parsonage
8400	10	15D	493 Route 46	Church
8602	2	15D	16 Parkway Dr	Church
800	32.16	15F	35 Dorset Dr	Disabled Veteran
802	1	15F	63 Karen Pl	Disabled Veteran
1000	1	15F	159 Smithtown Rd	Disabled Veteran
1201	11	15F	43 Budd Lake Heights Rd	Disabled Veteran

1300	38	15F	16 Lozier Rd	Disabled Veteran
1502	6	15F	10 Louis Dr	Disabled Veteran
1503	1	15F	7 Louis Dr	Disabled Veteran
1503	12	15F	1 Locust St	Residence
1607	1	15F	38 Iroquois Trl	Disabled Veteran
1701	20	15F	40 Camelot Dr	Disabled Veteran
1800	1	15F	45 Indian Spring Rd	Disabled Veteran
2300	9	15F	378 Route 46	Fire House
2306	2	15F	8 Myrtle Rd	Disabled Veteran
2505	12	15F	1 Manor House Rd	Disabled Veteran
2507	1	15F	1 Dogwood Dr	Handicapped Home
2801	8	15F	72 Lozier Rd	100% Disabled Vet
2802	3	15F	127 Lozier Rd	Disabled Veteran
3106	8	15F	29 Netcong Rd	Disabled Veteran
3106	20	15F	35 Netcong Rd	Disabled Veteran
3203	18	15F	10 Stonewald Ct Dr	Disabled Veteran
3307	5	15F	20 Church St	Disabled Veteran
3506	4	15F	14 Elm St	Disabled Veteran
3601	11	15F	6 Carson Rd	Disabled Veteran
3900	3	15F	77 Flanders Rd	Humane Society
4100	119	15F	100 International Dr S	Clubhouse
4200	6	15F	34 Old Ledgewood Rd	Disabled Veteran
4402	2	15F	18 Sovereign Dr	Disabled Veteran
4407	11	15F	3 Pfrommer Ave	Disabled Veteran
4411	46	15F	15 Tutbury Ct	Disabled Veteran
4500	4	15F	119 Flanders-Netcong Rd	Transfer Station
4500	5	15F	129 Flanders-Netcong Rd	Transfer Station
4701	11	15F	221 Flanders-Netcong Rd	Disabled Veteran
5000	46	15F	20 Richard Dr	Disabled Veteran
5002	33	15F	268 Flanders-Netcong Rd	Disabled Veteran
5010	6	15F	6 Kent Ct	Disabled Veteran
5500	10	15F	27 Main Rd	Volunteer Fire Co
5501	14	15F	6 Railroad Ave Rear	Club House
6000	5.023	15F	44 Drake Way	Disabled Veteran
6000	5.064	15F	40 Gordon Way	Disabled Veteran
6000	5.092	15F	70 Pleasant Hill Rd	Coah Apartments
6000	5.154	15F	43 Gordon Way	Disabled Veteran
6000	5.168	15F	7 Gordon Way	Disabled Veteran
6000	12.01	15F	49-51 Flanders Bartley Rd	Sc Rental Tax Law
6100	9	15F	23 Deerfield Pl	Disabled Veteran
6102	2	15F	3 Collingswood Pl	Disabled Veteran
6207	8	15F	16 Rehoboth Rd	Disabled Veteran
7302	9	15F	18 Kevin Dr	Disabled Veteran
7610	15	15F	31 Vista Dr	Disabled Veteran
7701	1	15F	365 Route 46	Rescue Squad
7801	4	15F	31 Tudor Pl	Disabled Veteran
8103	91	15F	93 Wolfe Rd	NJ Vasa Home
8200	28	15F	11 Oxford Rd	Disabled Veteran
8400	9	15F	425 Route 46	Paragon Development

8600	23	15F	29 Parkway Dr	Disabled Veteran
8602	19	15F	4 Francis Ter	Disabled Veteran
8800	5	15F	163 Stephens Park Rd	Disabled Veteran
8800	36.17	15F	19 Saunders Ln	Disabled Veteran
8801	6	15F	32 Powhatatan Way	Disabled Veteran

*Only a portion of the parcel is within the Mount Olive Township boundary

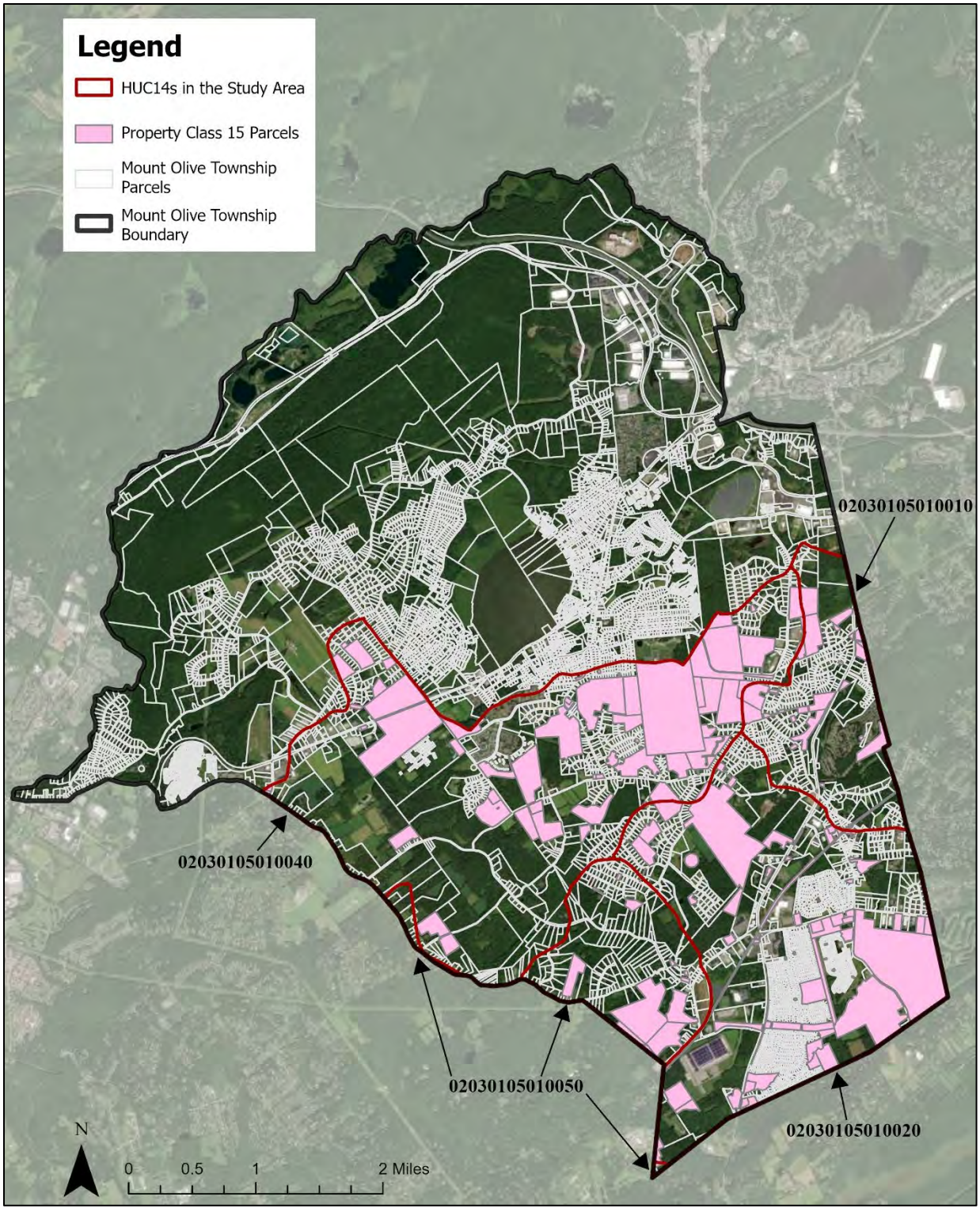


Figure 11: Property Class 15 parcels in the Study Area of Mount Olive Township

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

Block	Lot	Prop Class	Location	Facility Type
***900**[1]	**12**	**15A**	**386 Sand Shore Rd**	**Sandshore School**
5401	21	15A	227 Route 206	Schools
***6208**	**24**	**15A**	**120 Clover Hill Dr**	**Mt View & Mt View N**
6600	10.01	15A	0-1 Fourbridges Rd	High School
***7100**	**67**	**15A**	**24 Tinc Rd**	**Tinc Road School**
7600	70	15A	20 Sunset Dr	Upper Elementary
***7600**	**86**	**15A**	**18 Corey Rd**	**High School**
8101	22	15A	160 Wolfe Rd	Vehicle Terminal
5401	9	15B	26 Main Rd	Flanders School
2	17	15C	North Rd	Railroad
3	1	15C	North Rd	Railroad
3	2	15C	Class 11 Rr Longwood Br	Railroad
4	1	15C	Bartley Flanders Rd	Railroad
5	1	15C	Bartley Chester Rd	Railroad
6	1	15C	Bartley-Long Valley Rd	Railroad
910	6	15C	11 Meadow Ln	Detention Basin
910	7	15C	376 Sand Shore Rd	Greenhills South
2000[1]	8	15C	70-1 Smithtown Rd Path	10 Ft Walkway
2300[1]	2	15C	6 Smithtown Rd	Tax Lien Foreclosure
3501[1]	4	15C	64-86 Mt Olive Rd	Vacant Land
3607	11	15C	23 Carson Rd	Well Site
4400	4	15C	175 Flanders Rd	Vacant Land
4400[1]	9	15C	161 Flanders Rd	Turkey Brook Park
4400[1]	26	15C	159 Flanders Rd	Turkey Brook Pk
4500	8	15C	155 Flanders-Netcong Rd	Open Space Purchase
4500	29	15C	48 Drakedale Rd	Vacant Land
4500	31.06	15C	12 Arrow Ct	Detention Basin
4500	34	15C	110 Route 206	Park
4600	1	15C	117 Route 206	Park
4600	1.01	15C	1 Patricia Dr	Park
4600[2]	2	15C	123 Route 206	Park
4600	8	15C	135 Route 206	Tax Lien Foreclosure
4600	12	15C	0 Roxbury Border	N.A.
4600	15	15C	1 Oakwood Dr	Water Plant
4600	32	15C	Roxbury Border	Vacant Land
4600	34	15C	185-1 Route 206 Rear	Tank Site
4701	12	15C	221-1 Flanders-Netcong Rd	Water Treatment Plnt
4701	27.01	15C	4 Fells Ln	Well
5000	1	15C	17 Warwick Rd	Park
5000	7	15C	186 Route 206	Island
5000	11	15C	158 Route 206	Park
5000	12	15C	148 Route 206	Park
5000	26	15C	116 Route 206	Vacant Land
5000	94	15C	239 Flanders-Netcong Rd	Drainage
5002	2	15C	65 Flanders-Drakestown Rd	Drainage
5010	15	15C	10 Warwick Rd	Drainage

5200	4	15C	43 Corey Rd	Park
5201	10	15C	44-1 Corey Rd	Park
5201	10	15C	44-1 Corey Rd	Park
5202	11	15C	44-1 Corey Rd	Park
5300	8	15C	222 Route 206	Park
5300	8.01	15C	222 Route 206	Park
5300	51	15C	175 Tinc Rd	Vacant Land
5300	55.22	15C	6 Courtney Dr	Detention Basin
5401	9.01	15C	26-1 Main Rd	Schools
5401	24	15C	201 Route 206	Vacant Land
5900	1	15C	121 Pleasant Hill Rd	Vacant Land
5900	2	15C	1 Pleasant Hill Rd	Golf Course
5900	6.01	15C	33 Ironia Rd	Park
5900	9	15C	39 Ironia Rd	Vacant Land
5900	10	15C	41 Ironia Rd	Open Space
6000	1	15C	22 Pheasant Ct	Park
6000	2	15C	1 Fox Pl	Tax Lien Foreclosure
6000	3	15C	22-1 Pheasant Ct	Park
6000	5.3	15C	70 Pleasant Hill Rd	
6000	6	15C	90 Pleasant Hill Rd	Land Sale
***6000[3]**	**12**	**15C**	**40 Flanders-Bartley Rd**	**Park**
***6000[3]**	**12.03**	**15C**	**40 Flanders-Bartley Rd**	**Recreation**
***6000[3]**	**12.04**	**15C**	**40 Flanders-Bartley Rd**	**Recreation**
6100	29	15C	293 Route 206	Pumping Station
6106	1	15C	280 Route 206	Island
6208	48	15C	47-1 Biscay Dr	10 Ft Walkway
6208	66	15C	102 Clover Hill Dr	Park
6300	13	15C	335 Route 206	Vacant Land
6300	14	15C	5 Glendale Rd	Park
6300	15	15C	335 Route 206	Vacant Land
6304	33	15C	95 Clover Hill Dr	Dan Jordan Park
6400	22	15C	349 Route 206	Vacant Land
6500	37	15C	355 Route 206	Park
6500	38	15C	363 Route 206	Sewerage Disposal
6502	6	15C	8 Hermanne Dr	Tax Lien Foreclosure
6502	7	15C	371 Route 206	Park
6600	3	15C	105 Duffy Rd	Park
6600	11	15C	0-1 Bartley Rd Rear	Park
6600	12	15C	0-2 Bartley Rd Rear	Park
6600	14	15C	0 Class 11 R.R.	Railroad
6700[2]	1	15C	681 Bartley-Long Valley R	Vacant Land
6700	10	15C	693 Bartley Rd	Railroad
6800	1	15C	284 Route 206	Pumping Station
6800	13	15C	650 Bartley-Chester Rd	Vacant Land
6802	1	15C	282 Route 206	N.A.
6803	1	15C	278 Route 206	Island
6900	9.01	15C	531-553 Drakestown Rd	Park
6900	26	15C	22 Bartley Rd	Tax Lien Foreclosure
6900	33	15C	36 Bartley Rd	Park

6900	36	15C	0-3 Bartley Rd	Park
6900	37	15C	0-4 Bartley Rd	Vacant Land
7000	21	15C	496 Drakestown Rd	Park
7000	63	15C	9 Shop Ln	Vacant Land
7100	4	15C	186 Tinc Rd	Tax Lien Foreclosure
7100	9	15C	172 Tinc Rd	Tax Lien Foreclosure
7100	53	15C	13 Natures Ct	Park
7102	7	15C	23 Whispering Woods Dr	Drainage
7200	21	15C	12 David Pl	Detention Basin
7200	27.03	15C	6 Deborah Ct	Drainage
7201	19	15C	0 Pedestrian Walkway	20 Ft. R.O.W.
7400	19	15C	5-1 Sharon Ct	Walkway
7400	23	15C	75 Kevin Dr	Park
7400	33	15C	7 Bennington Dr	Park
7500	6	15C	5 Gail Dr	Central Water System
7501	7	15C	72-1 Kevin Dr	Walkway
7600	3	15C	93 Flanders-Drakestown Rd	Tax Lien Foreclosure
7600	48	15C	Open Space Lot	Park
7600	64	15C	113 Mt Olive Rd	Park
7600	65	15C	109 Mt Olive Rd	Park
***7600[1]**	**71**	**15C**	**30 Flanders Rd**	**Turkey Brook Park**
7600[1]	74	15C	100 Flanders Rd	Turkey Brook Park
7600	87.12	15C	13 School House Ln	Park & Drainage
7600	87.17	15C	20-1 Corey Rd Rear	Park
7600	89	15C	100-2 Flanders Rd Rear	Park
7600	114	15C	173 Flanders-Drakestown R	Pumping Station
7600	147	15C	12 Fernwood Ct Rear	Water Plant
7610	4	15C	55 Vista Dr Open Space	Park
7702[1]	1	15C	18 Wolfe Rd	Vacant Land
7702	9	15C	10 Carteret Ave	Well Site
7801	5	15C	54 Wolfe Rd	Park
7801	8	15C	157 Flanders-Drakestown R	Park
7801	13	15C	191 Flanders-Drakestown R	Park
7801	14	15C	131 Flanders-Drakestown R	Hist/Church/Cemetery
7801	41	15C	Mt. Olive Rd	Park
7900	3.01	15C	202 Flanders-Drakestown R	Government Owned
7900	18	15C	204 Flanders-Drakestown R	Municipal Bldg
8000	8	15C	10 Shop Ln	Vacant Land
8100	3.01	15C	355 River Rd	Vacant Land
8100	54	15C	441 Route 46	Park
8100	55	15C	439 Route 46	Park
8100	61	15C	427 Route 46	Vacant Land
8101	28	15C	150 Wolfe Rd	Mt Olive Library
8200	1	15C	342 Route 46	Vacant Land
8200	39	15C	6 Kobert Ave	Open Space
***4500**	**27**	**15D**	**58 Drakedale Rd**	**Church**
5300	18	15D	240 Route 206	Administrative Bldg.
5300	31	15D	104 Bartley-Flanders Rd	Parsonage
5300	58	15D	60 Tinc Rd	Rectory

***5400**	**22**	**15D**	**76 Main Rd**	**Church**
***5400**	**24**	**15D**	**50 Flanders-Bartley Rd**	**Hope Baptist Church**
***5501**	**17.01**	**15D**	**4 Park Pl**	**Church**
5501	19	15D	8 Park Pl	Parsonage
5800	39	15D	59-61 Main Rd	Parish/Rectory Hse
5800	41	15D	59-61 Main Rd	Park
***6000**	**11**	**15D**	**58 Pleasant Hill Rd**	**Synagogue**
7100	1	15D	6 River Rd	Mental Health Facili
7600	84	15D	208 Flanders-Netcong Rd	Camp
7900	3	15D	200 Flanders-Drakestown R	Church
8200	4	15D	354 Route 46	Church
8200	4	15D	354 Route 46	Church
8200	19	15D	369 Sand Shore Rd	Church
8400[1]	3	15D	6 Naughright Rd	Church
8400[1]	4	15D	8 Naughright Rd	Parsonage
3506[1]	4	15F	14 Elm St	Disabled Veteran
3601	11	15F	6 Carson Rd	Disabled Veteran
4402	2	15F	18 Sovereign Dr	Disabled Veteran
4701	11	15F	221 Flanders-Netcong Rd	Disabled Veteran
5000	46	15F	20 Richard Dr	Disabled Veteran
5002	33	15F	268 Flanders-Netcong Rd	Disabled Veteran
5010	6	15F	6 Kent Ct	Disabled Veteran
5500	10	15F	27 Main Rd	Volunteer Fire Co
5501	14	15F	6 Railroad Ave Rear	Club House
6000	5.023	15F	44 Drake Way	Disabled Veteran
6000	5.064	15F	40 Gordon Way	Disabled Veteran
6000	5.092	15F	70 Pleasant Hill Rd	Coah Apartments
6000	5.154	15F	43 Gordon Way	Disabled Veteran
6000	5.168	15F	7 Gordon Way	Disabled Veteran
6000	12.01	15F	49-51 Flanders Bartley Rd	Sc Rental Tax Law
6100	9	15F	23 Deerfield Pl	Disabled Veteran
6102	2	15F	3 Collingswood Pl	Disabled Veteran
6207	8	15F	16 Rehoboth Rd	Disabled Veteran
7302	9	15F	18 Kevin Dr	Disabled Veteran
7610	15	15F	31 Vista Dr	Disabled Veteran
7801	4	15F	31 Tudor Pl	Disabled Veteran
8103	91	15F	93 Wolfe Rd	NJ Vasa Home
8200	28	15F	11 Oxford Rd	Disabled Veteran

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

Only a portion of the parcel is within the study area

[2] Only a portion of the parcel is within the Mount Olive Township boundary

[3] Site includes three tax-exempt parcels

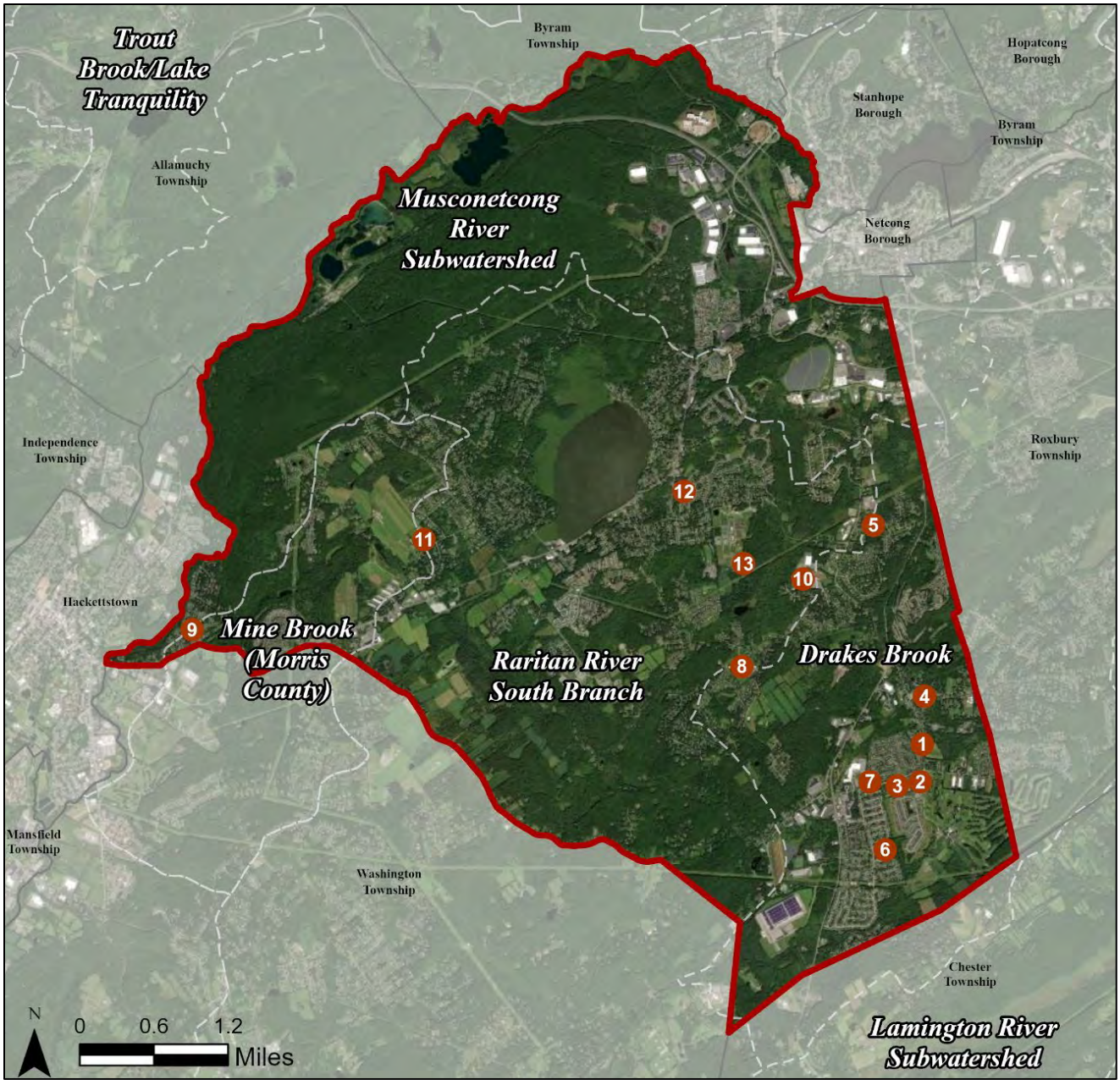


Figure 12: Sites with Green Infrastructure Opportunities in Mount Olive Township

CALVARY BIBLE CHAPEL

RAP ID: 1

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 37,042 sq. ft.

Address: 76 Main Street
Flanders, NJ 07836

Block and Lot: Block 5400, Lot 22

Rain gardens can be installed to the east and west of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require the installation of a gutter system on the building. Existing parking spaces to the west and north of the building can be converted into pervious pavement to capture and infiltrate 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"
45	16,792	0.8	8.5	77.1	0.013	0.52

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	2,635	0.078	11	5,500	0.21	660	$6,600
Pervious pavement	10,235	0.303	44	21,350	0.80	3,860	$96,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Calvary Bible Chapel

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

0 20' 40'

CHABAD JEWISH CENTER OF MT. OLIVE

RAP ID: **2**

Subwatershed: **Drakes Brook**

HUC14 ID: **02030105010020**

Site Area: **101,680 sq. ft.**

Address: **58 Pleasant Hill Road**
Flanders, NJ 07836

Block and Lot: **Block 6000, Lot 11**

Rain gardens can be installed to the north and east of the building to capture, treat, and infiltrate stormwater runoff from the rooftop and the driveway. This will require downspout redirections beneath the sidewalk and the driveway, as well as trench drains. A cistern can be installed to the northwest of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering the landscaping vegetation. 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"
41	41,364	2.0	20.9	189.9	0.032	1.29

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	6,175	0.183	27	12,880	0.48	1,545	$15,450
Rainwater harvesting	380	0.011	2	300	0.01	300 (gal)	$900

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chabad Jewish Center of Mt. Olive

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

0 25' 50'

FLANDERS PARK

RAP ID: 3

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 830,055 sq. ft.

Address: 40 Flanders-Bartley Road
Flanders, NJ 07836

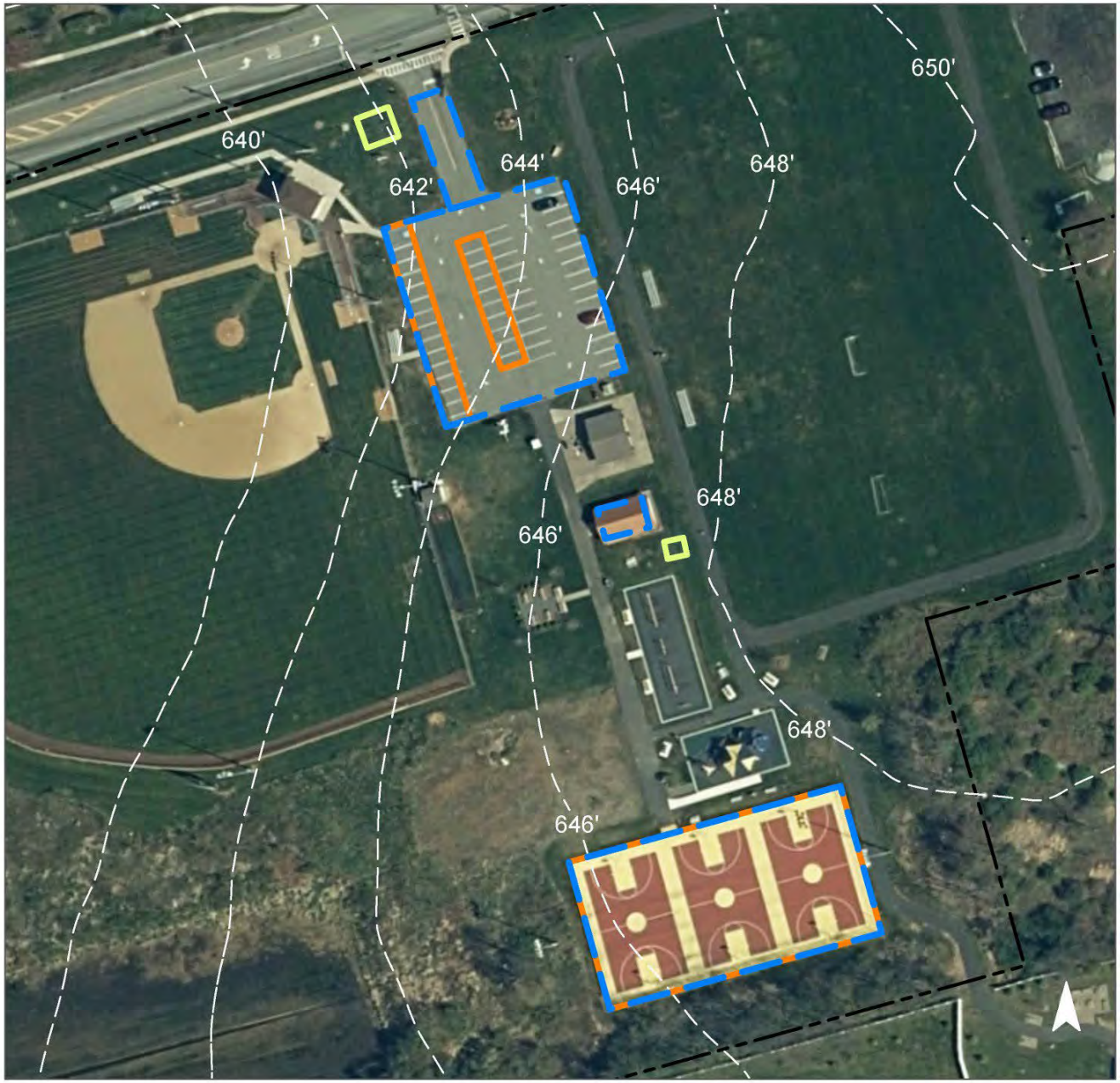
Block and Lot: Block 6000, Lots 12, 12.03, 12.04

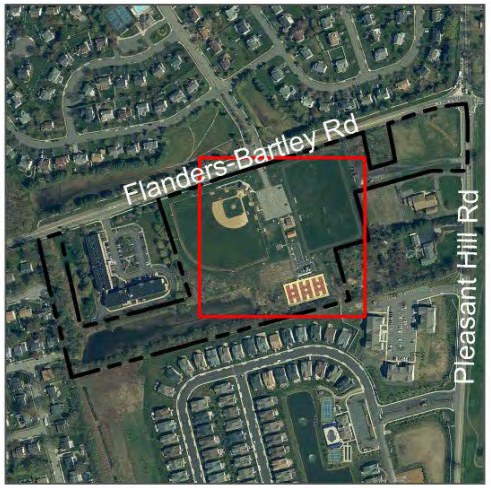
A rain garden can be installed to the southeast corner of the pavilion to capture, treat, and infiltrate stormwater runoff from the rooftop. A gutter system will need to be installed. Another rain garden can be installed to the west of the driveway entrance to capture, treat, and infiltrate stormwater runoff from the asphalt. A trench drain will be required. The rain garden can be installed near the existing catch basin, which can be used as an overflow. Existing parking spaces to the west of the lot can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. The basketball courts can be converted to pervious pavement to capture and infiltrate stormwater runoff from the courts. 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	109,178	5.3	55.1	501.3	0.085	3.40

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	2,405	0.071	11	5,020	0.19	600	$6,000
Pervious pavement	35,095	1.039	154	73,200	2.75	22,310	$557,750

GREEN INFRASTRUCTURE RECOMMENDATIONS





Flanders Park

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

0 50' 100'

FLANDERS UNITED METHODIST CHURCH & THRIFT SHOP

RAP ID: 4

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 59,170 sq. ft.

Address: 4 Park Place
Flanders, NJ 07836

Block and Lot: Block 5501, Lots 17 & 17.01

Rain gardens can be installed in multiple grass areas around the buildings using the existing disconnected downspouts to capture, treat, and infiltrate stormwater runoff from the rooftops. Some of the disconnected downspouts will need to be extended to the rain gardens. The existing parking spaces to the north of the thrift shop building can be converted into pervious pavement to capture and infiltrate 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"
50	29,335	1.4	14.8	134.7	0.023	0.91

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	2,825	0.084	11	5,890	0.22	710	$7,100
Pervious pavement	6,415	0.190	29	13,380	0.50	1,600	$40,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Flanders United Methodist Church & Thrift Shop

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

0 20' 40'

FUN-N-FRIENDS NURSERY SCHOOL

RAP ID: 5

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 225,845 sq. ft.

Address: 58 Drakesdale Road
Flanders, NJ 07836

Block and Lot: Block 4500, Lot 27

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the rooftops and the driveway. Downspout redirections and disconnections will be required for some of these raingardens. A gutter system will need to be installed on the western section of the building for the northwestern rain garden. A trench train and curb cut will be needed for the southwestern rain garden. Existing parking spaces to the south and west of the lot can be converted into pervious pavement to capture and infiltrate 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"
24	55,191	2.7	27.9	253.4	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	7,270	0.215	32	15,160	0.57	1,825	$18,250
Pervious pavement	28,570	0.846	125	59,590	2.24	6,020	$150,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Fun-N-Friends Nursery School

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

0 25' 50'

MOUNTAIN VIEW ELEMENTARY SCHOOL

RAP ID: 6

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 867,709 sq. ft.

Address: 118 Clover Hill Drive
Flanders, NJ 07836

Block and Lot: Block 6208, Lot 24

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the driveways and the southern parking lot. Curb cuts and a trench drain will be required for some of these rain gardens. Existing parking spaces to the north of the northern lot can be converted into pervious pavement to capture and infiltrate 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"
27	237,638	11.5	120.0	1,091.1	0.185	7.41

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	29,090	0.861	127	60,680	2.28	7,270	$72,700
Pervious pavement	17,060	0.505	74	35,580	1.34	4,715	$117,875

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mountain View Elementary School

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

0 100' 200'

ST. THOMAS ORTHODOX CHURCH

RAP ID: 7

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 130,673 sq. ft.

Address: 50 Flanders-Bartley Road
Flanders, NJ 07836

Block and Lot: Block 5400, Lot 24

Rain gardens can be installed to the east and west of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. Downspout redirections beneath the sidewalk will be required for the eastern rain garden. Downspout redirection and disconnection will be required for the western rain garden. Existing parking spaces to the north and east of the building can be converted into pervious pavement to capture and infiltrate 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"
34	44,957	2.2	22.7	206.4	0.035	1.40

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	2,705	0.080	11	5,640	0.21	675	$6,750
Pervious pavement	27,935	0.827	122	58,270	2.19	6,410	$160,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Thomas Orthodox Church

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

0 30' 60'

TINC ROAD SCHOOL

RAP ID: 8

Subwatershed: Drakes Brook

HUC14 ID: 02030105010020

Site Area: 1,306,368 sq. ft.

Address: 24 Tinc Road
Flanders, NJ 07836

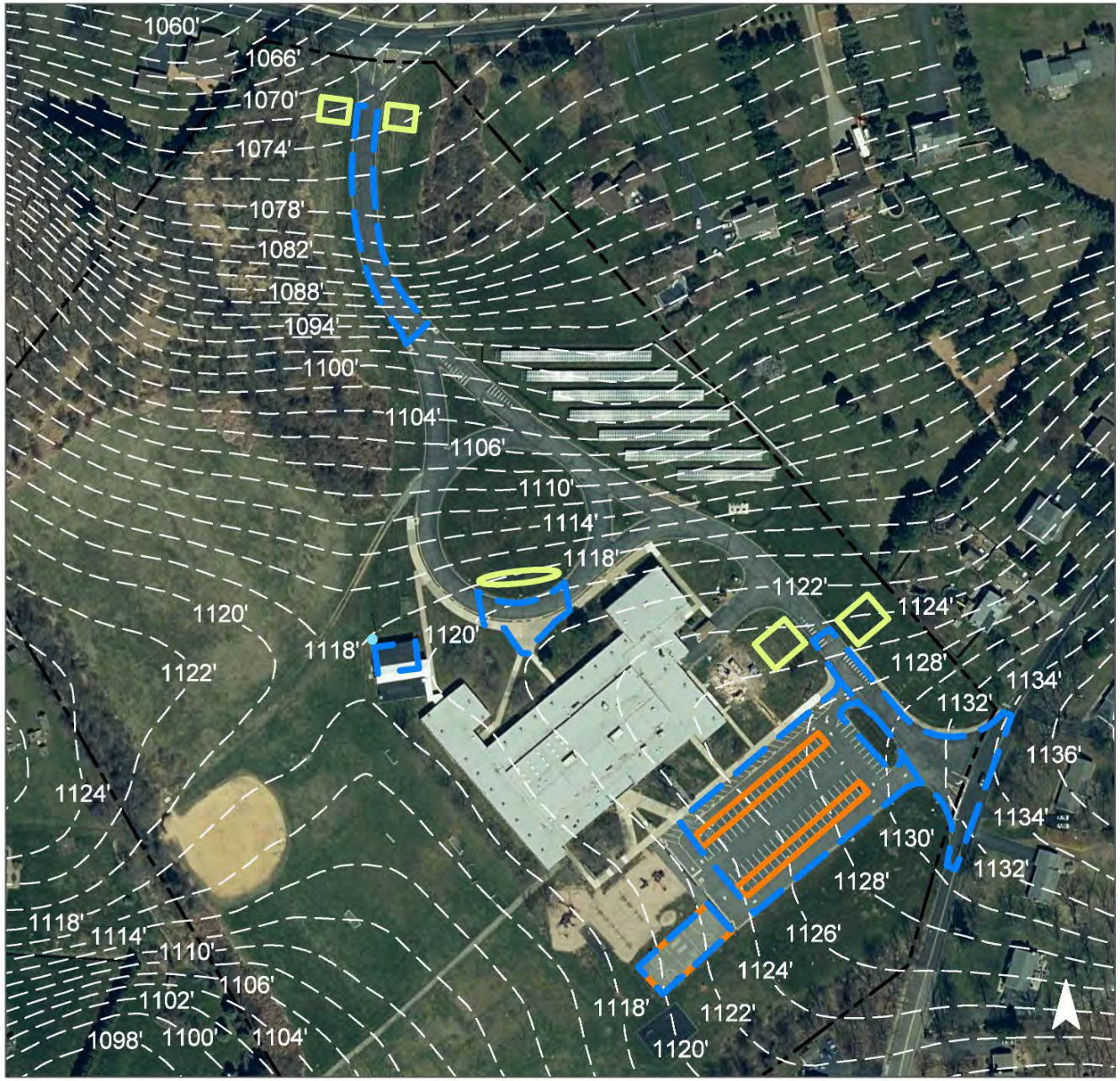
Block and Lot: Block 7100, Lot 67

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the driveway. Curb cuts will be required, and a trench drain may also be needed for the rain garden to the north of the school. Existing parking spaces in the lot can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. Trench drains will be required. The basketball courts can be converted into pervious pavement to capture and infiltrate stormwater runoff from the courts. A cistern can be installed to the northwest of the northern shed to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering the nearby garden. The downspouts can be reworked so that all shed runoff is managed by the cistern. 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"
17	219,401	10.6	110.8	1,007.4	0.171	6.84

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	31,895	0.944	139	66,530	2.50	7,970	$79,700
Pervious pavement	47,505	1.407	207	99,090	3.72	13,555	$338,875
Rainwater harvesting	1,890	0.056	8	1,500	0.06	1,500 (gal)	$4,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Tinc Road School

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

0 100' 200'

KINGDOM HALL OF JEHOVAH'S WITNESSES

RAP ID: 9

Subwatershed: Mine Brook

HUC14 ID: 02040105150090

Site Area: 40,562 sq. ft.

Address: 16 Parkway Drive
Hackettstown, NJ 07840

Block and Lot: Block 8602, Lot 2

Rain gardens can be installed to the south of the building to capture, treat, and infiltrate stormwater runoff from the rooftop and driveway. Both rain gardens will require a trench drain and extension of the disconnected downspouts to the rain gardens. Existing parking spaces to the north and 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 for the western pervious pavement. The northern building downspouts can be disconnected to the northern pervious pavement to manage additional 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 50"
48	19,344	0.9	9.8	88.8	0.015	0.60

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	1,253	0.037	6	2,610	0.10	630	$6,300
Pervious pavement	12,355	0.366	53	25,770	0.97	2,920	$73,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Kingdom Hall of Jehovah's Witnesses

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

0 20' 40'

MOUNT OLIVE HIGH SCHOOL

RAP ID: 10

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010040

Site Area: 2,112,315 sq. ft.

Address: 18 Corey Road
Flanders, NJ 07836

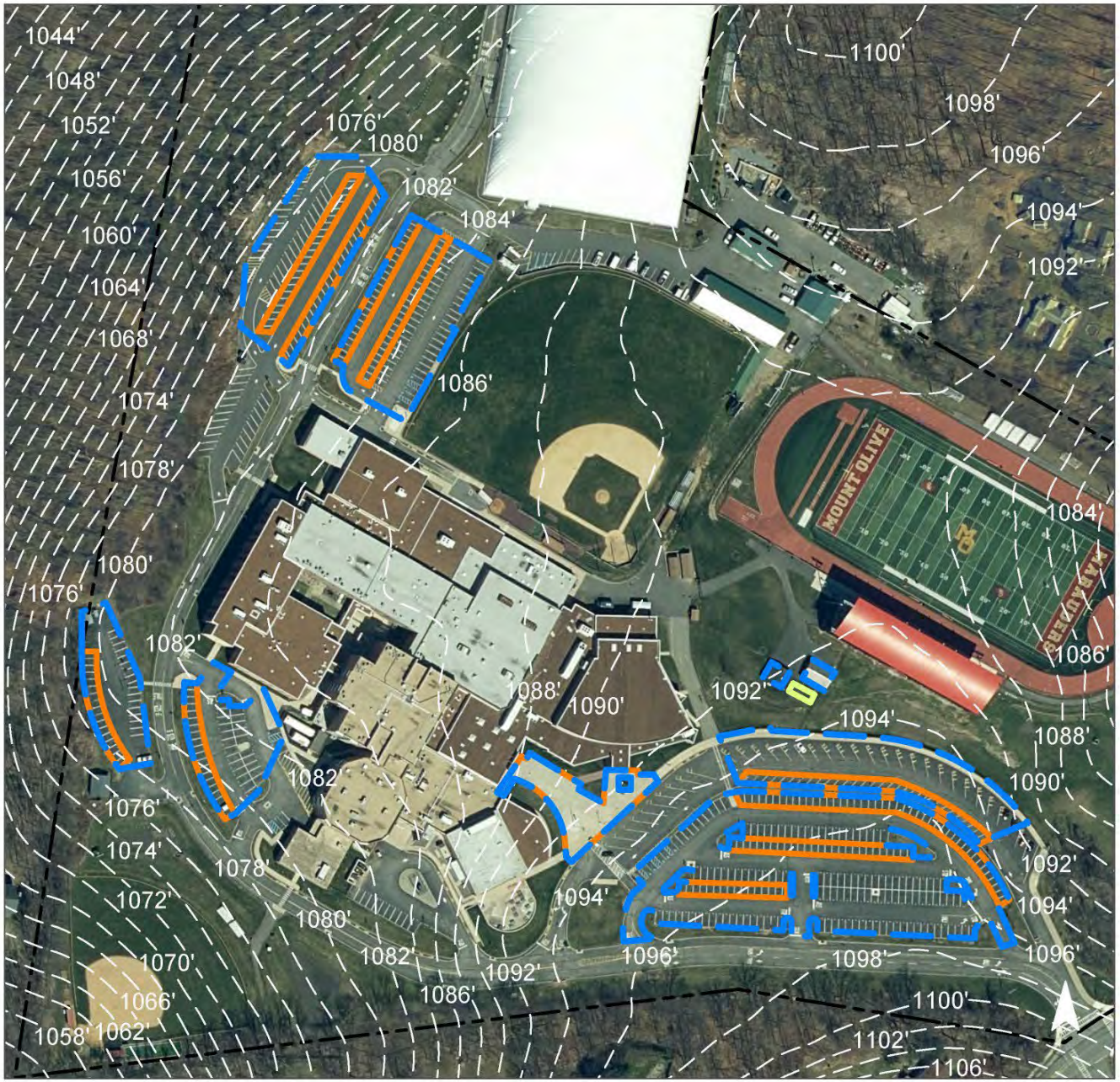
Block and Lot: Block 7600, Lot 86

A rain garden can be installed to the south of the eastern sheds to capture, treat, and infiltrate stormwater runoff from the rooftops. This may require gutter installation or reworking of existing downspouts. Existing parking spaces in the eastern, western, and northern lots can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. The concrete entryway to the south of the 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"
46	967,478	46.6	488.6	4,442.0	0.754	30.15

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	1,520	0.045	6	3,170	0.12	380	$3,800
Pervious pavement	193,565	5.731	844	403,740	15.17	50,120	$1,253,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Olive High School

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

0 100' 200'

SANDSHORE ELEMENTARY SCHOOL

RAP ID: 11

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010040

Site Area: 868,001 sq. ft.

Address: 498 Sand Shore Road
Hackettstown, NJ 07840

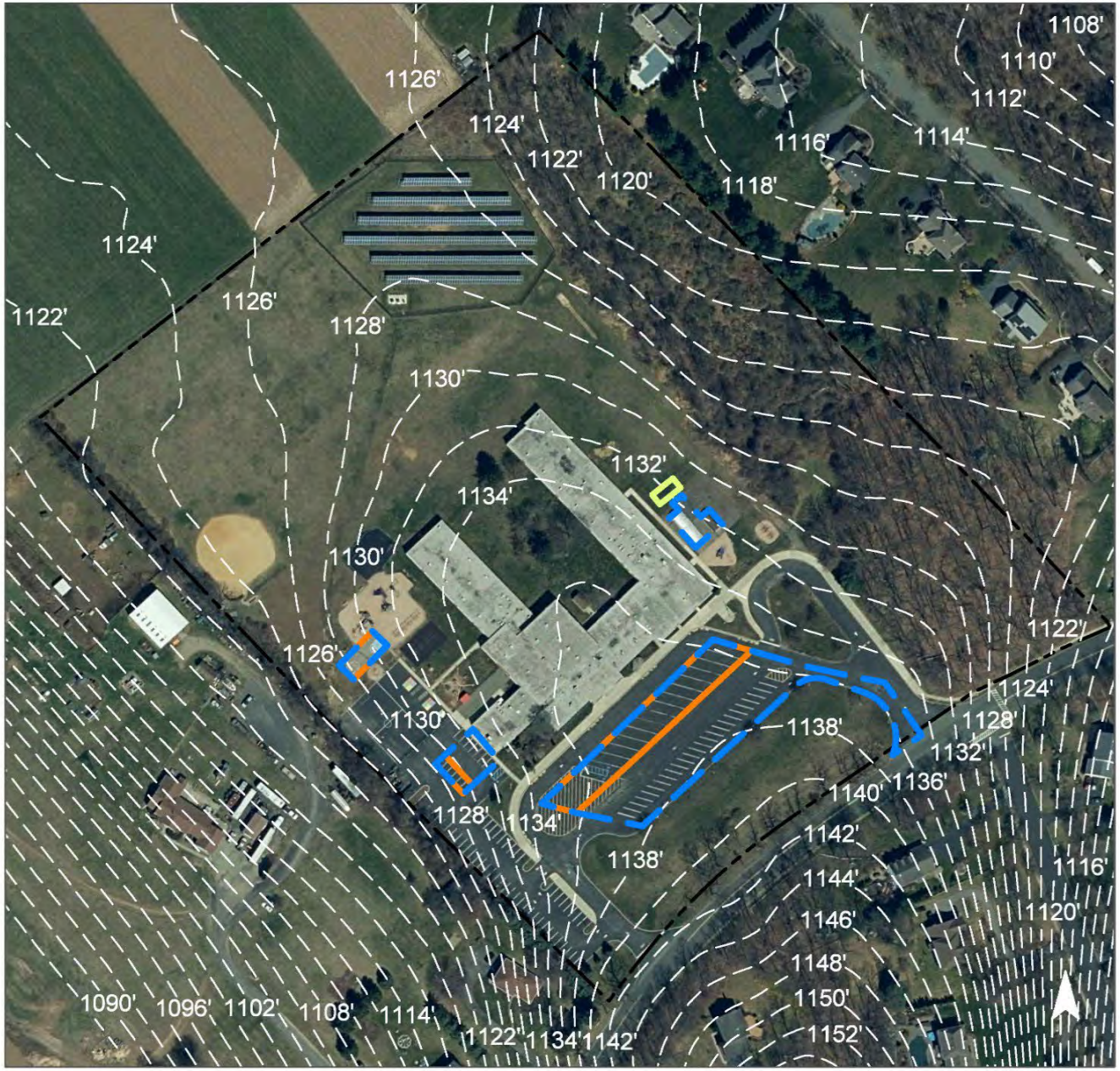
Block and Lot: Block 900, Lot 12

A rain garden can be installed to the north of the eastern sheds to capture, treat, and infiltrate stormwater runoff from the rooftops. This will require gutter system installations. Existing parking spaces to the south and west of the building can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. The basketball court can be converted into pervious pavement to capture and infiltrate stormwater runoff from the court. 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"
25	220,998	10.7	111.6	1,014.7	0.172	6.89

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	2,245	0.066	10	4,680	0.18	560	$5,600
Pervious pavement	44,810	1.327	196	93,460	3.51	16,075	$401,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Sandshore Elementary School

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

0 100' 200'

ST. JUDE THADDEUS ROMAN CATHOLIC CHURCH

RAP ID: 12

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010030

Site Area: 280,110 sq. ft.

Address: 17 Mount Olive Road
Budd Lake, NJ 07828

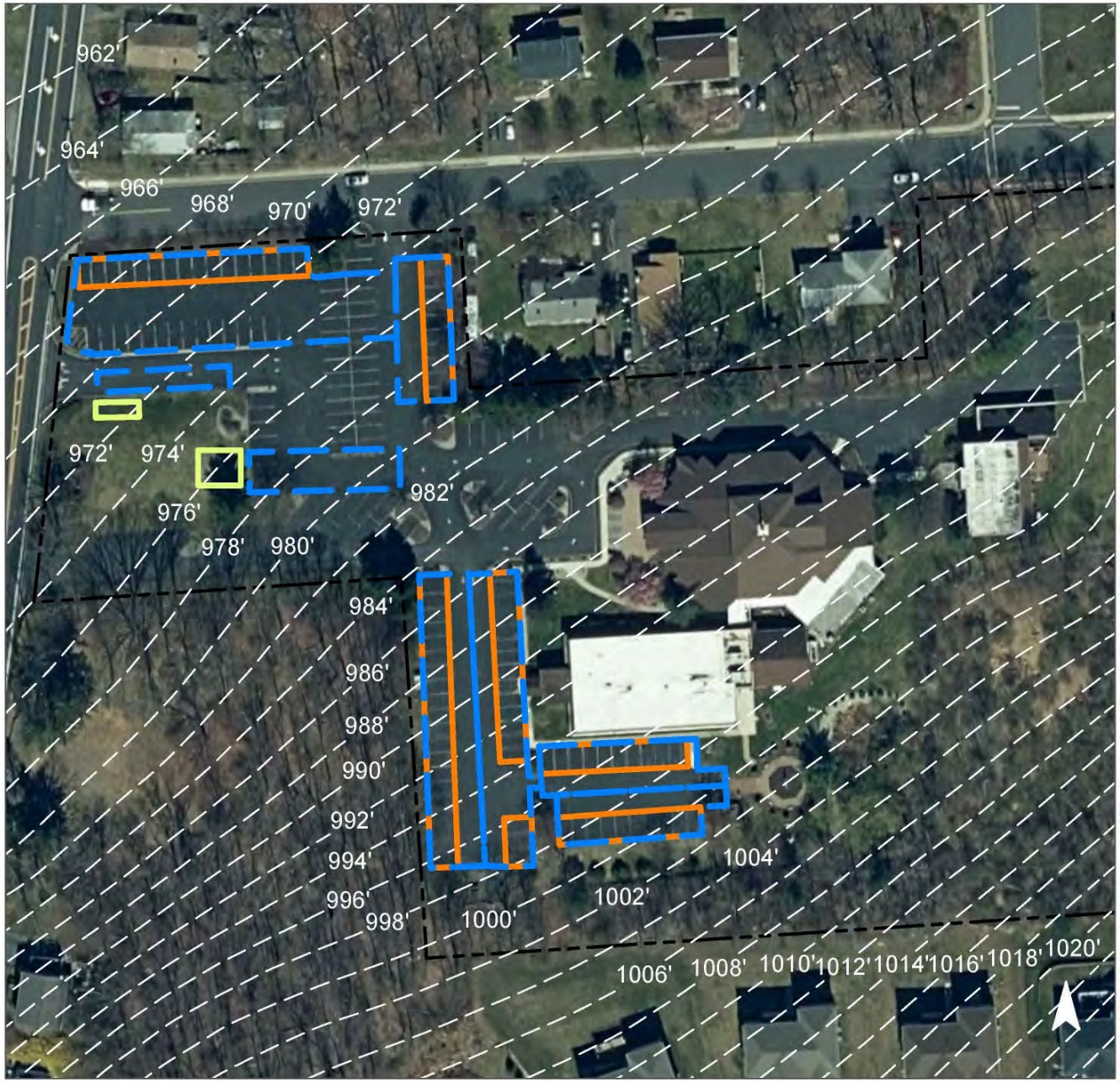
Block and Lot: Block 3807, Lot 1

Rain gardens can be installed to the northwest of the property to capture, treat, and infiltrate stormwater runoff from the parking lot and driveway. Curb cuts will be required. Existing parking spaces to the south, west, and northwest of the building can be converted into pervious pavement to capture and infiltrate 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"
44	122,711	5.9	62.0	563.4	0.096	3.82

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	3,735	0.111	17	7,790	0.29	935	$9,350
Pervious pavement	34,855	1.032	152	72,700	2.73	14,110	$352,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



St. Jude Thaddeus Roman Catholic Church

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

0 50' 100'

TURKEY BROOK PARK

RAP ID: 13

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010040

Site Area: 11,330,892 sq. ft.

Address: 30 Flanders Road
Budd Lake, NJ 07828

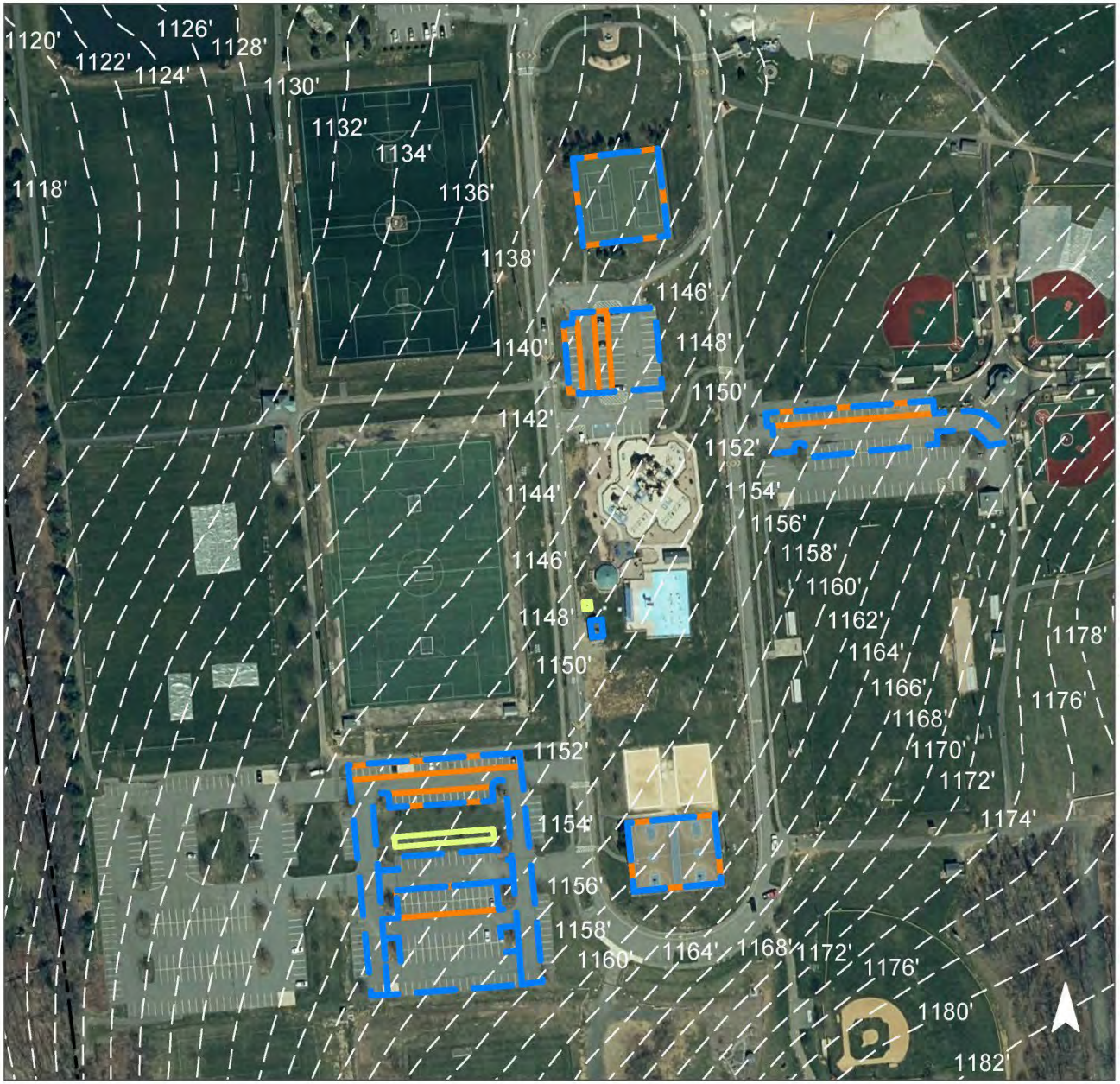
Block and Lot: Block 7600, Lot 71

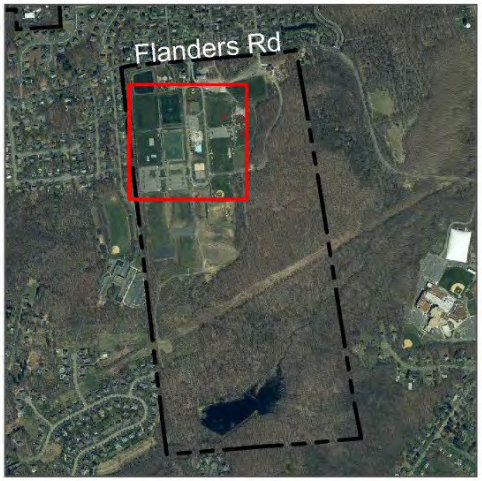
A rain garden can be installed to the northwest corner of the southwestern shed to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require gutter system installation. Another rain garden can be installed to the north of the southwestern parking lot to capture, treat, and infiltrate stormwater runoff from the asphalt. Existing parking spaces to the north, east, and southwest can be converted into pervious pavement to capture and infiltrate stormwater runoff from the asphalt. The tennis and basketball courts can be converted into pervious pavement to capture and infiltrate stormwater runoff from the courts. 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"
8	867,872	41.8	438.3	3,984.7	0.676	27.05

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	7,195	0.213	32	15,000	0.56	1,800	$18,000
Pervious pavement	96,295	2.851	420	200,850	7.55	41,655	$1,041,375

GREEN INFRASTRUCTURE RECOMMENDATIONS





Turkey Brook Park

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

0 100' 200'

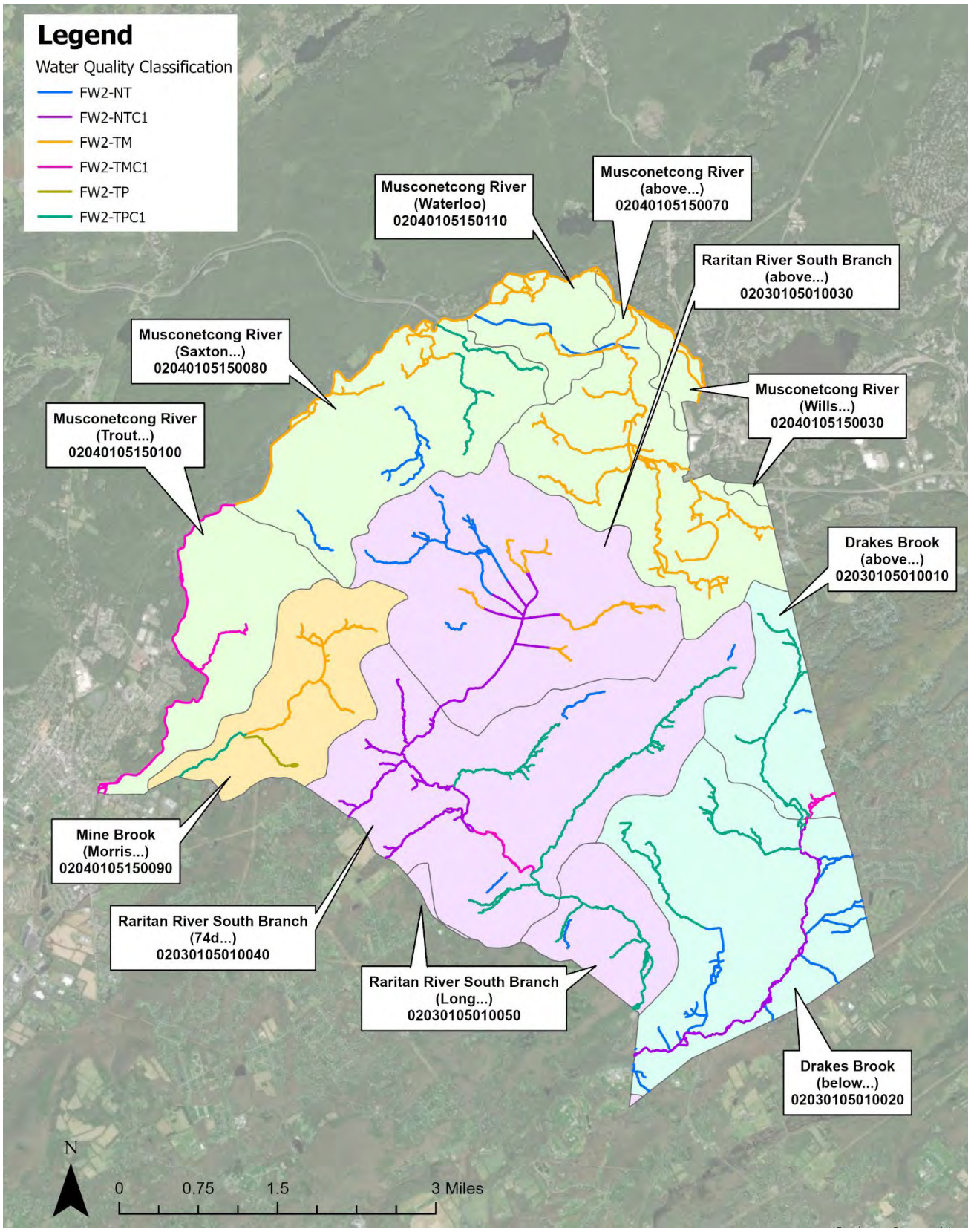


Figure 13. Water Quality Classification of Surface Waters in Mount Olive Township

Table 11. Water Quality Classification of Surface Waters in Mount Olive Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	16.5	16.7%
Freshwater 2, non-trout, Category One	FW2-NTC1	14.8	15.1%
Freshwater 2, trout production, Category One	FW2-TPC1	24.1	24.5%
Freshwater 2, trout maintenance	FW2-TM	34.8	35.4%
Freshwater 2, trout production	FW2-TP	0.8	0.8%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	7.4	7.5%

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.

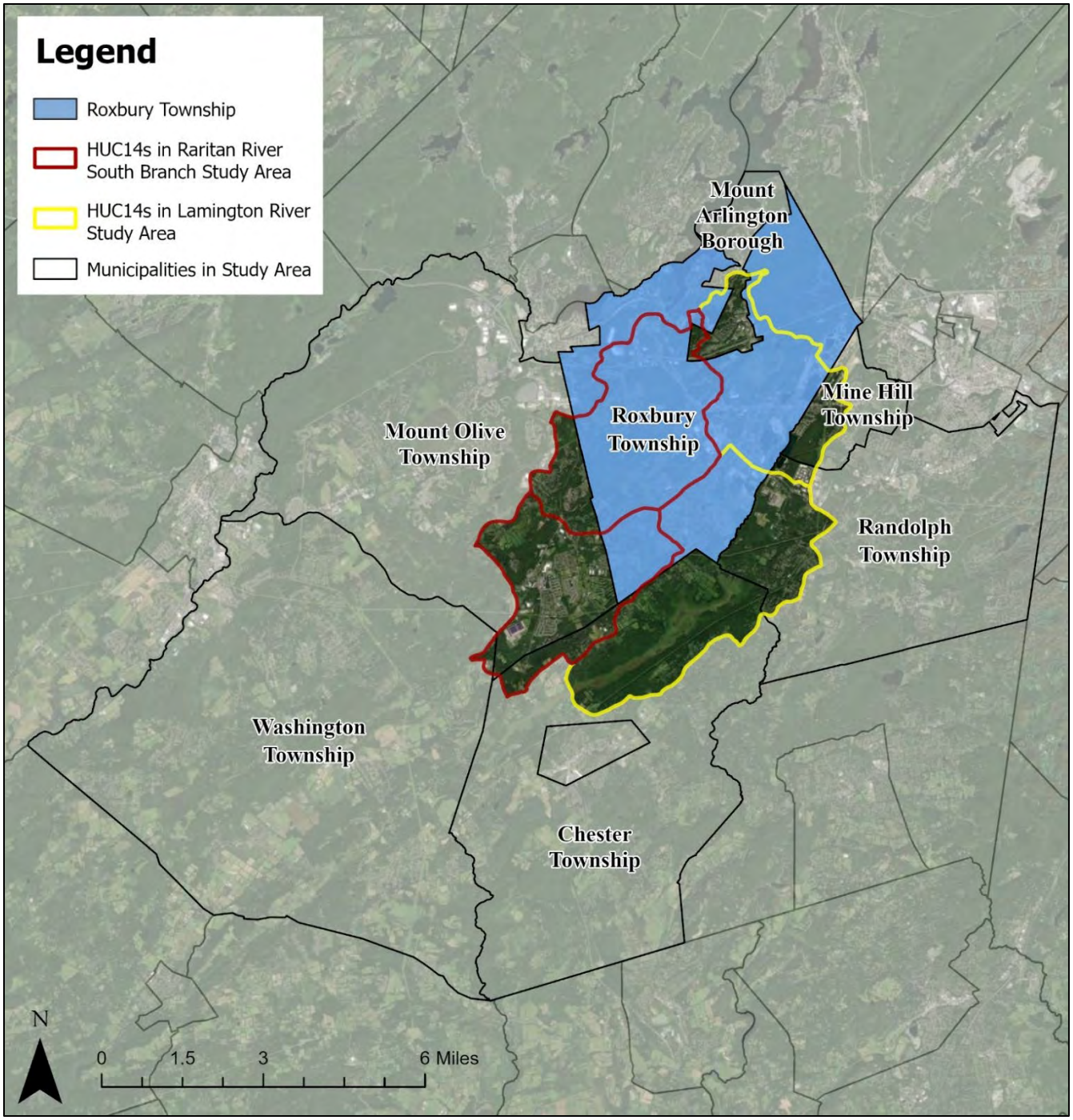


Figure 1: Municipalities in the Study Area

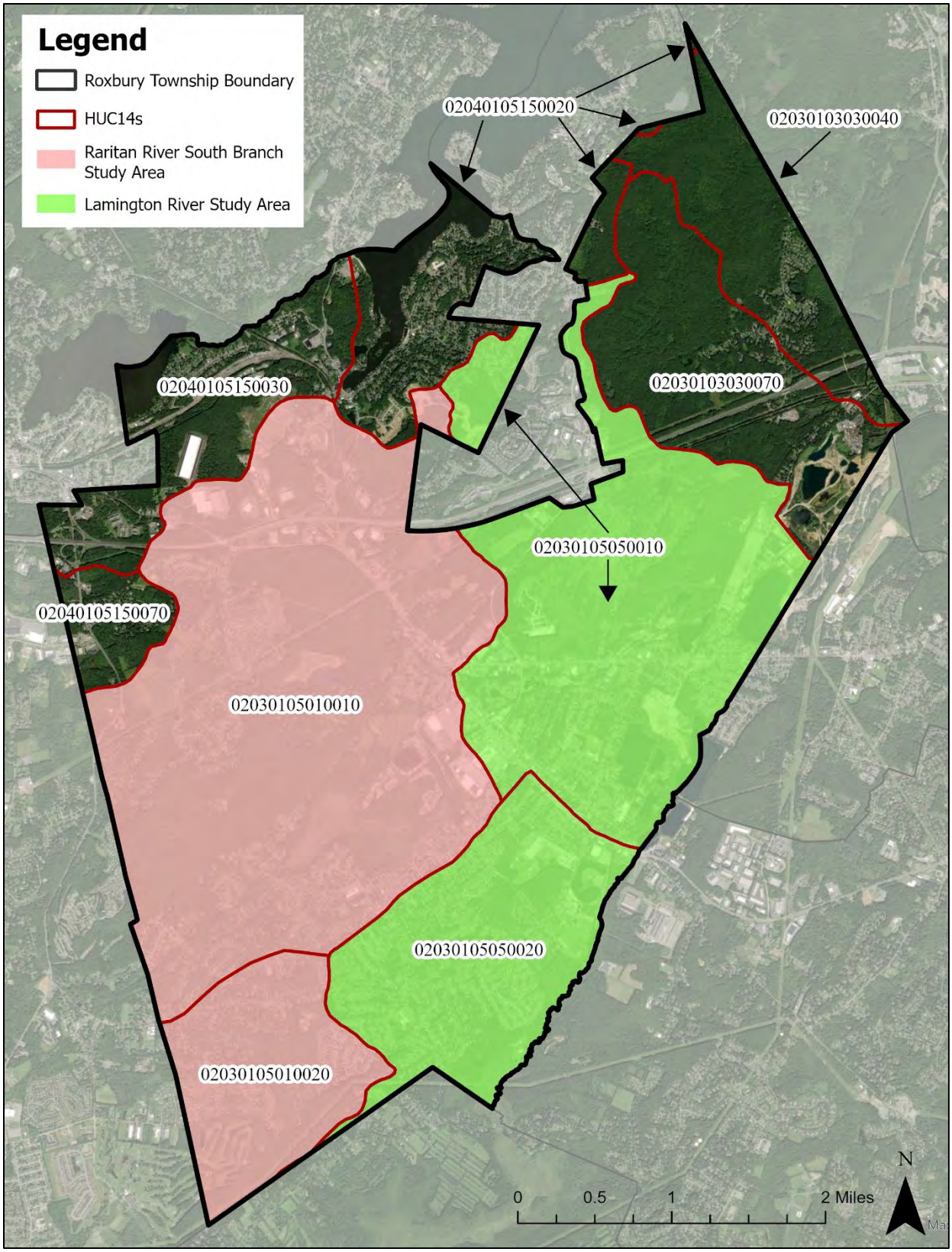


Figure 2: Portions of nine HUC14s are in Roxbury Township

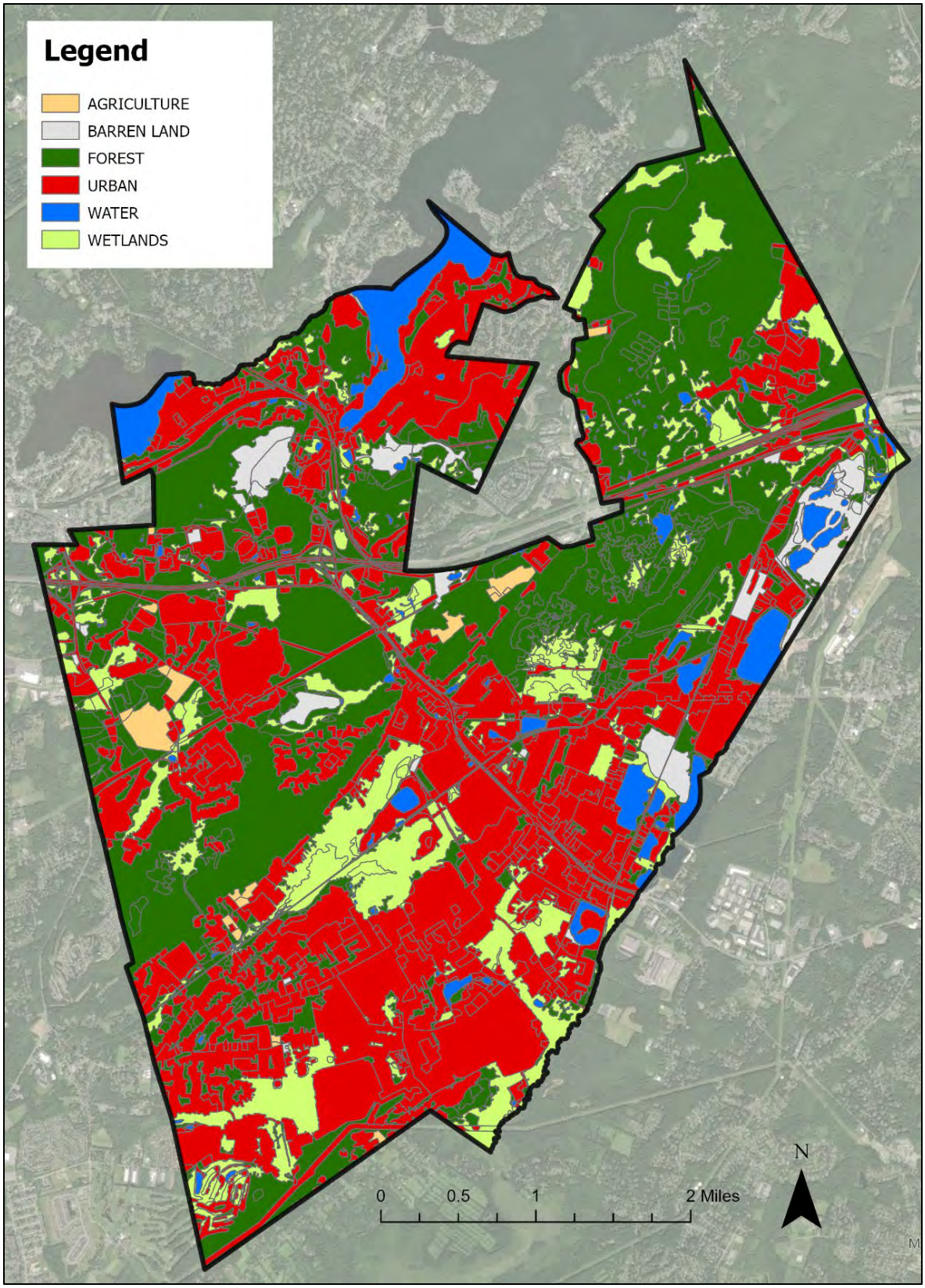


Figure 3: Land Use in Roxbury Township

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.

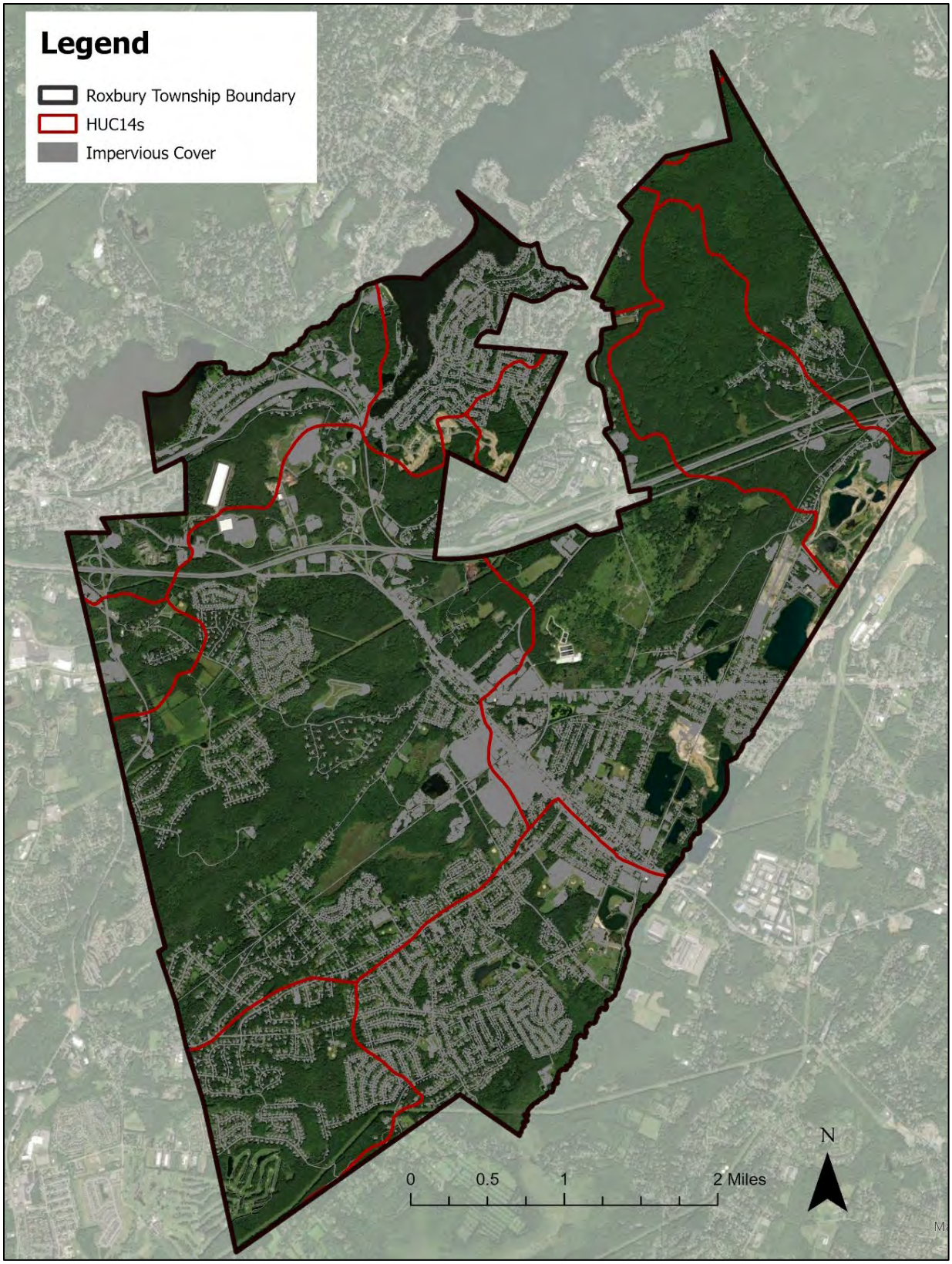


Figure 4: Impervious Cover in Roxbury Township

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%**

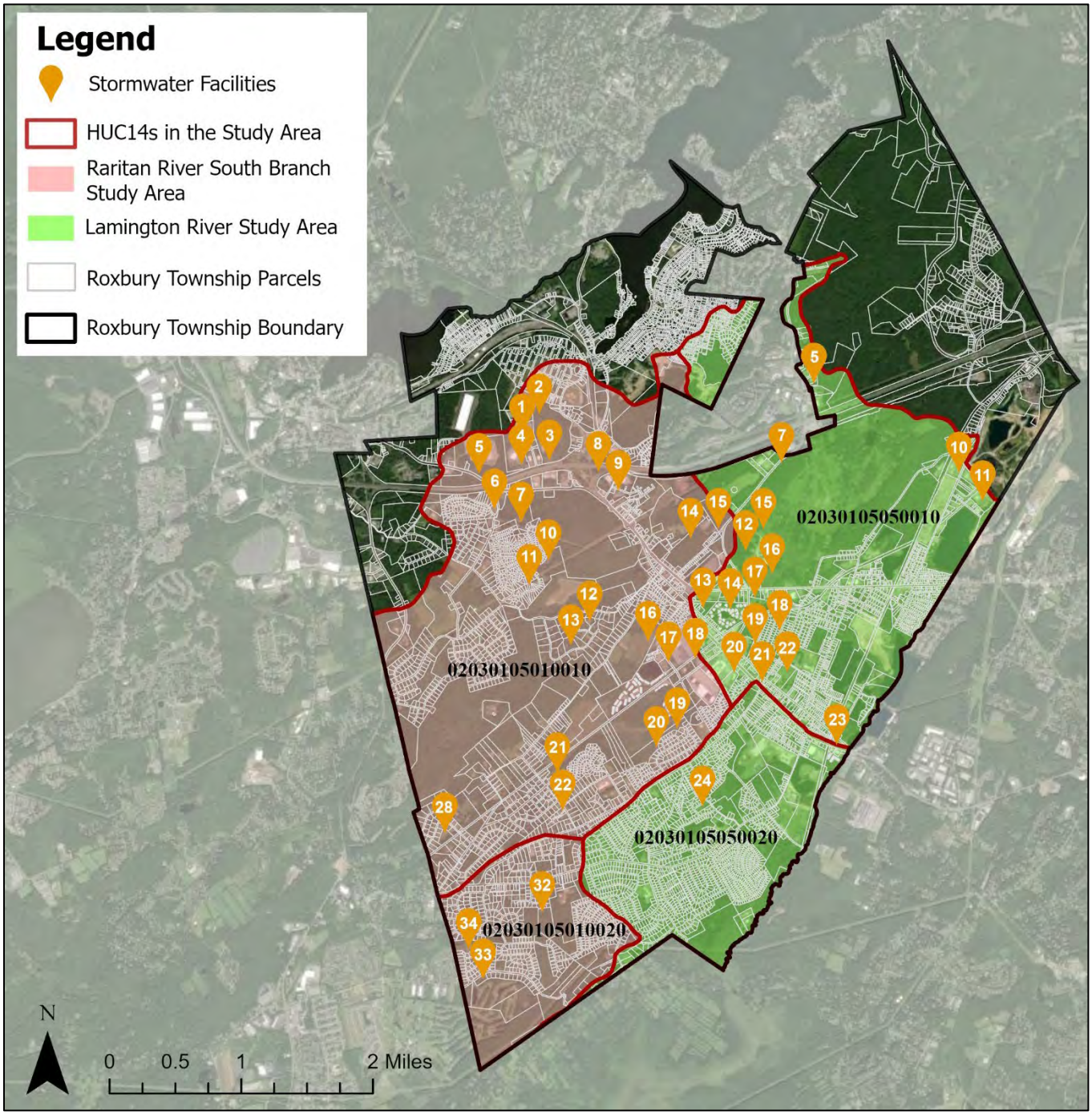


Figure 5: Stormwater Facilities in the Study Area of Roxbury Township

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

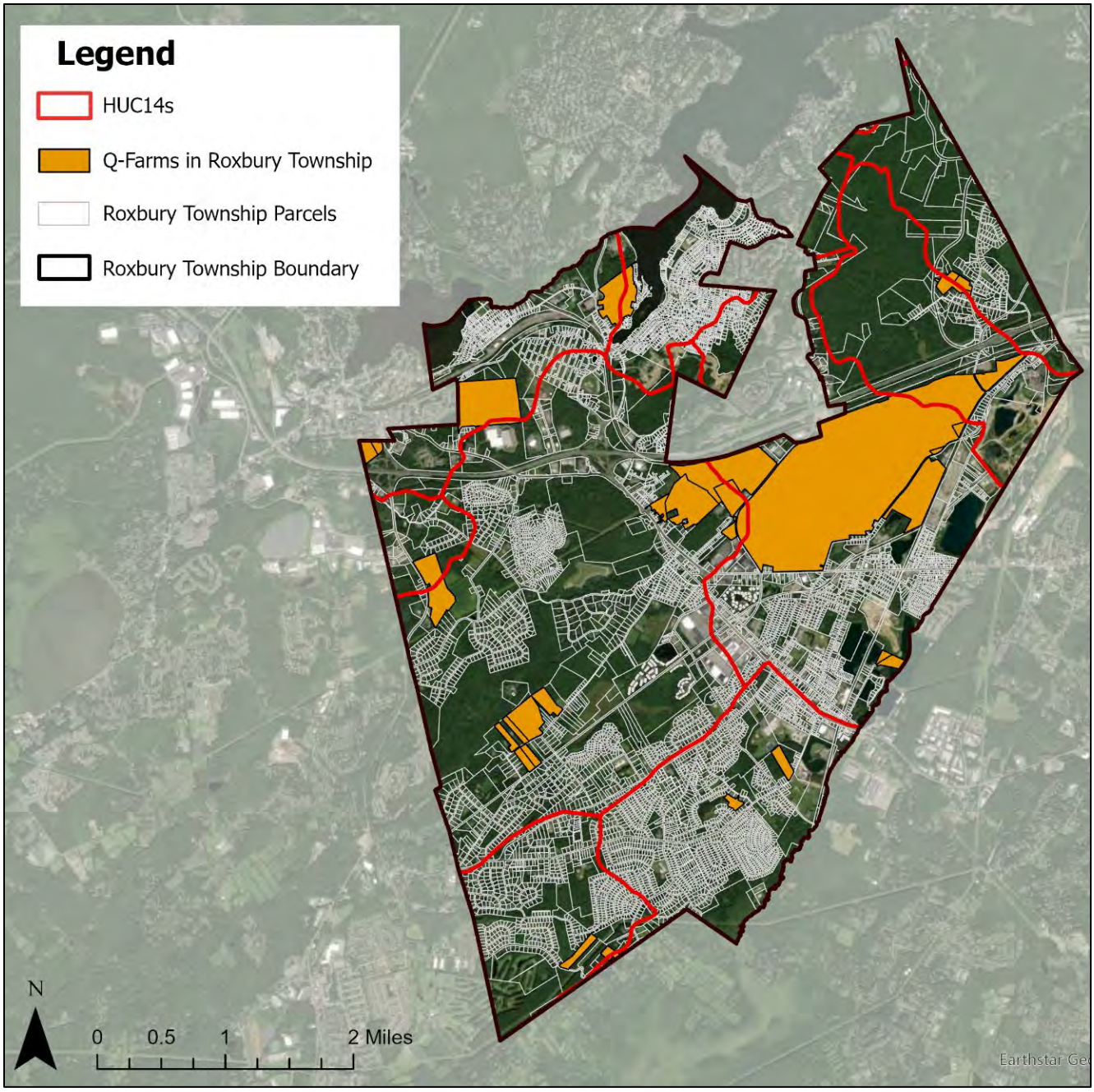


Figure 6: Q-Farm Parcels in Roxbury Township

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

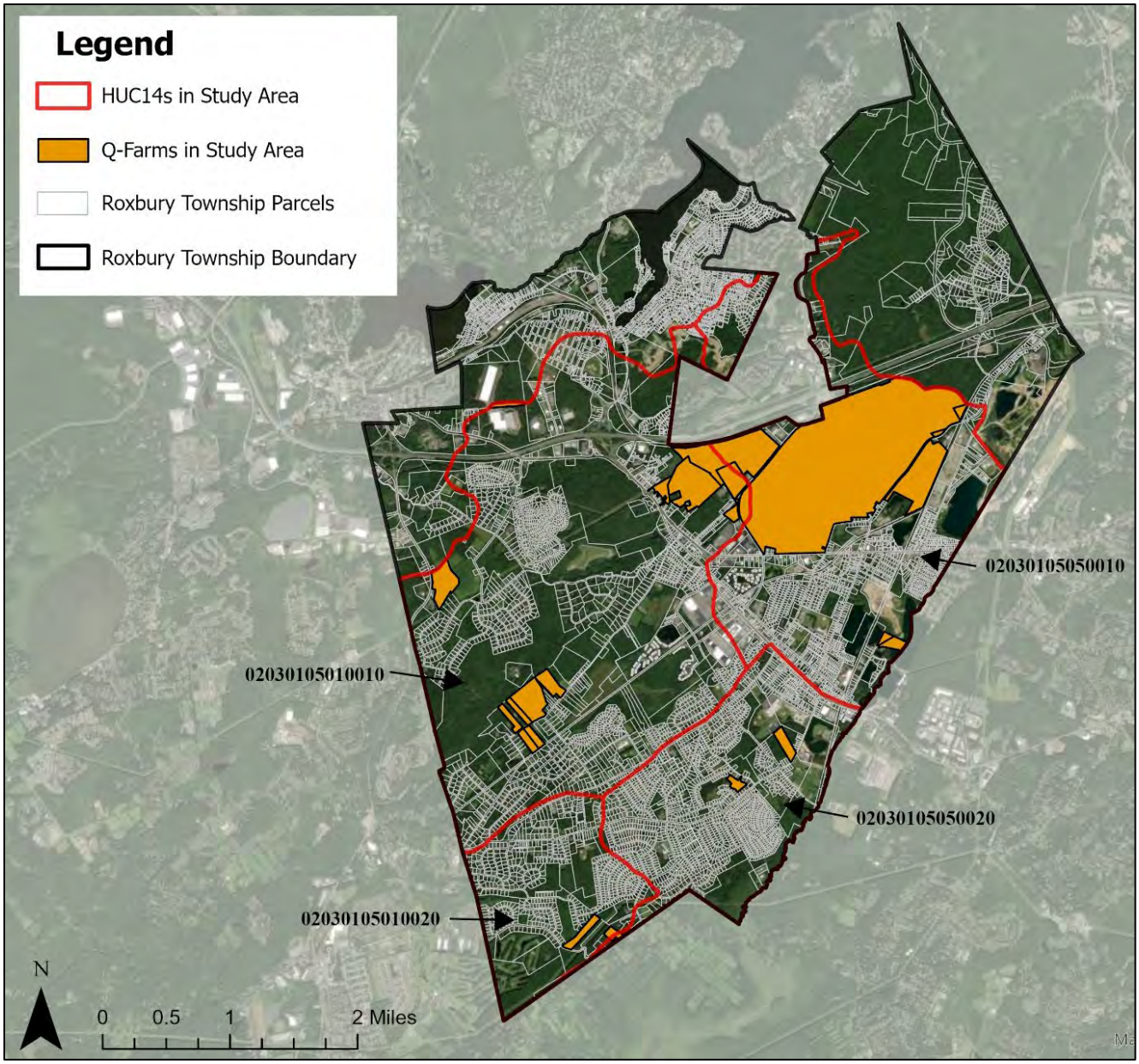


Figure 7: Q-Farm Parcels in the Study Area of Roxbury Township

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

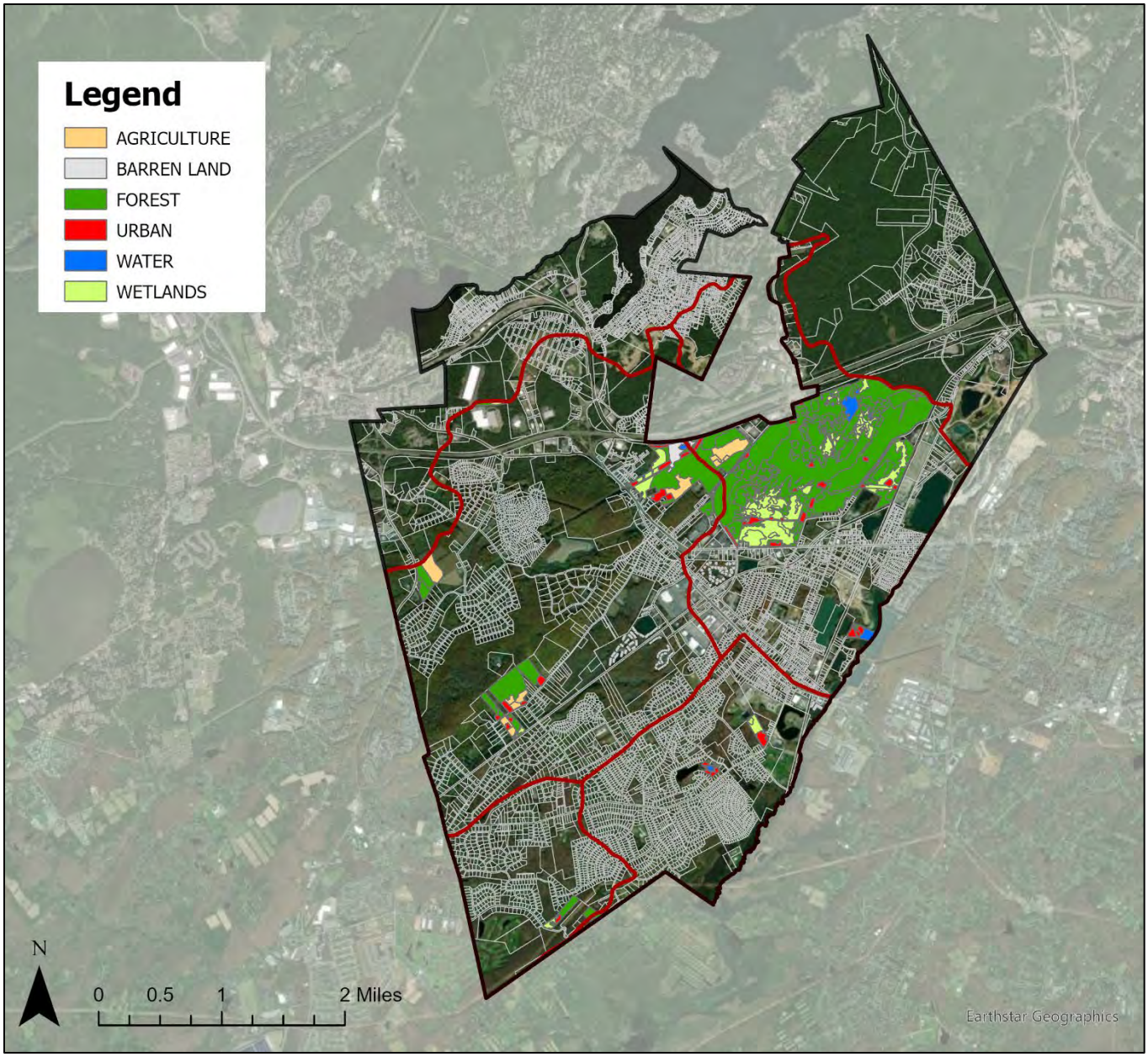


Figure 8: Land Use on Q-Farms in the Study Area of Roxbury Township

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**

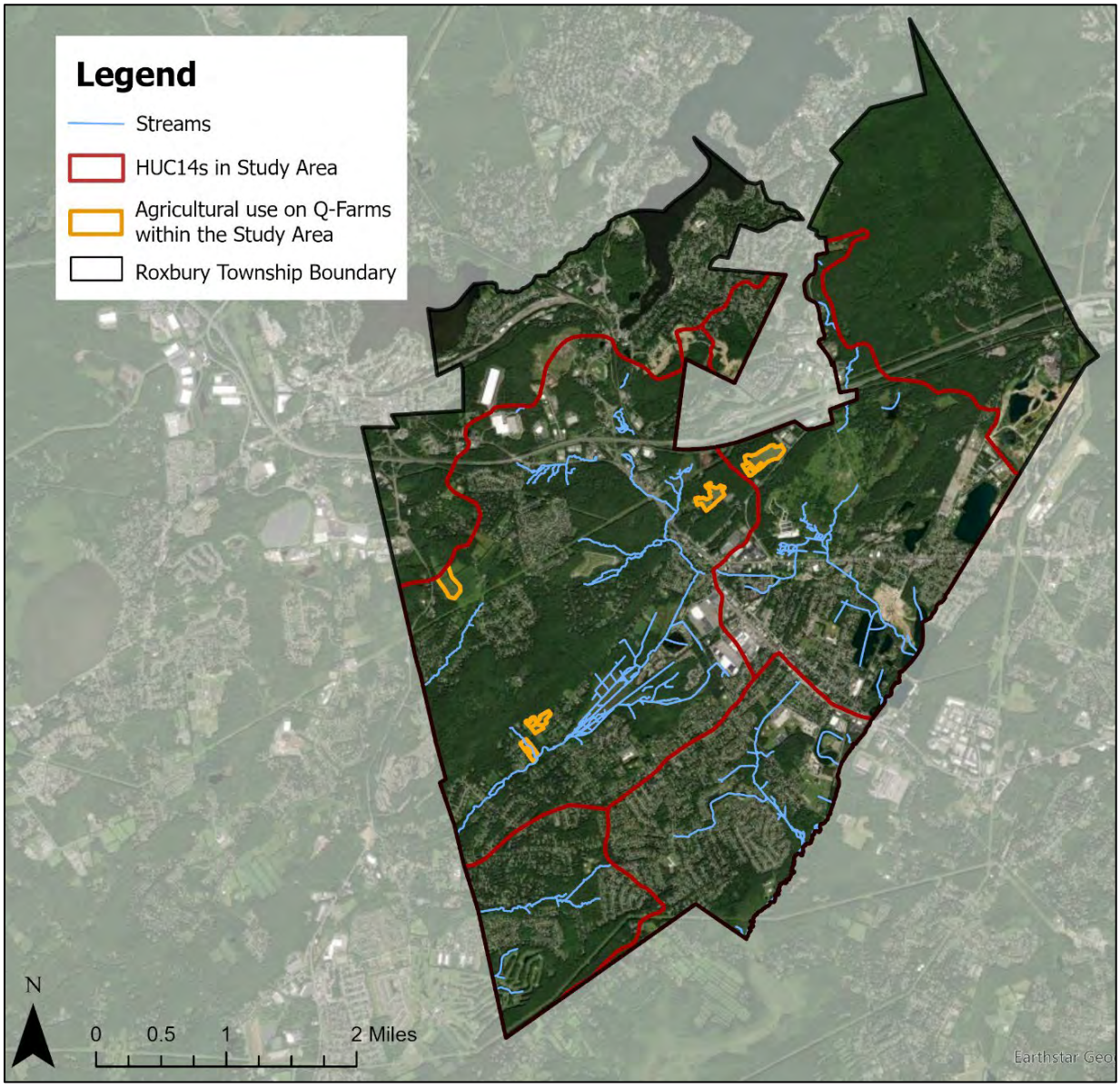


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Roxbury Township

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		

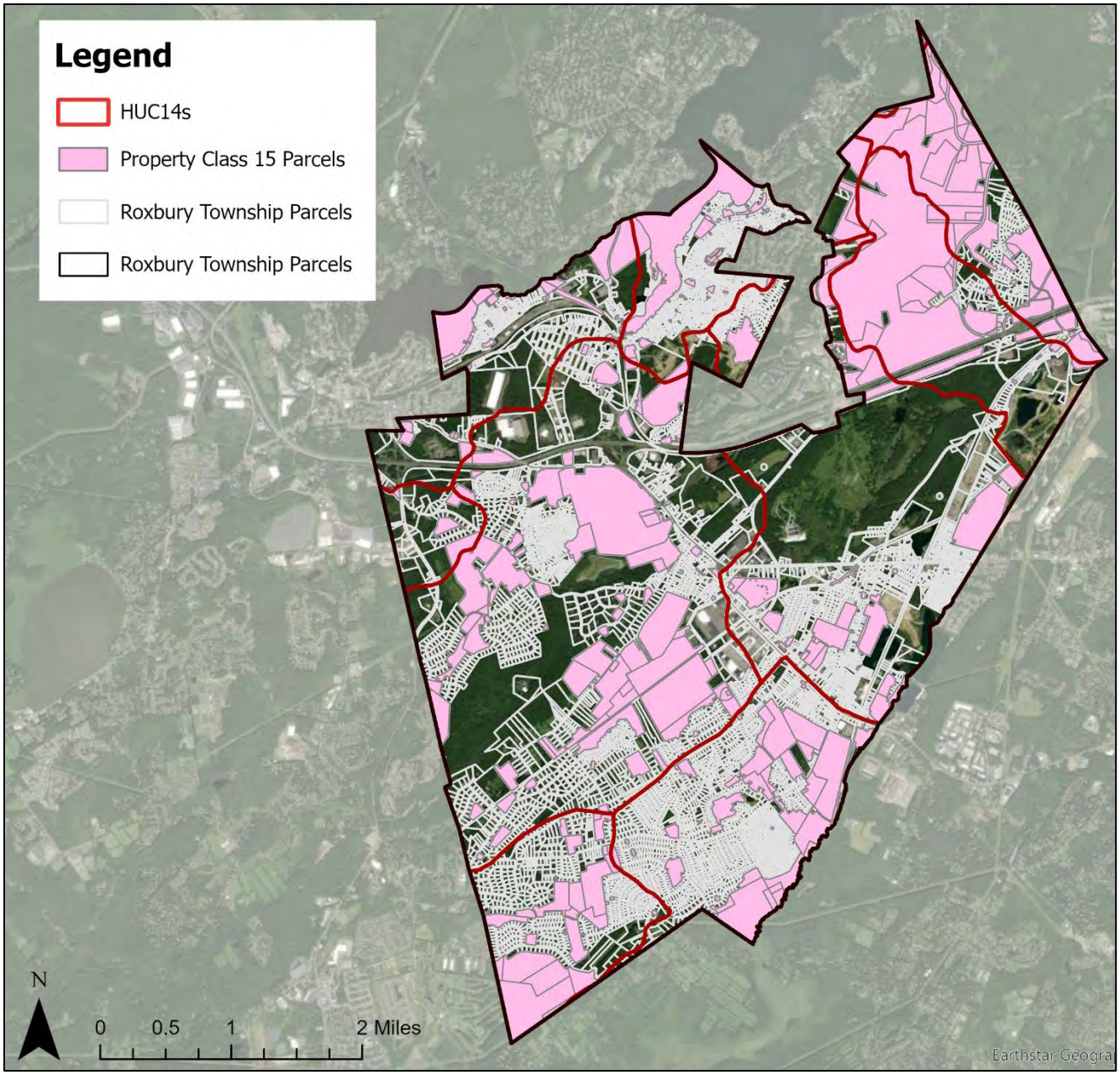


Figure 10: Property Class 15 Parcels in Roxbury Township

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

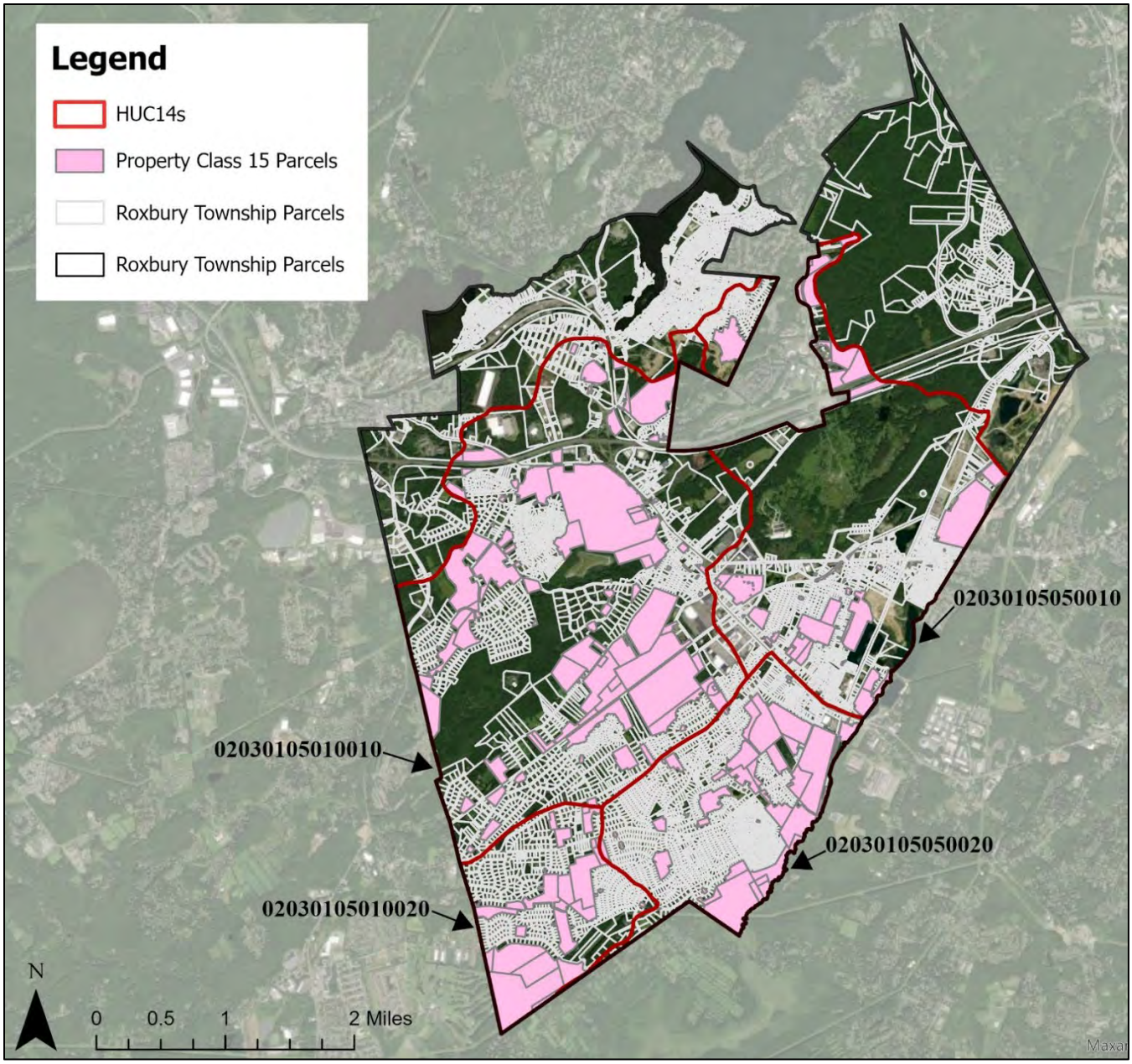


Figure 11: Property Class 15 parcels in the Study Area of Roxbury Township

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

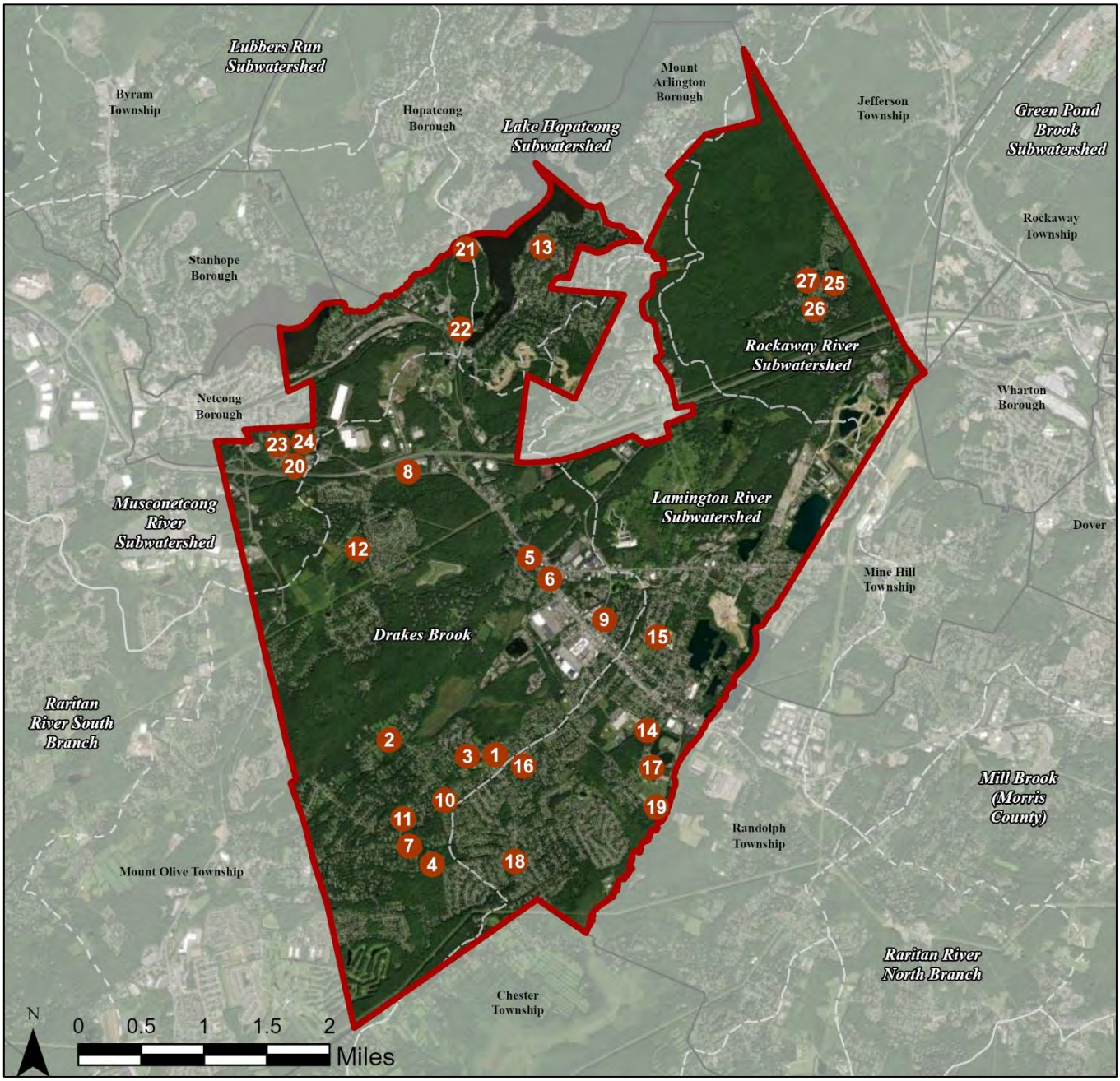


Figure 12: Sites with Green Infrastructure Opportunities in Roxbury Township

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

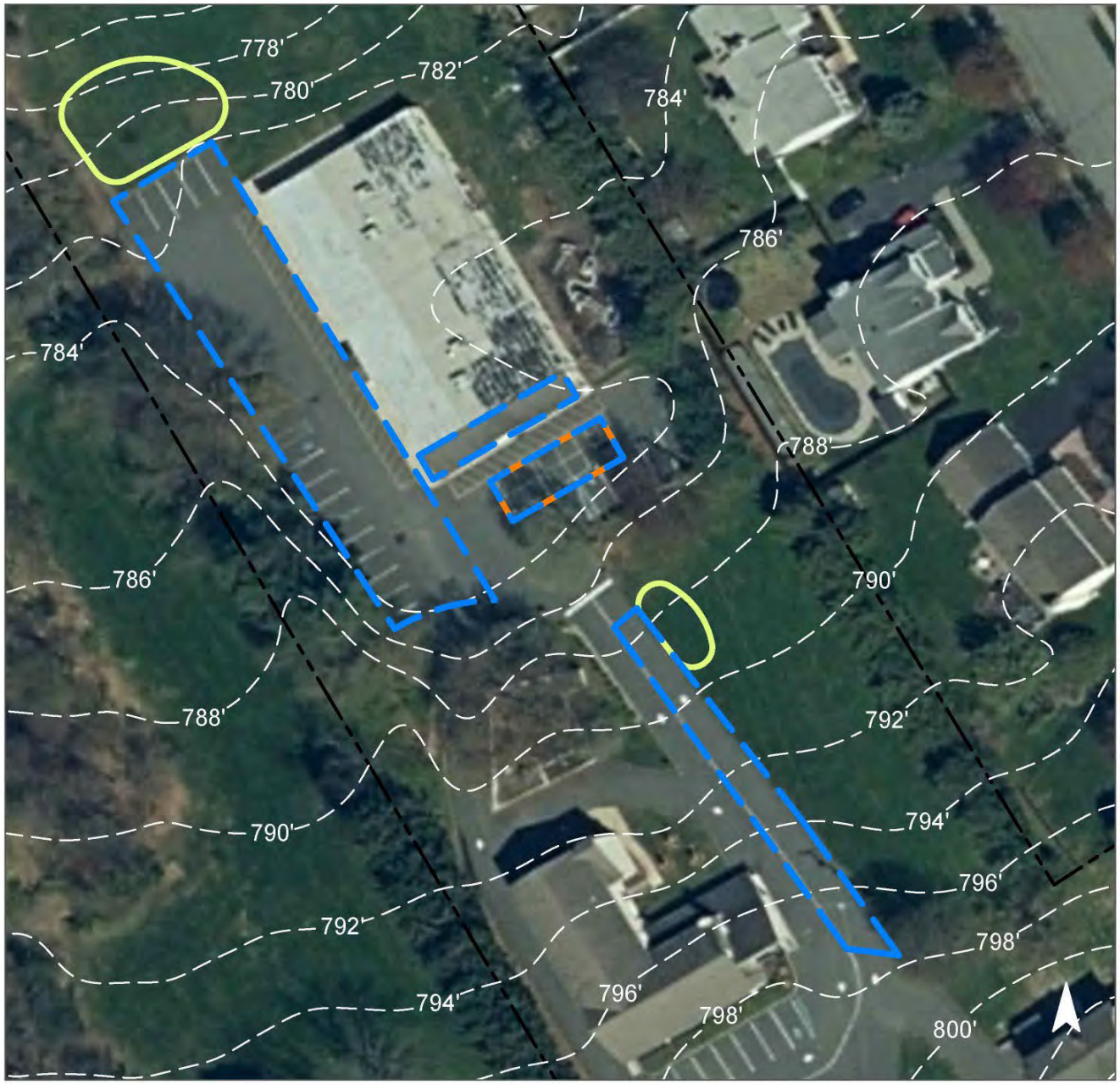
Block and Lot: Block 4601, Lot 13

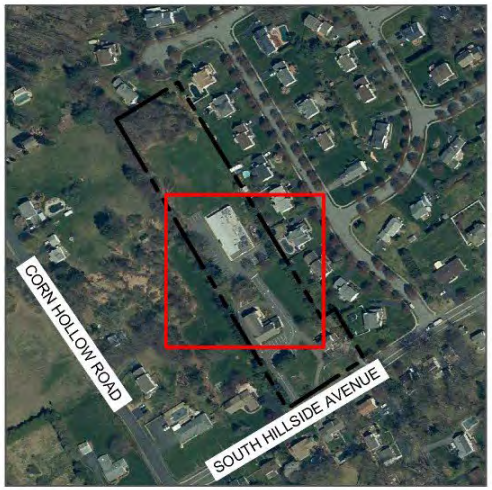
The pavement in the front of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof via already disconnected downspouts; the western downspout may require redirection towards the porous pavement. A rain garden with a curb cut can be installed in the 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

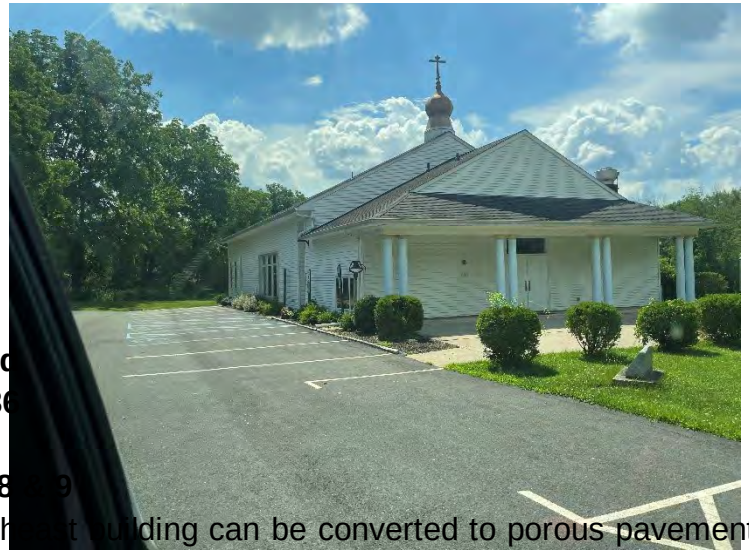
Subwatershed: Drakes Brook

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

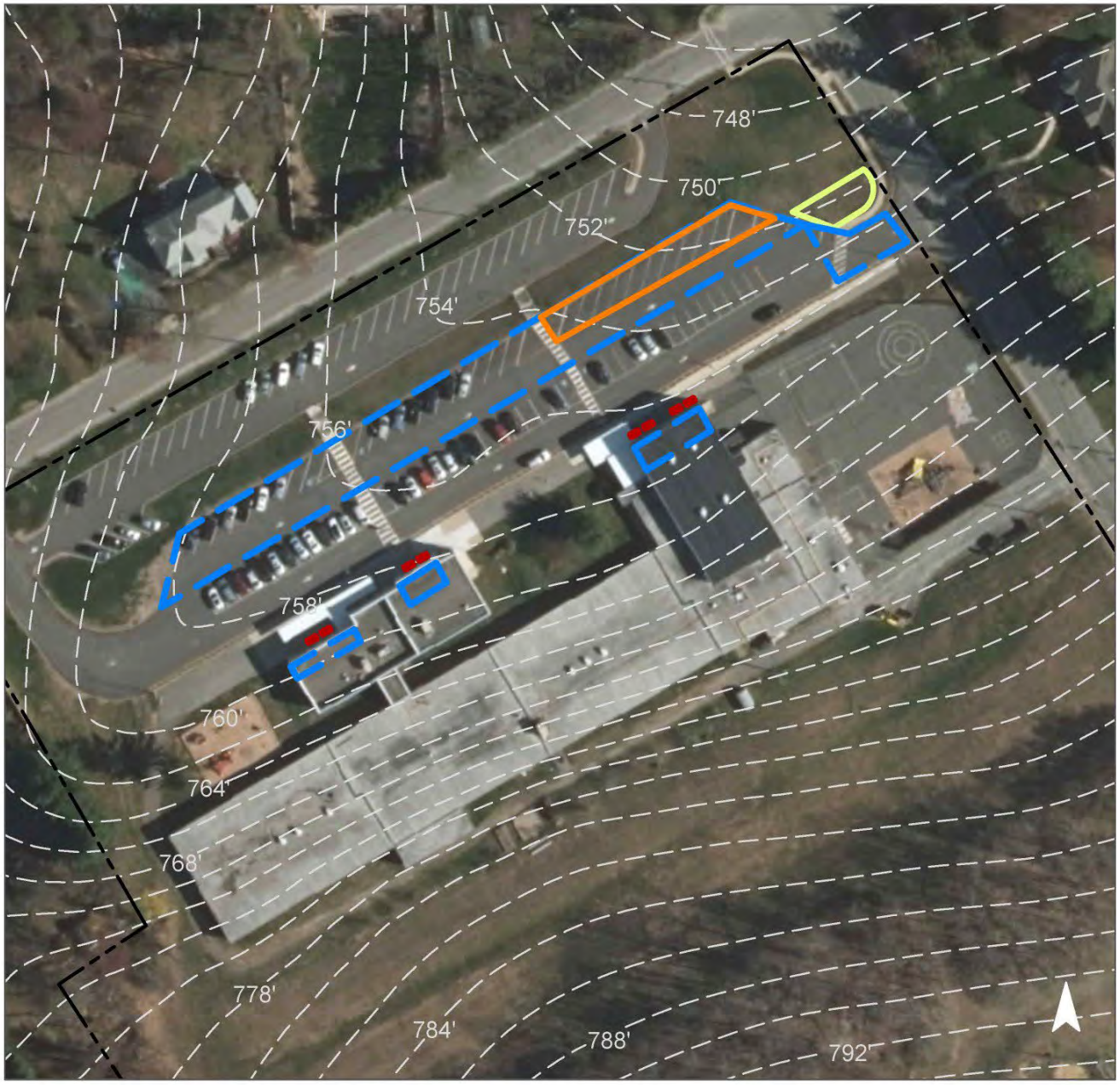
Block and Lot: Block 4501, Lot 10

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

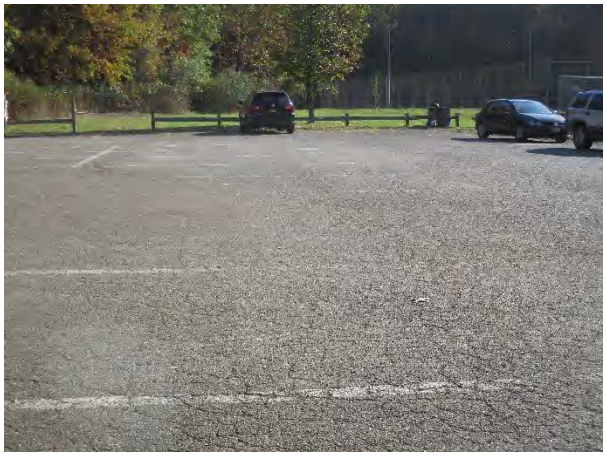
RAP ID: 4

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

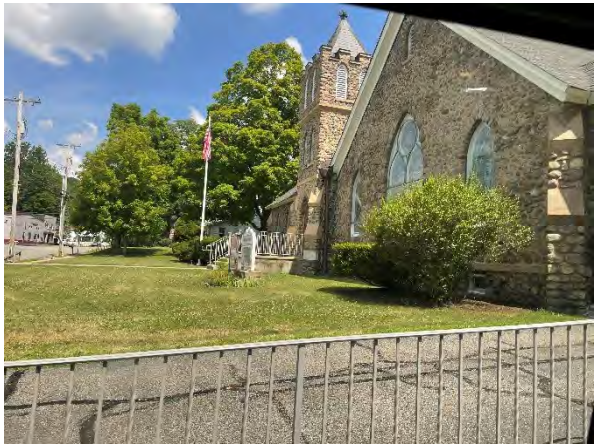
RAP ID: 5

Subwatershed: Drakes Brook

HUC14 ID: 02030105010010

Site Area: 100,592 sq. ft.

Address: 233 Main Street
Ledgewood, NJ 07852



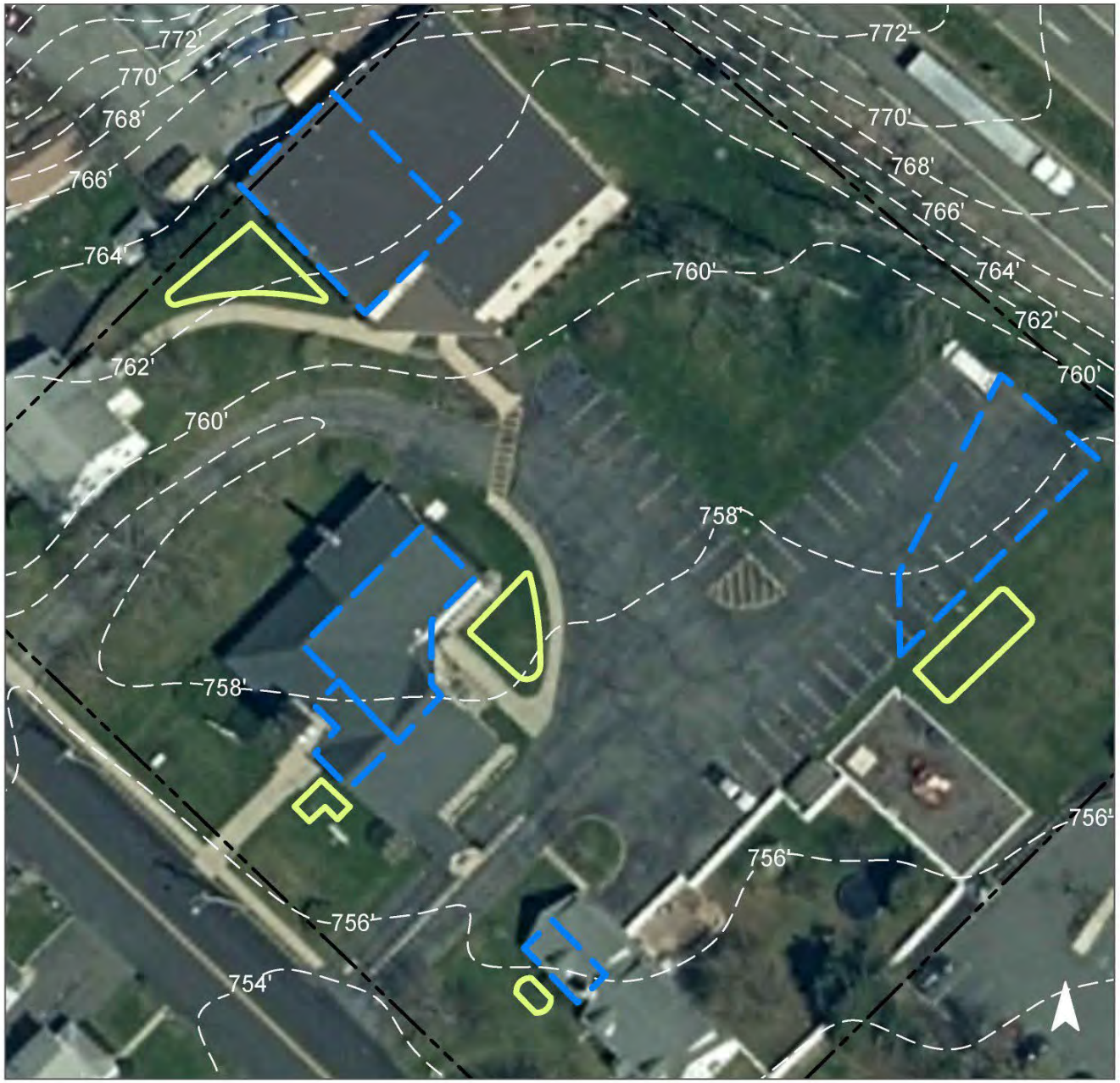
Block and Lot: Block 6406, Lot 5.01

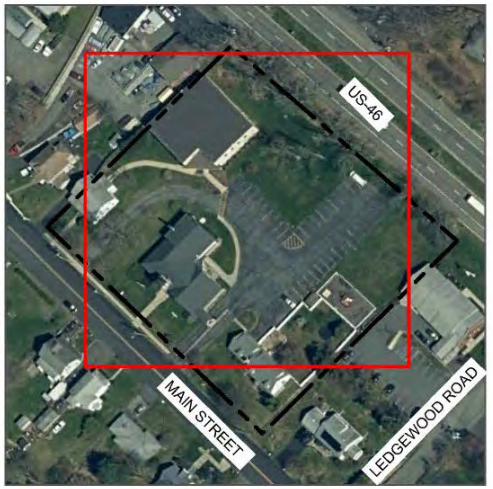
Four rain gardens that require downspout disconnection and redirection can be installed in the grass areas around the property building to capture, treat, and infiltrate stormwater runoff from the roofs. One rain garden can be installed in the grass area on the east side of the site to capture, treat,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

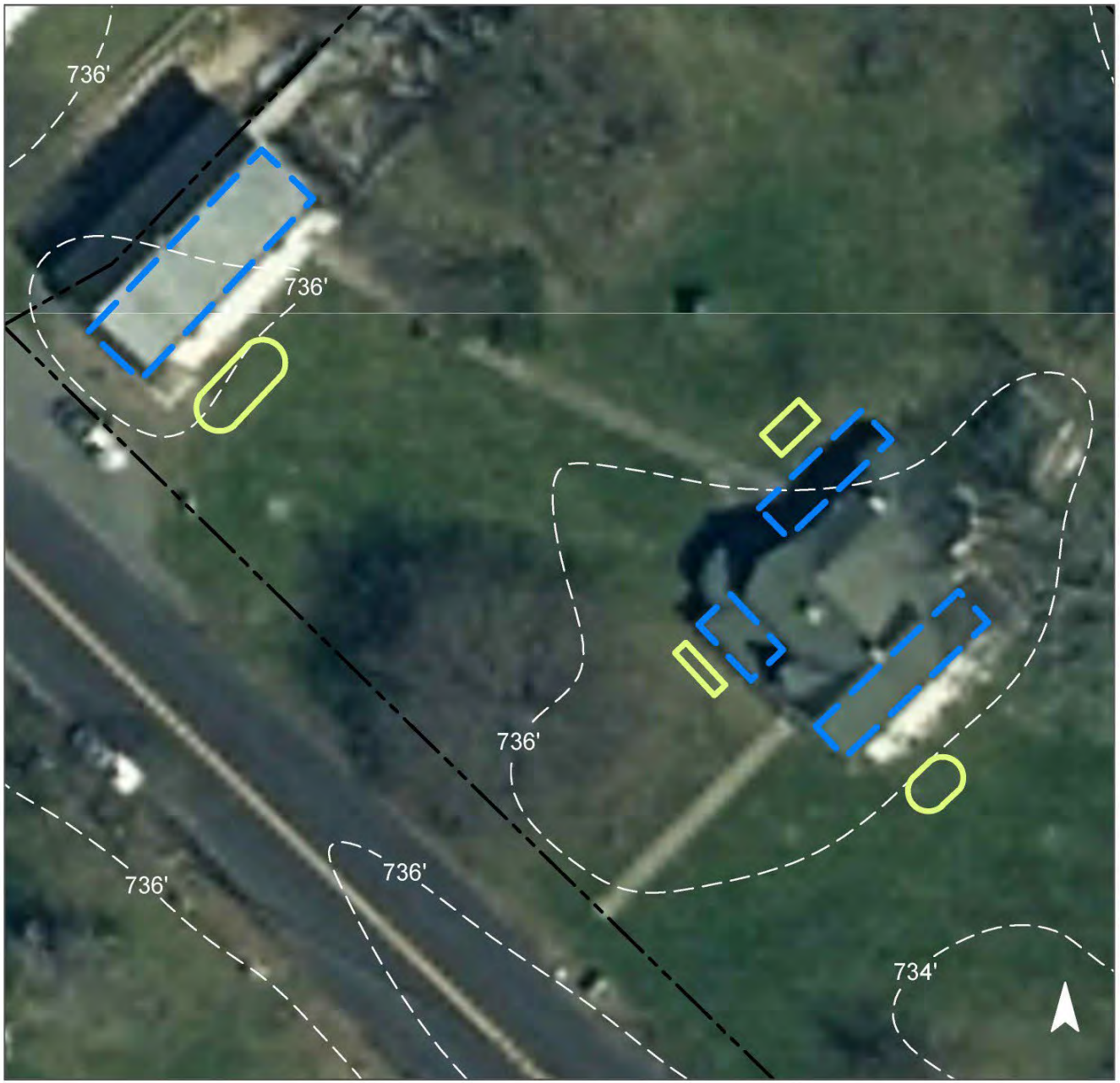
Block and Lot: Block 6408, Lot 2

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

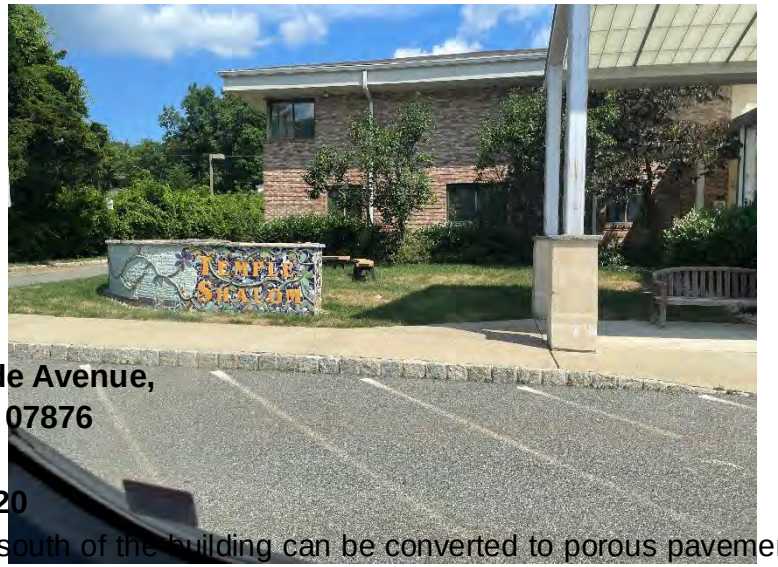
Subwatershed: Drakes Brook

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

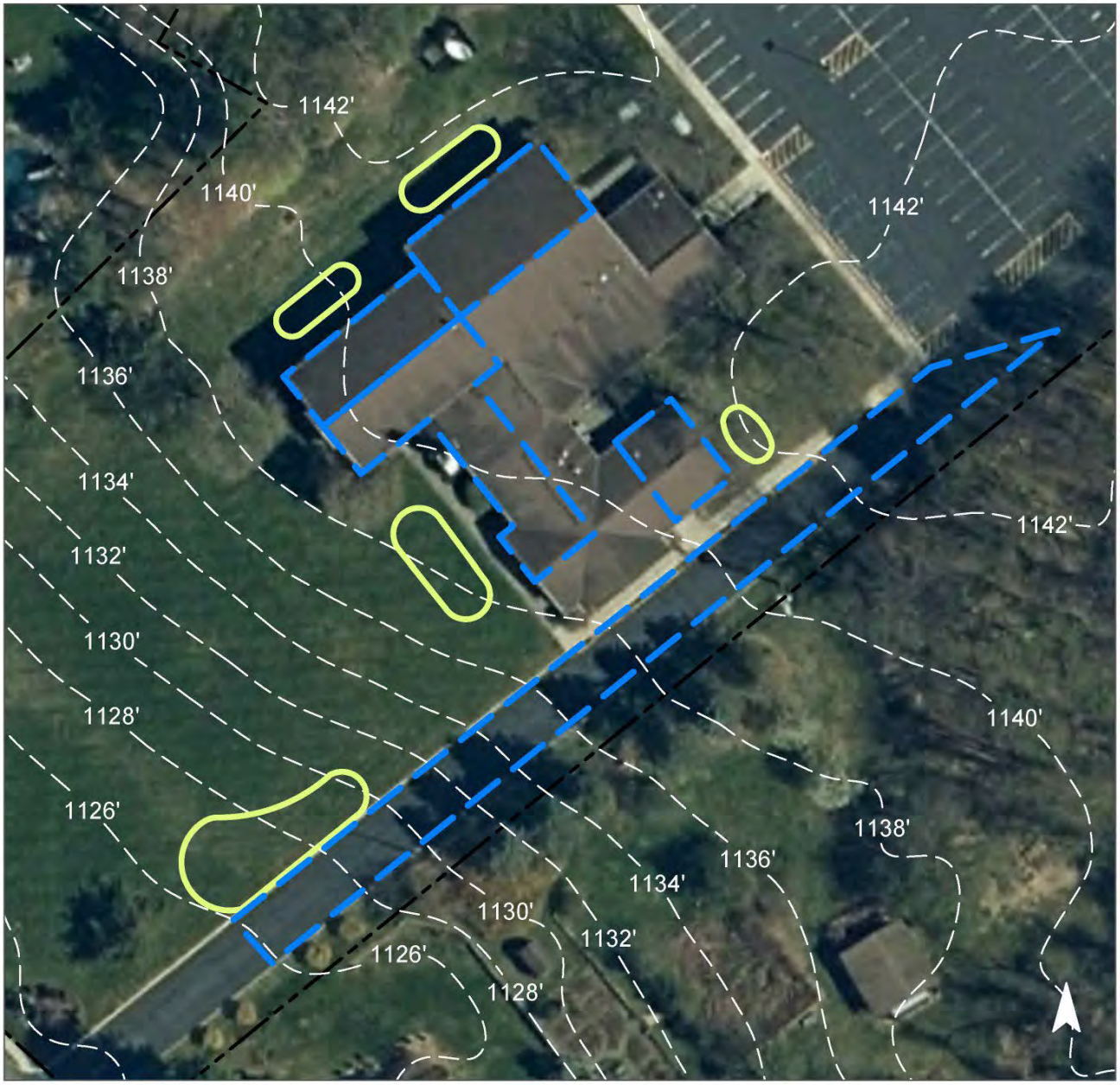
Block and Lot: Block 8201, Lot 9

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

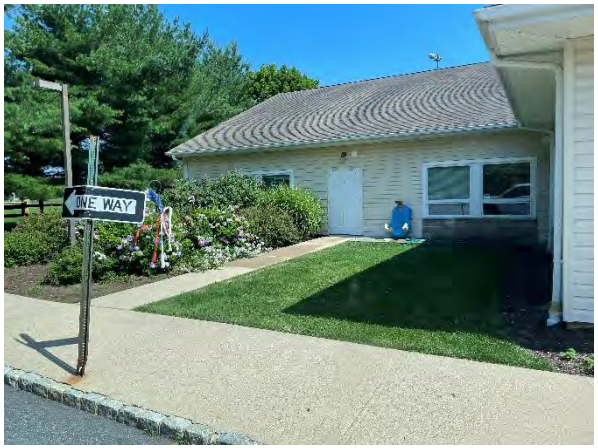
RAP ID: 19

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

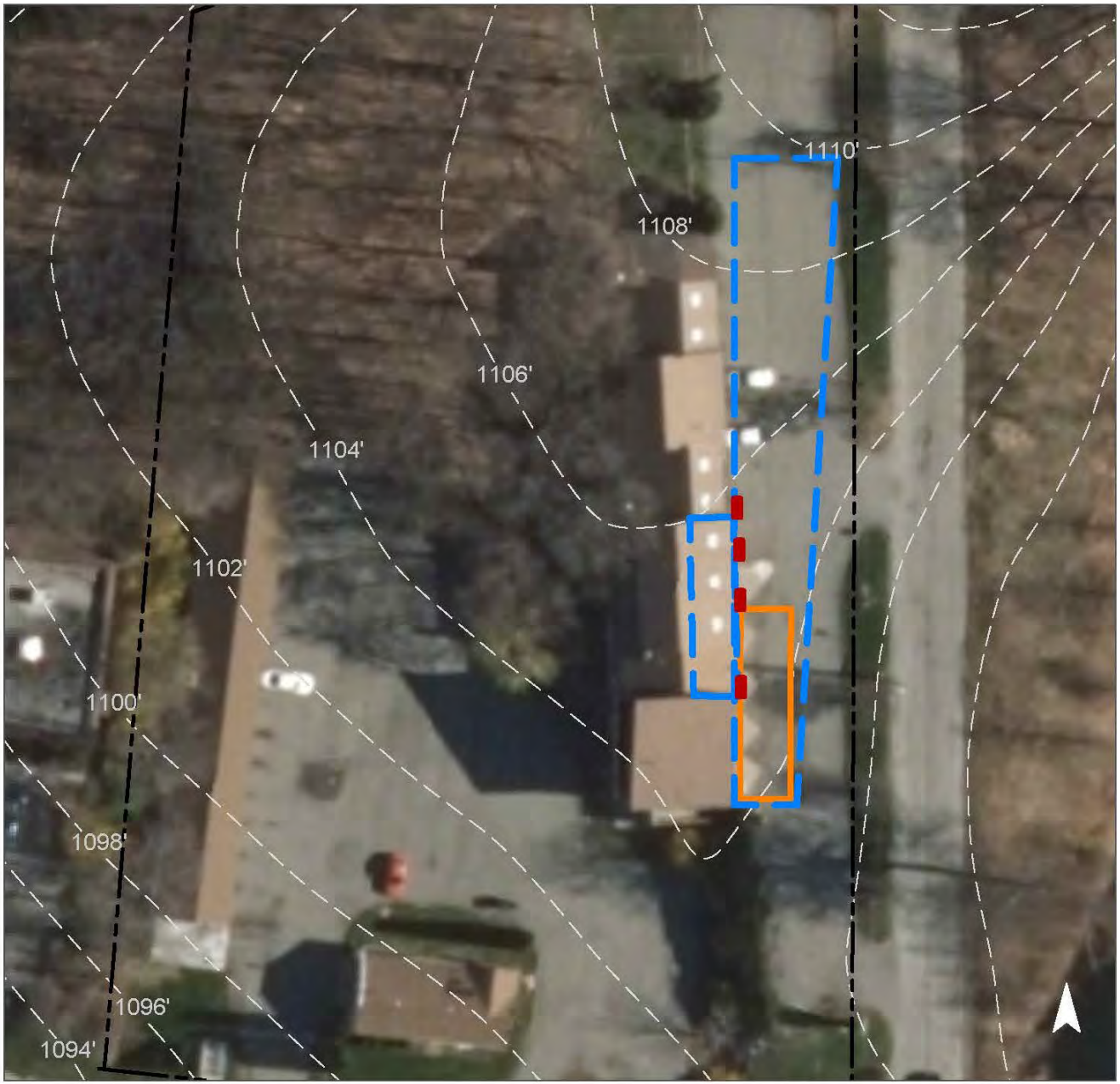
Block and Lot: Block 9402, Lot 13-15

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

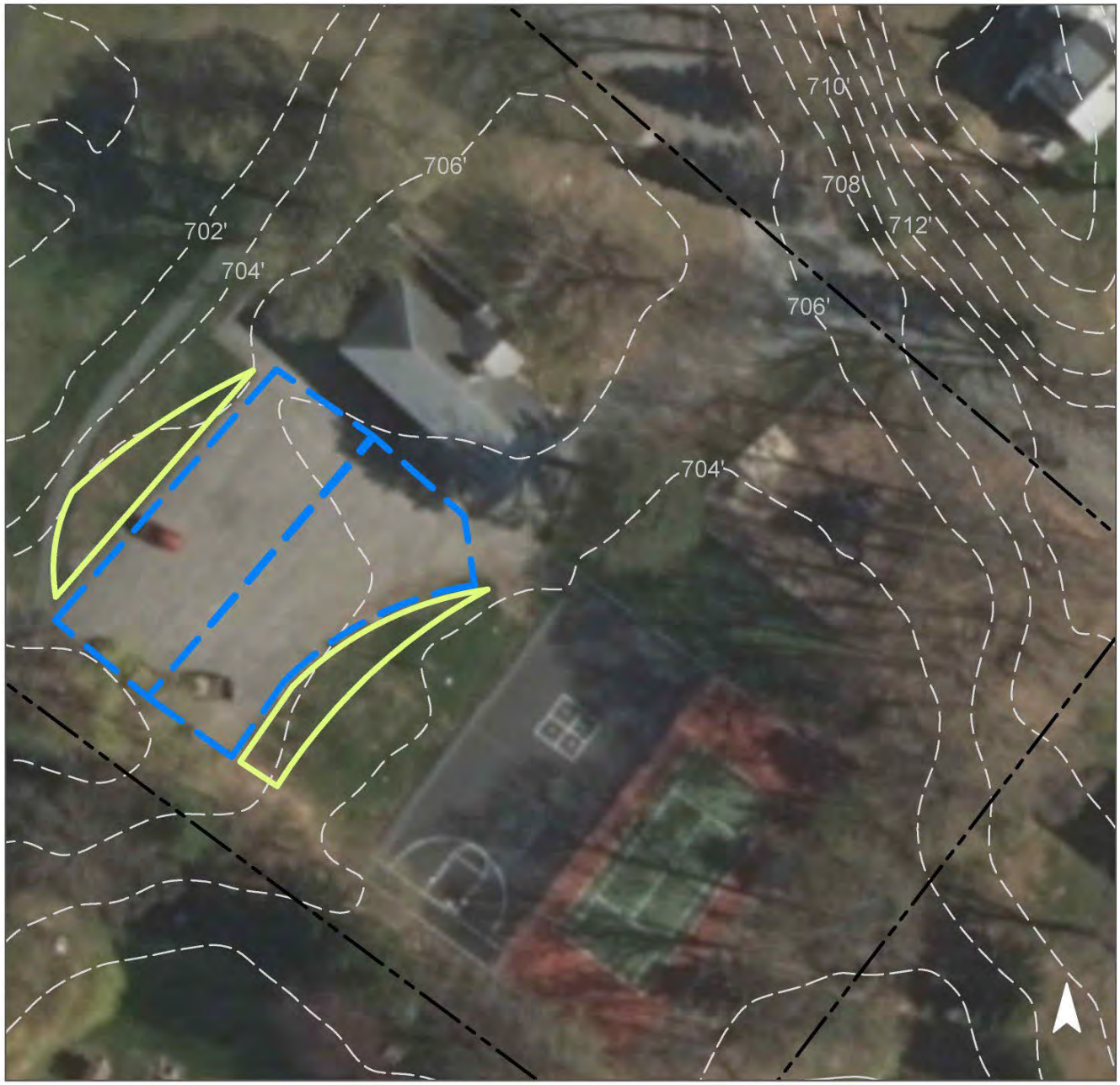
Block and Lot: **Block 13002, Lot 11**

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

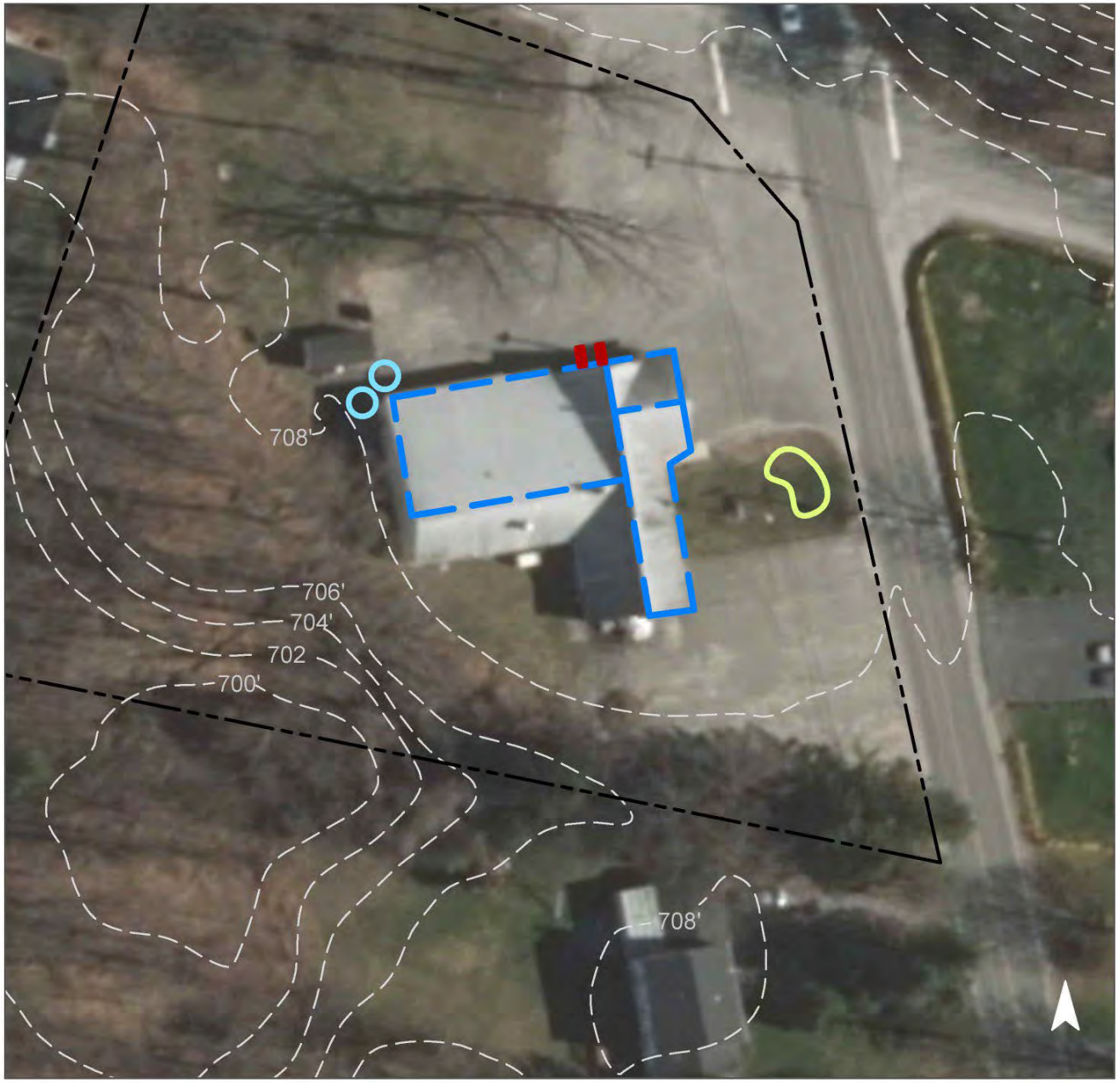
Block and Lot: Block 12501, Lot 21

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'

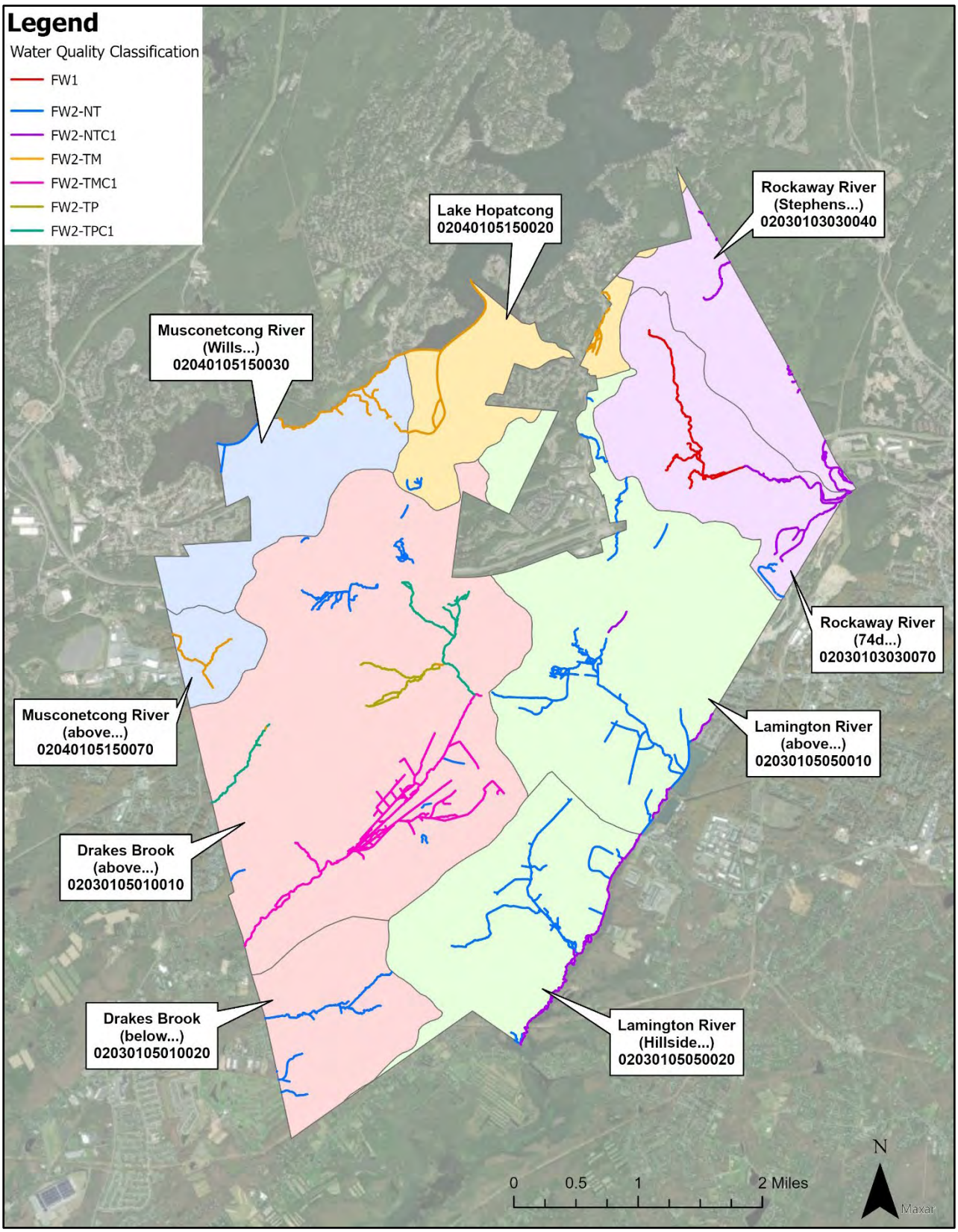


Figure 13. Water Quality Classification of Surface Waters in Roxbury Township

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.

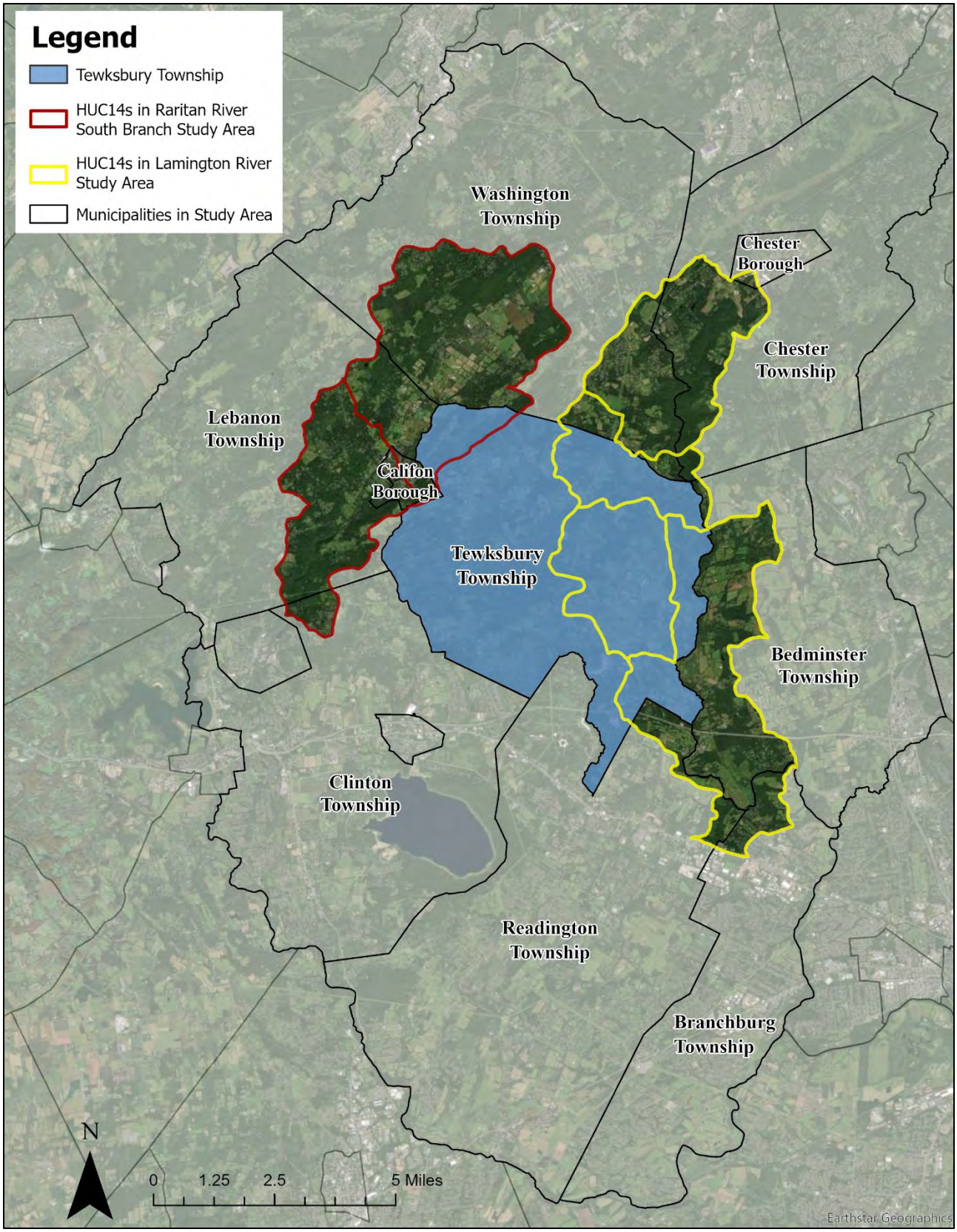


Figure 1: Municipalities in the Study Area

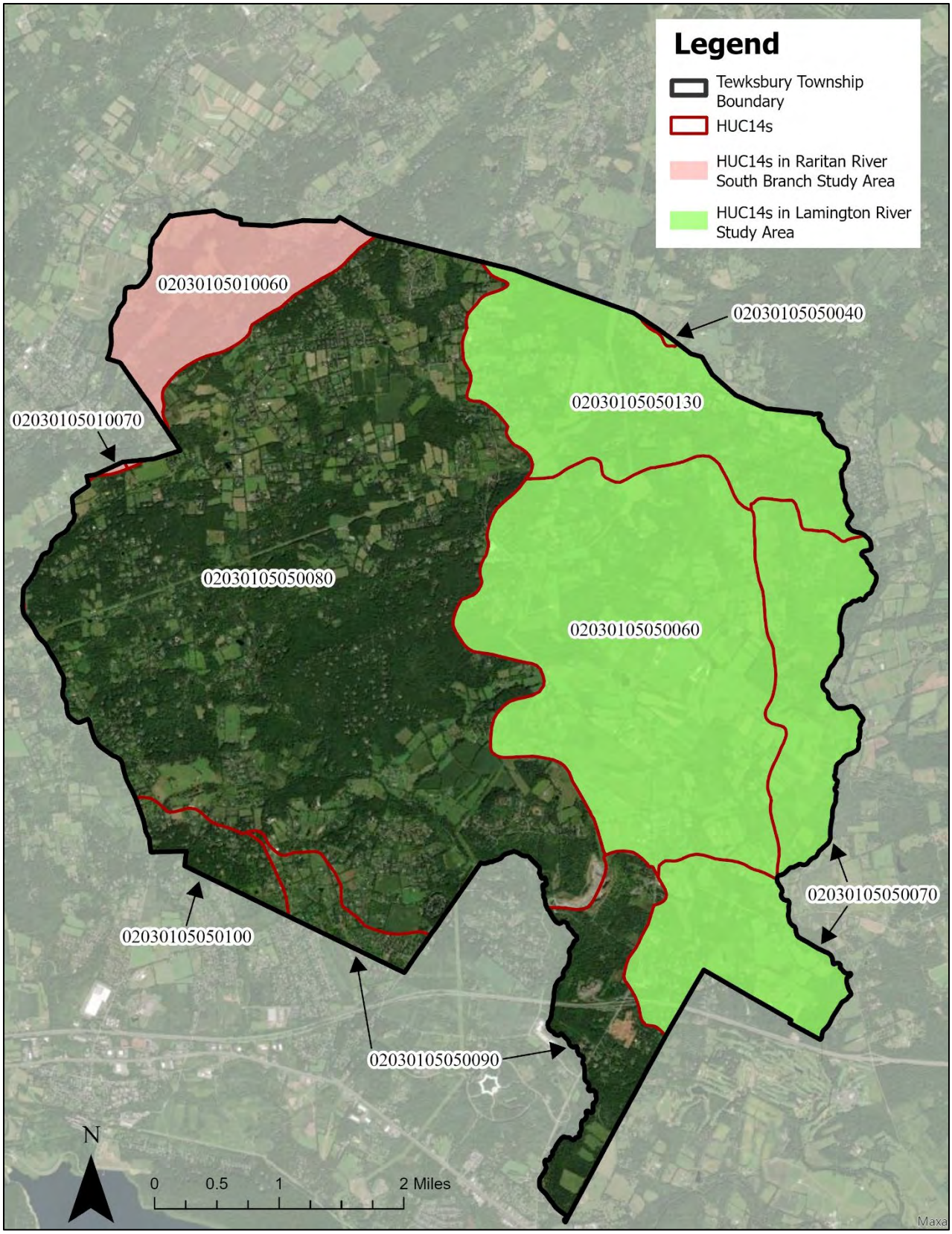


Figure 2: Portions of nine HUC14s are in Tewksbury Township

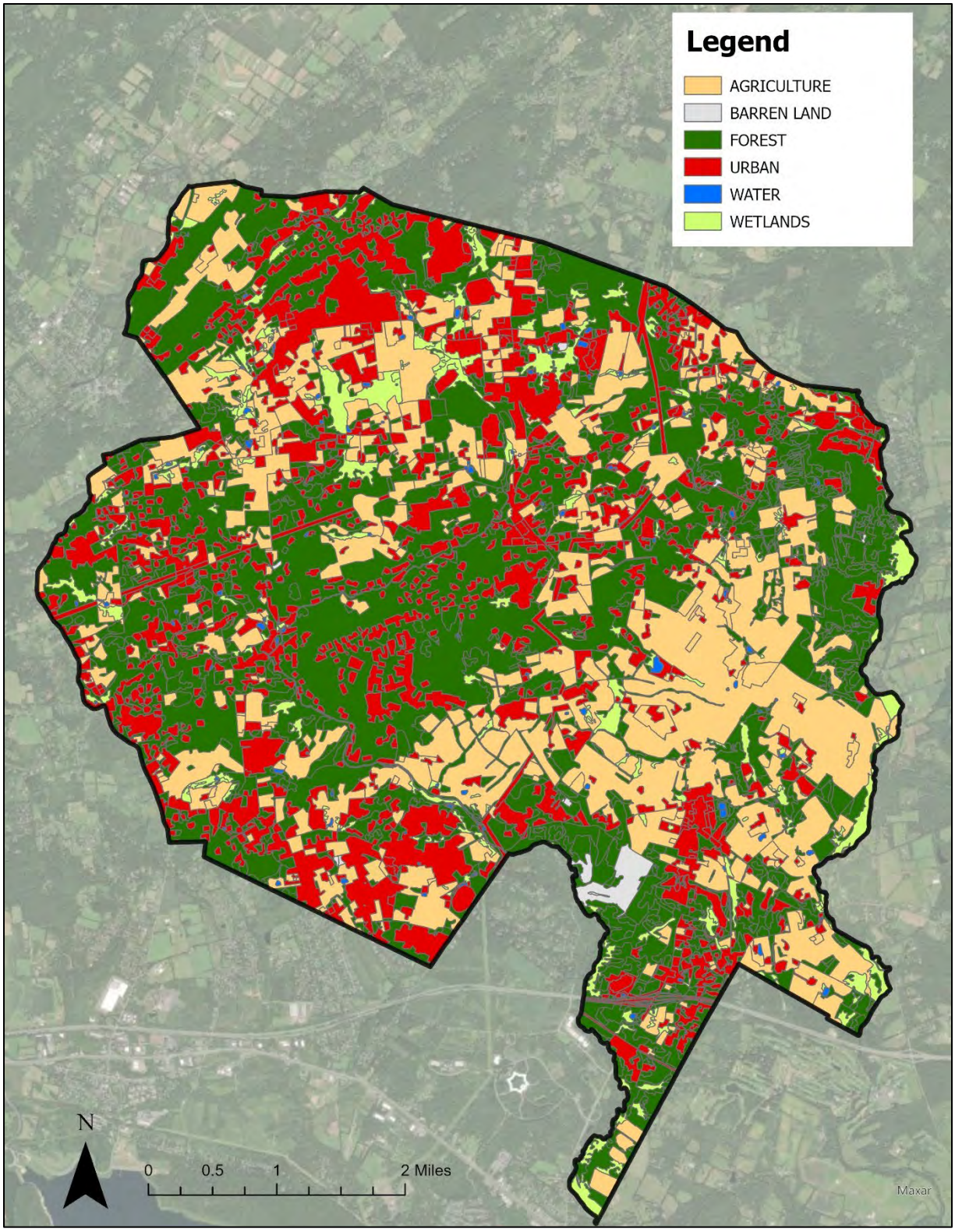


Figure 3: Land Use in Tewksbury Township

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.

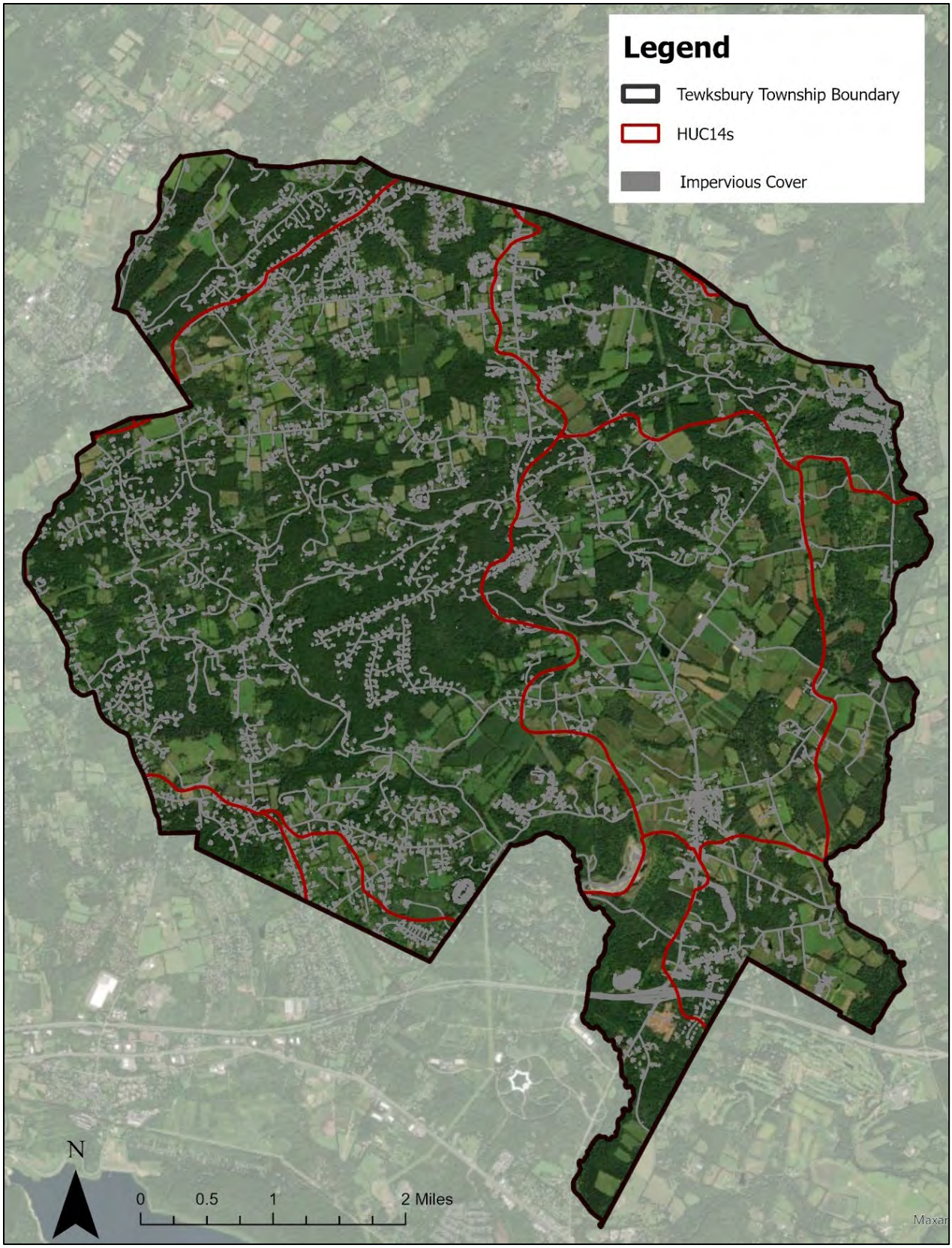


Figure 4: Impervious Cover in Tewksbury Township

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%**

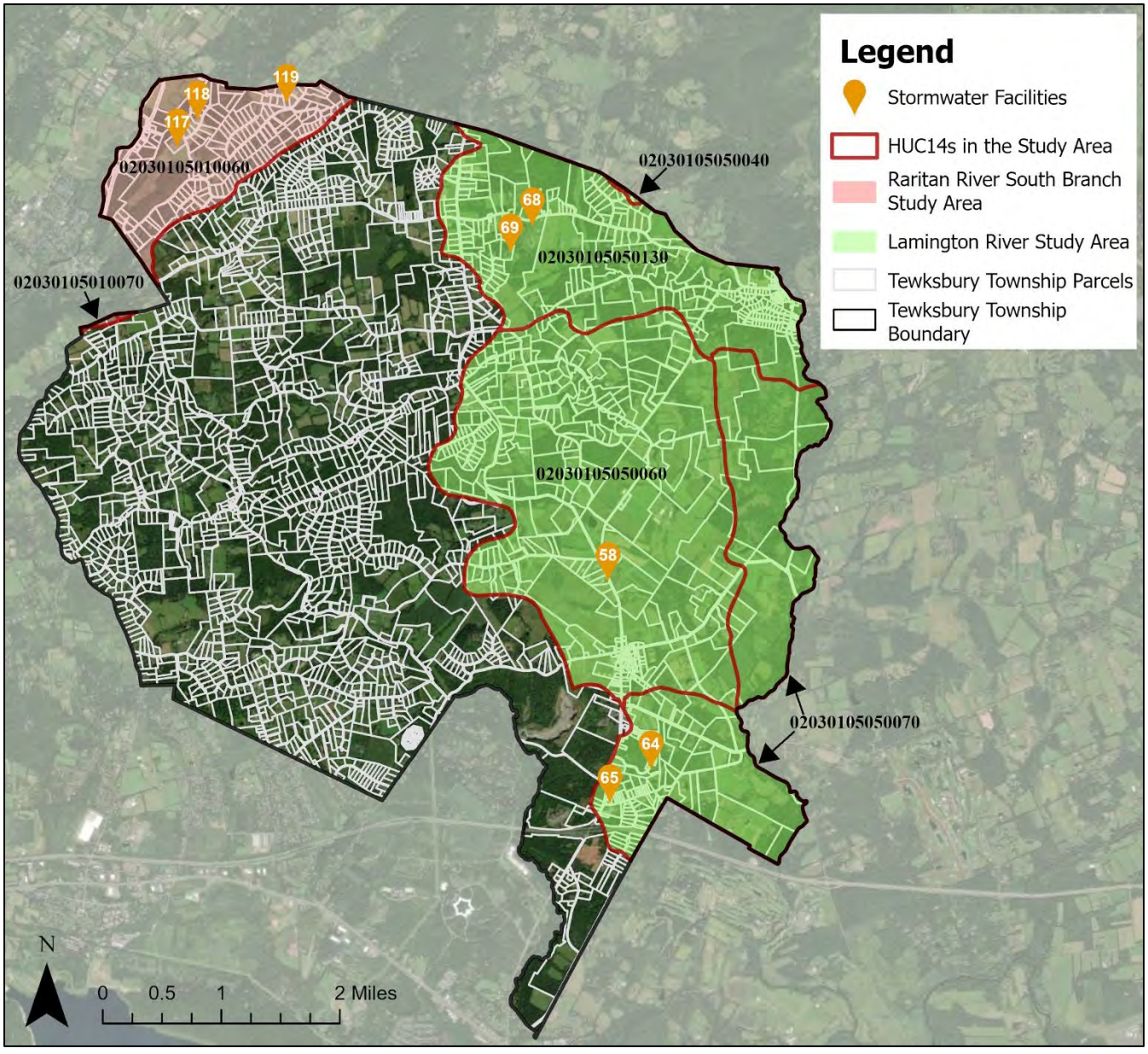


Figure 5: Stormwater Facilities in the Study Area of Tewksbury Township

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

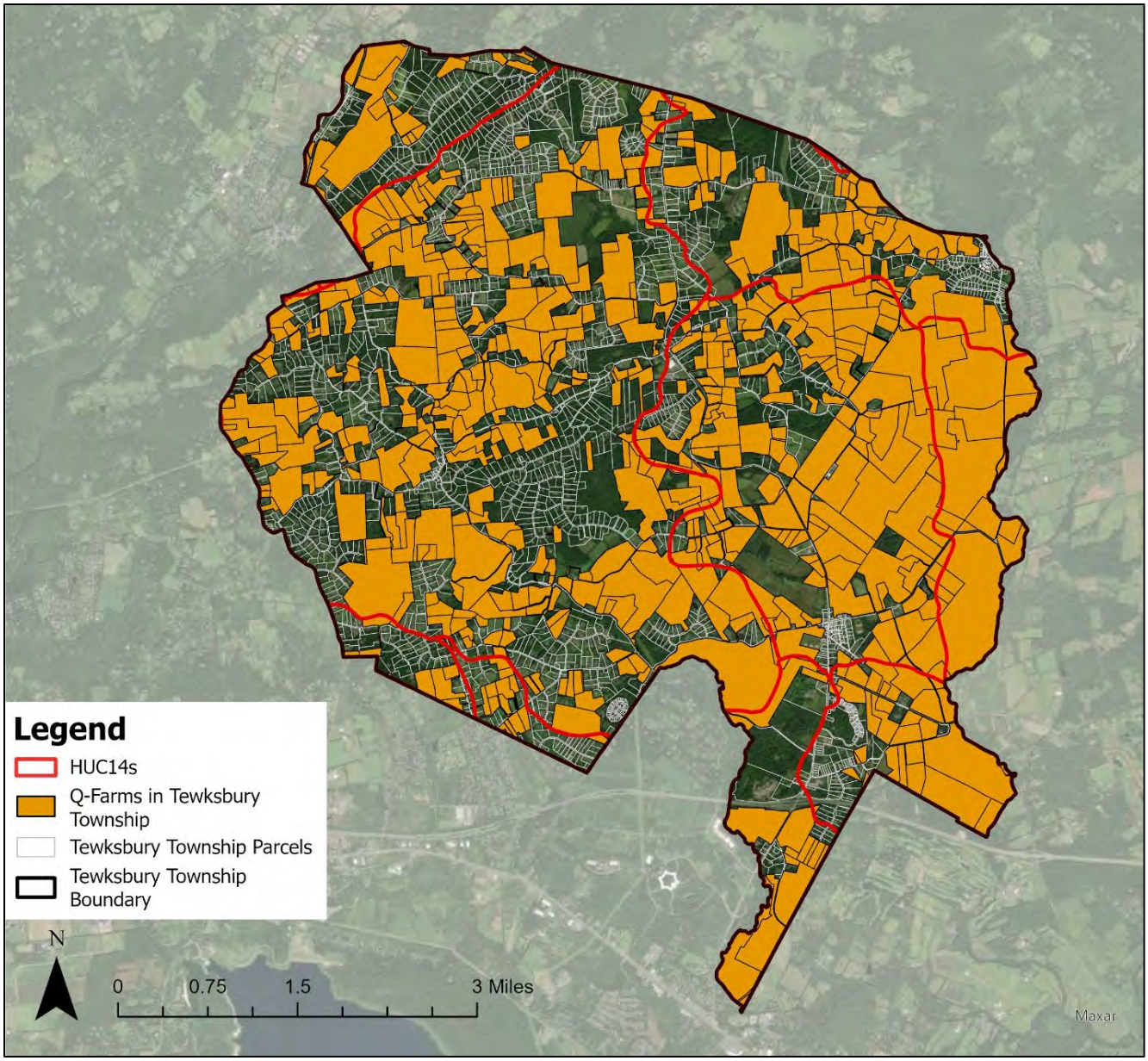


Figure 6: Q-Farm Parcels in Tewksbury Township

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

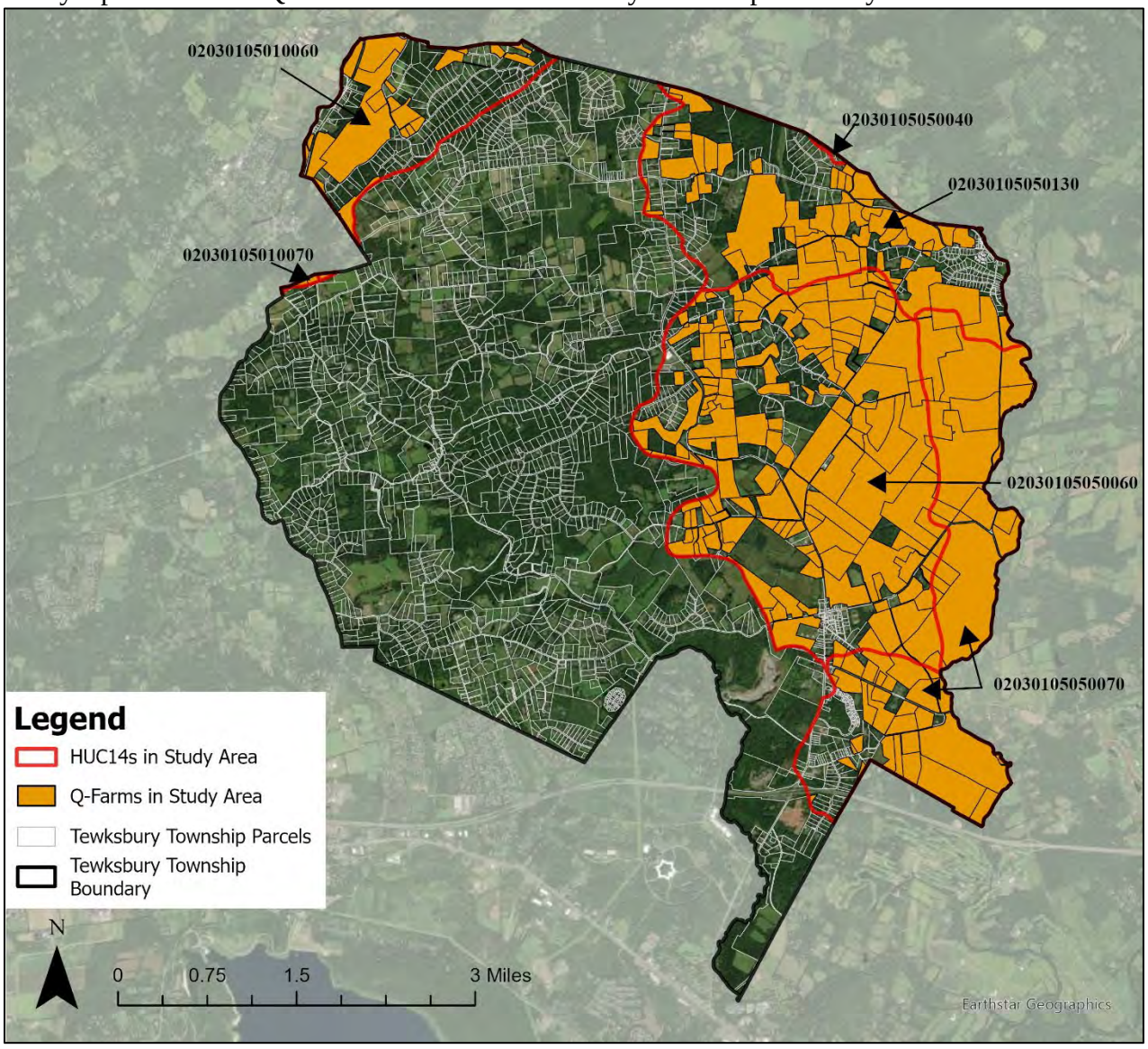


Figure 7: Q-Farm Parcels in the Study Area of Tewksbury Township

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

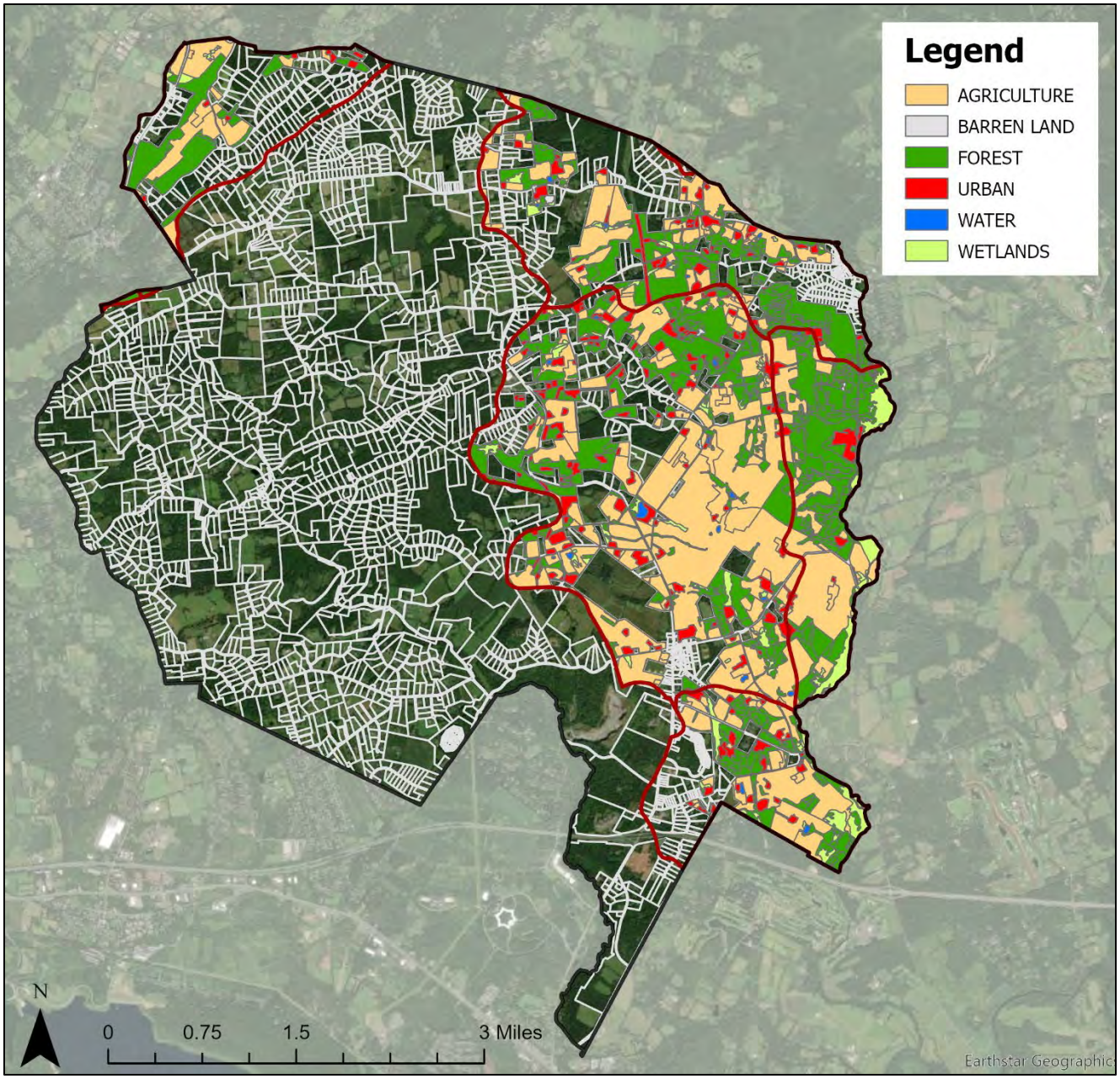


Figure 8: Land Use on Q-Farms in the Study Area of Tewksbury Township

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**

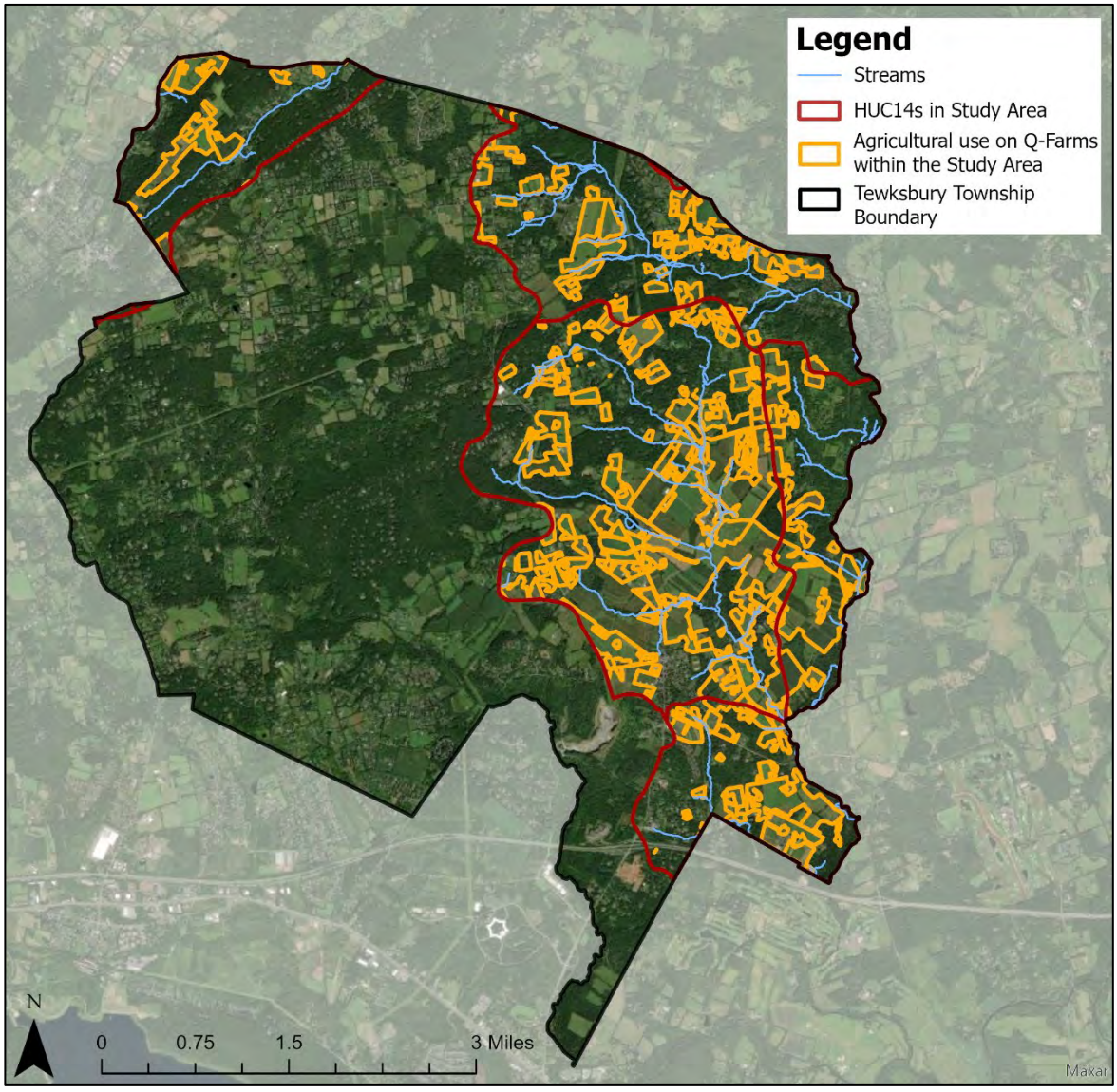


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Tewksbury Township

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

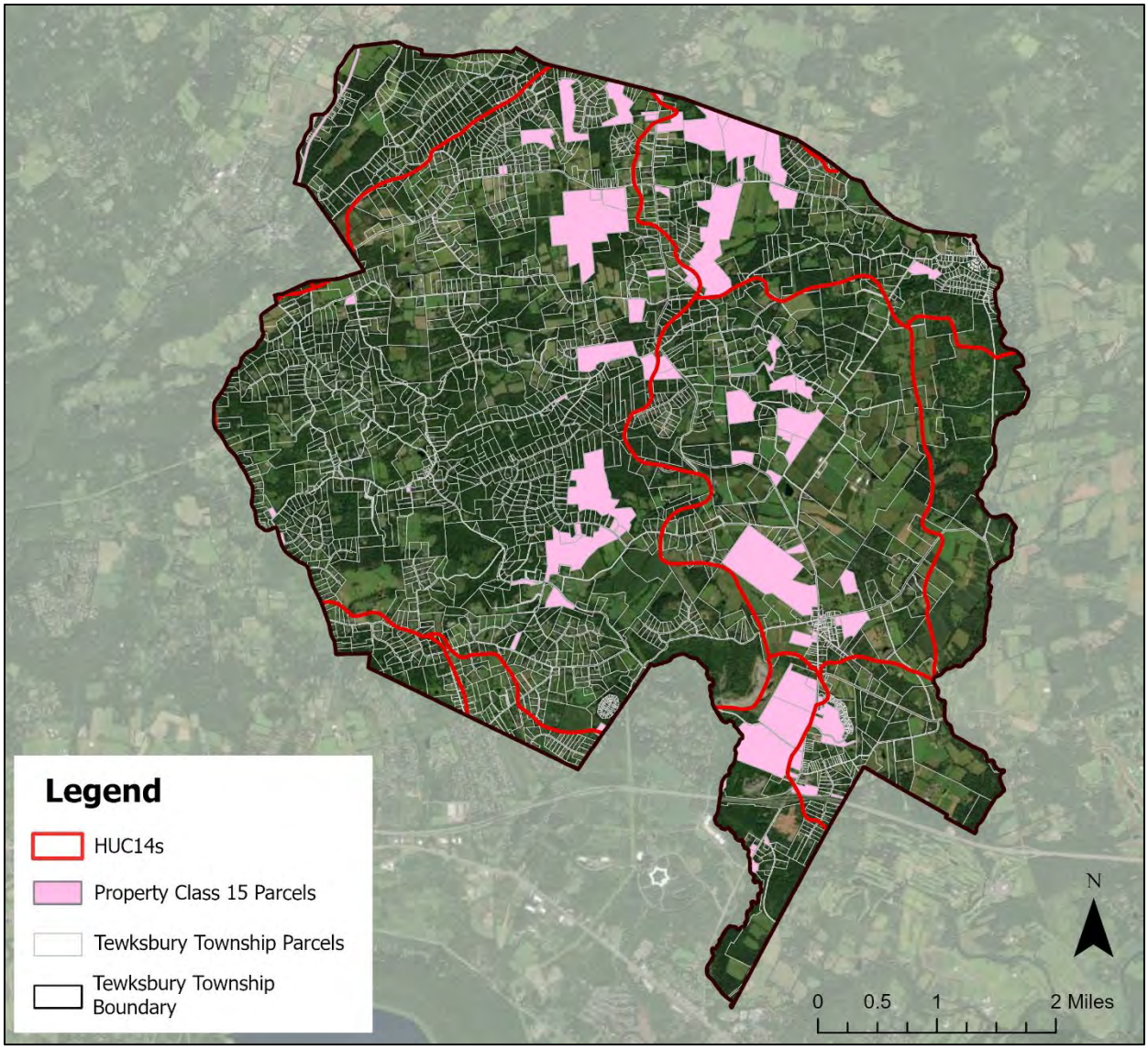


Figure 10: Property Class 15 Parcels in Tewksbury Township

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

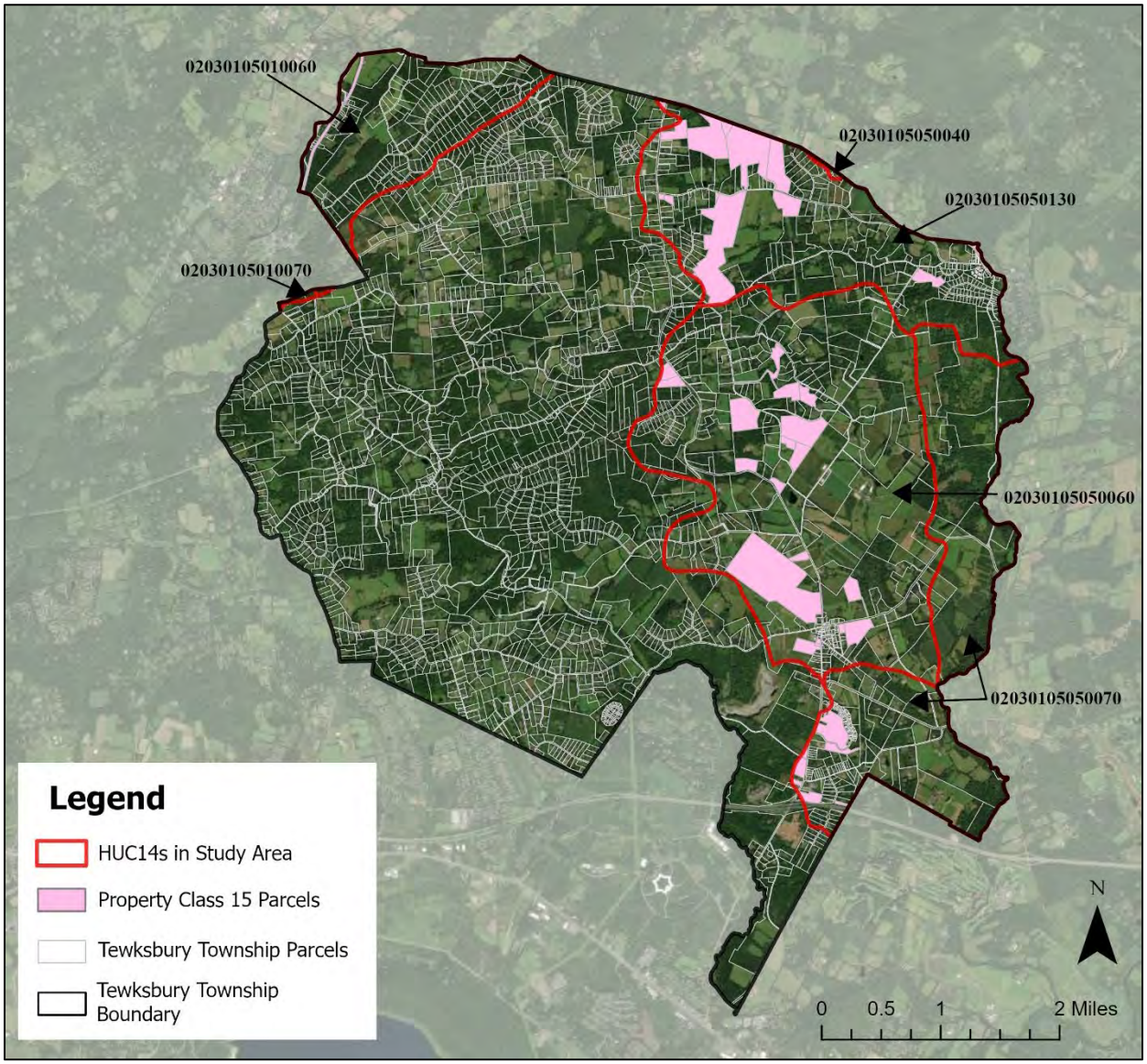


Figure 11: Property Class 15 parcels in the Study Area of Tewksbury Township

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

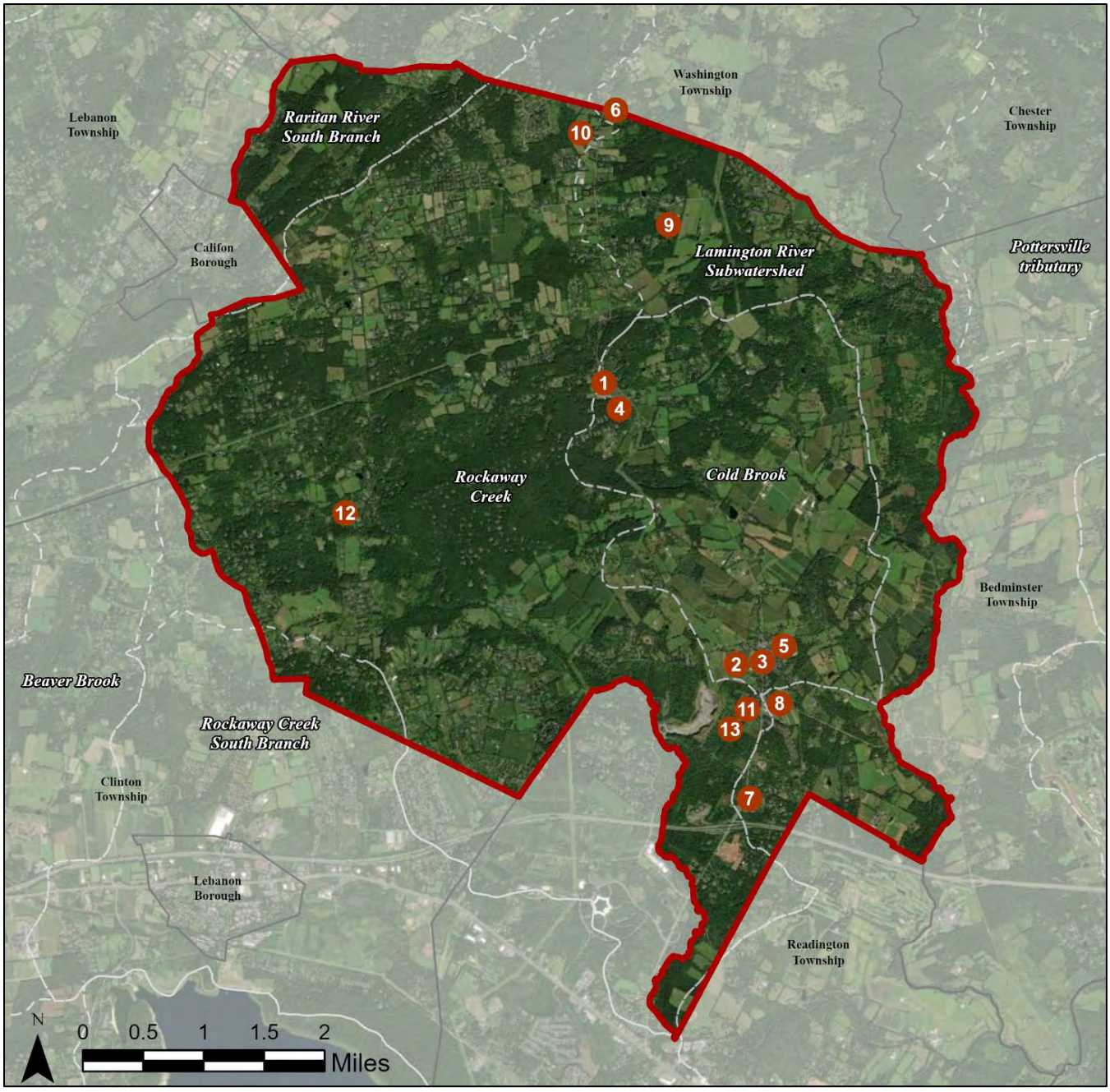


Figure 12: Sites with Green Infrastructure Opportunities in Tewksbury Township

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

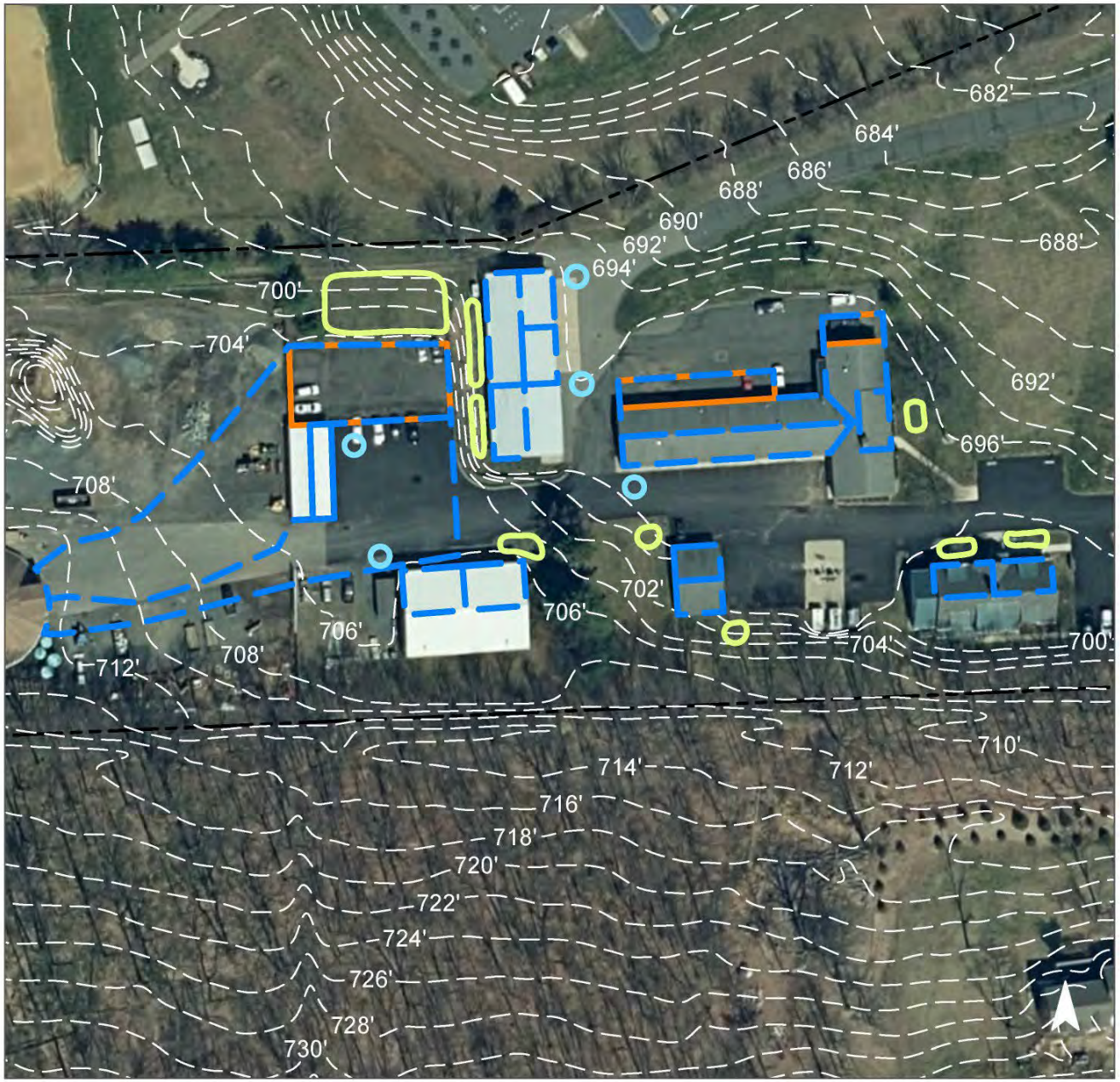
Block and Lot: Block 27, Lot 68.02

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

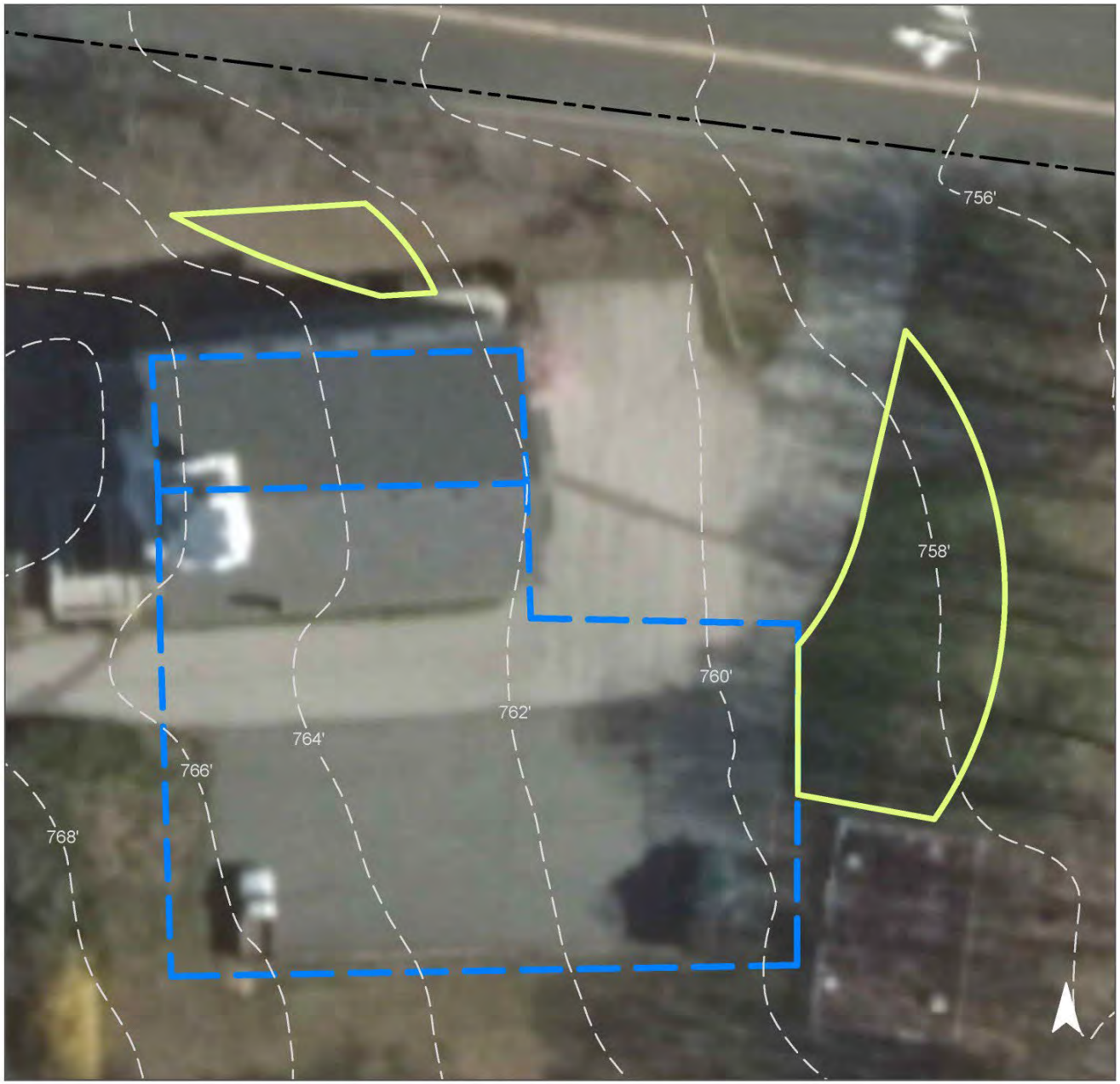
Block and Lot: Block 16, Lot 1,2.012

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

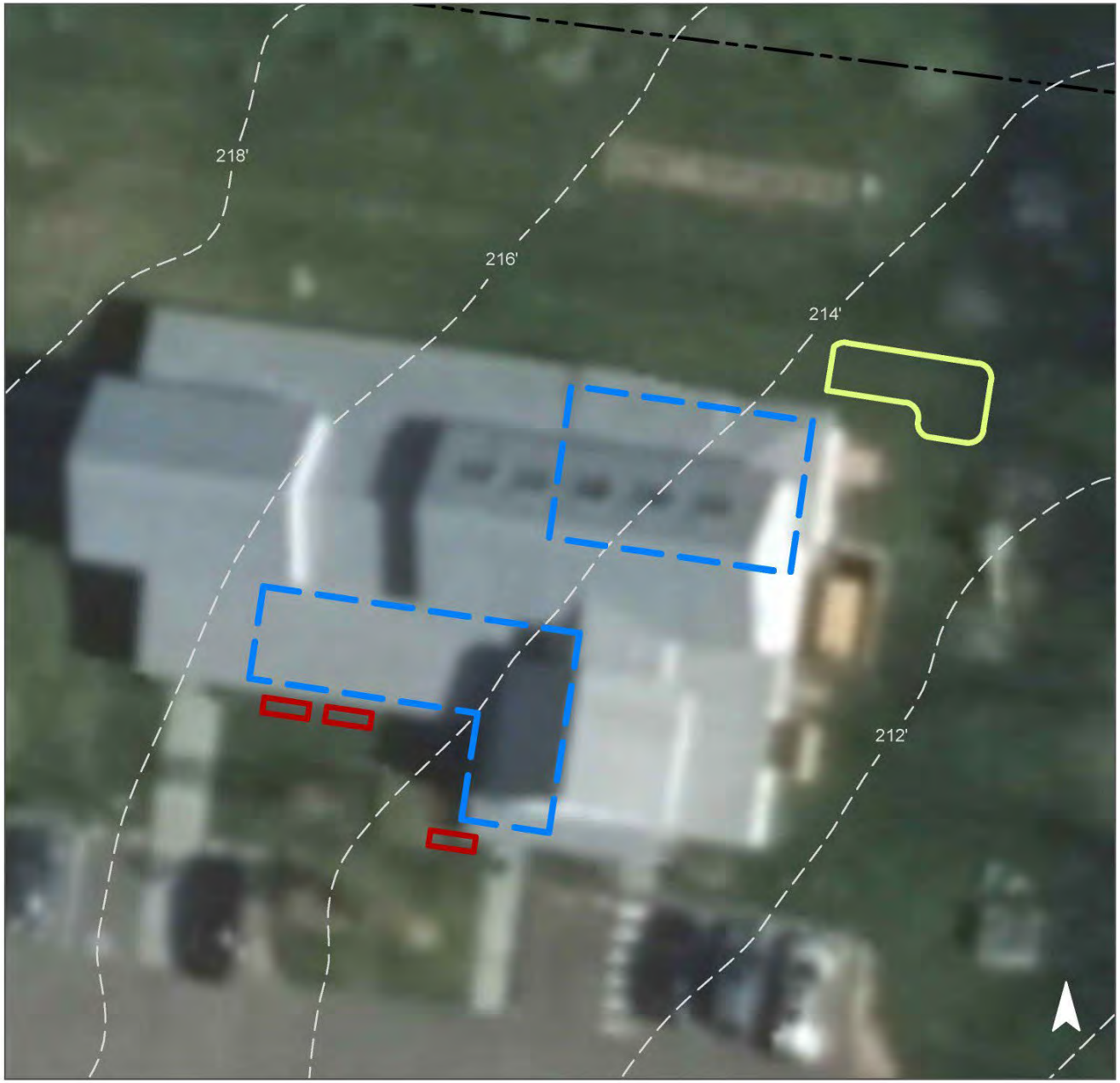
Block and Lot: Block 45, Lot 28

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

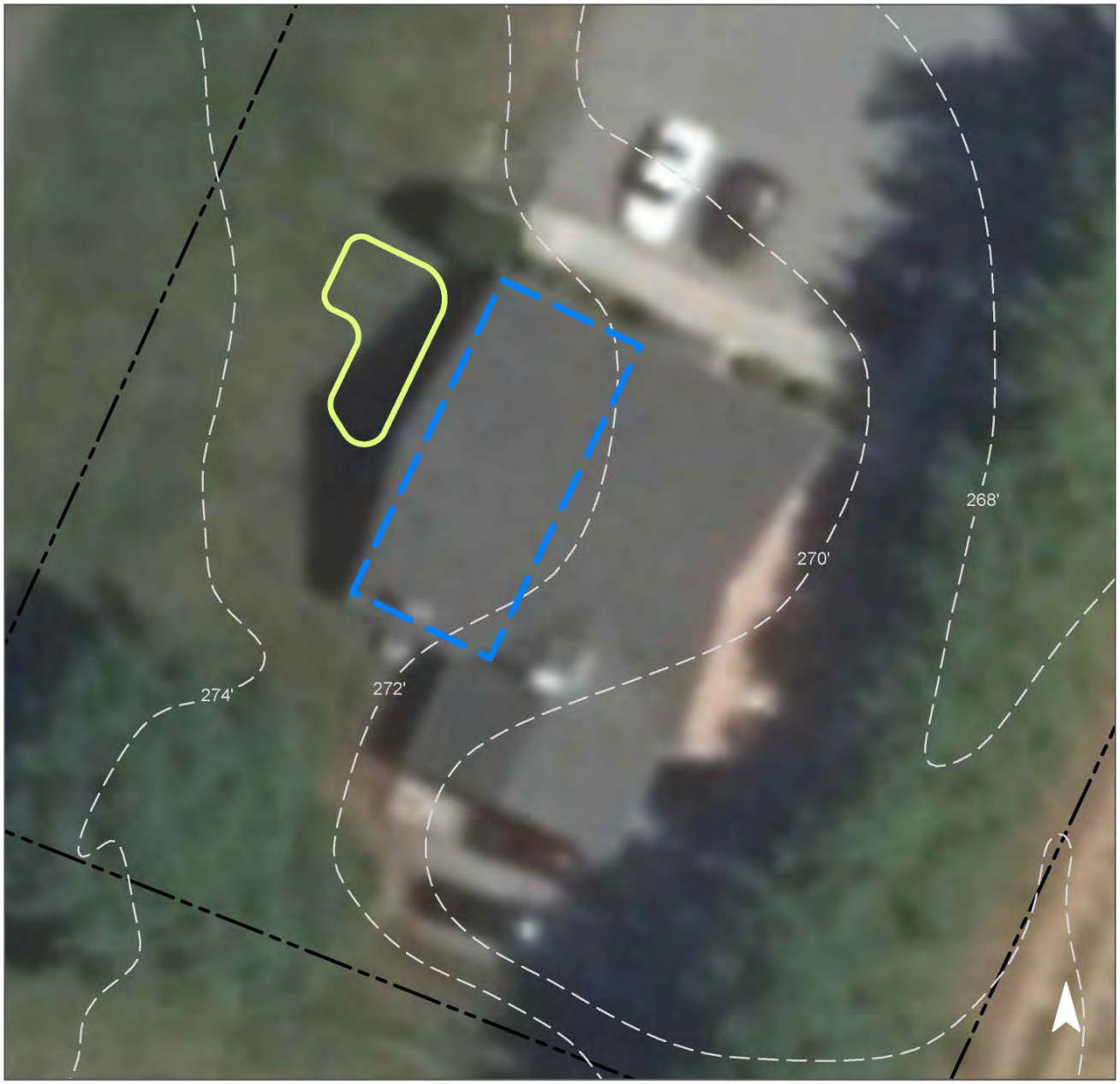
Block and Lot: Block 45, Lot 1.01

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

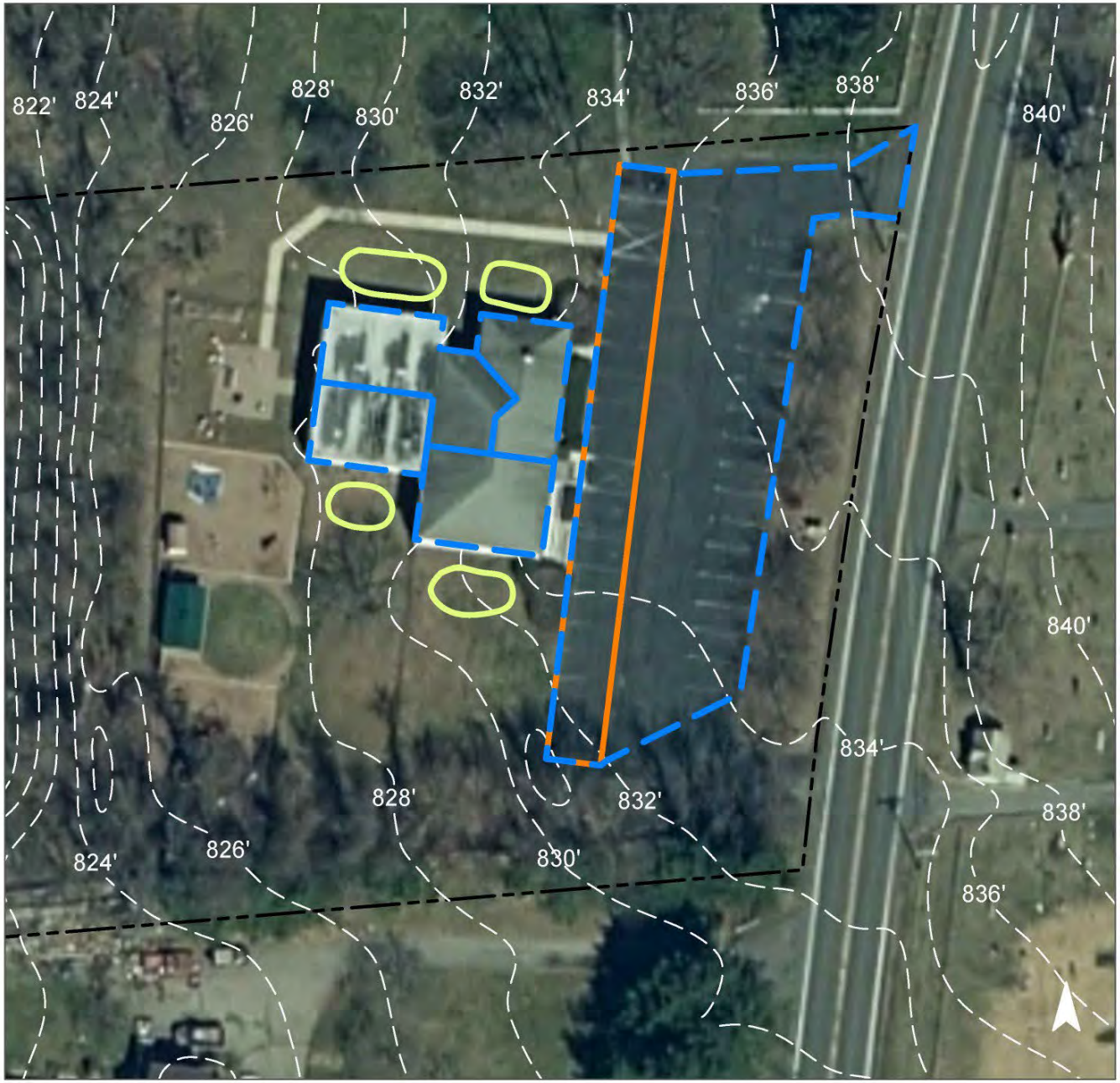
Block and Lot: Block 6.04, Lot 6.01

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

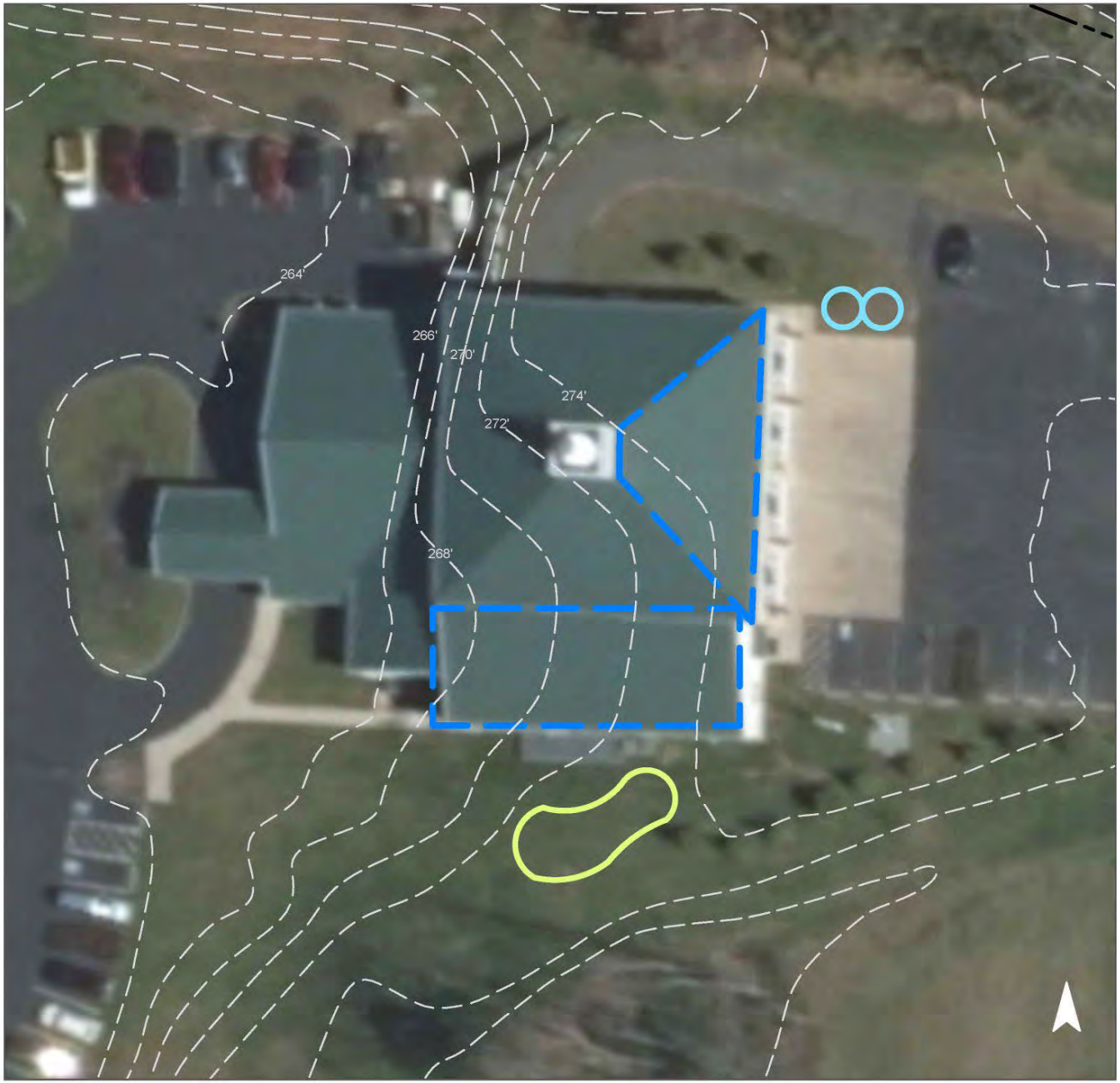
Block and Lot: Block 44, Lot 22.01

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

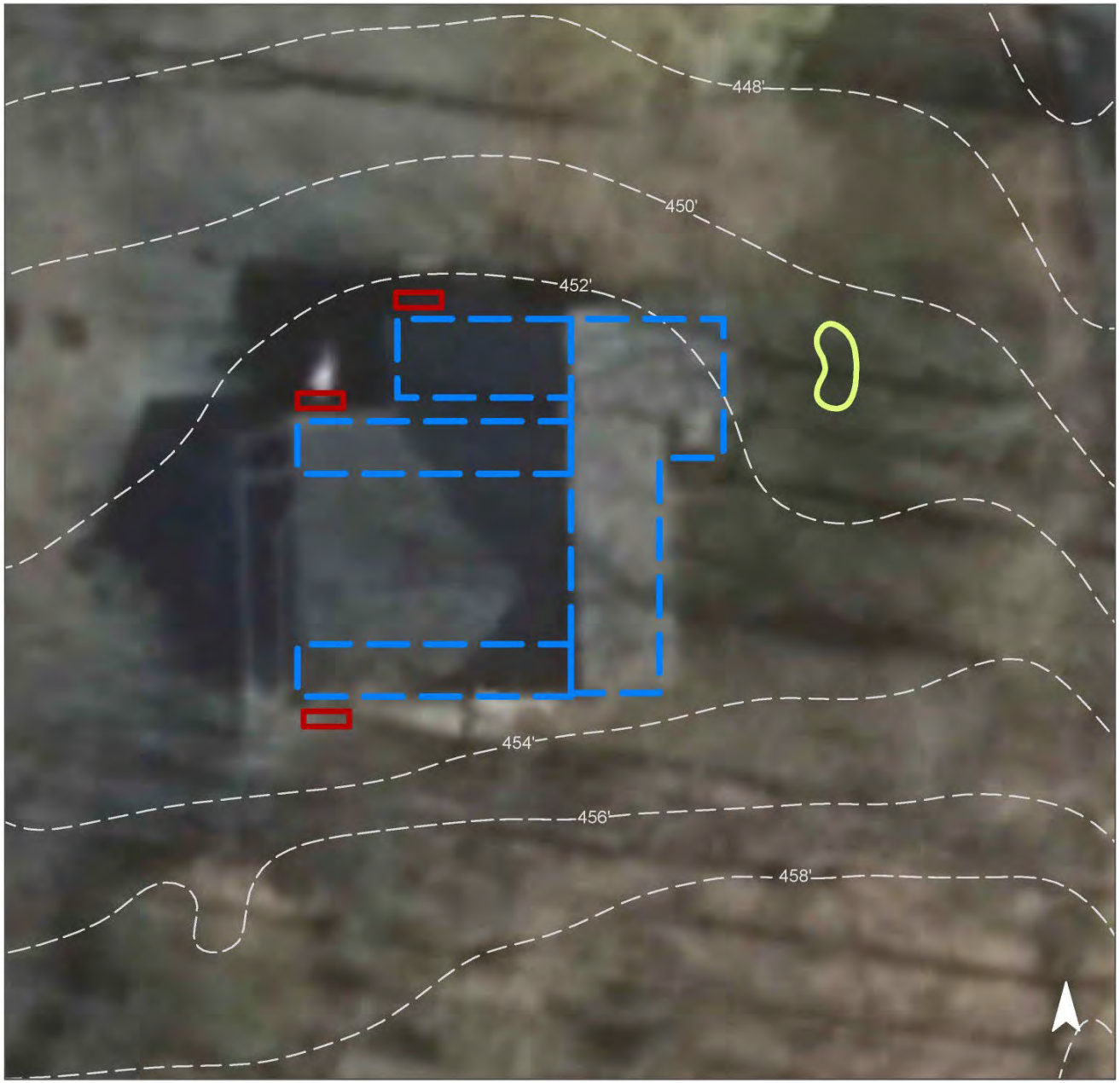
Block and Lot: Block 32, Lot 19

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

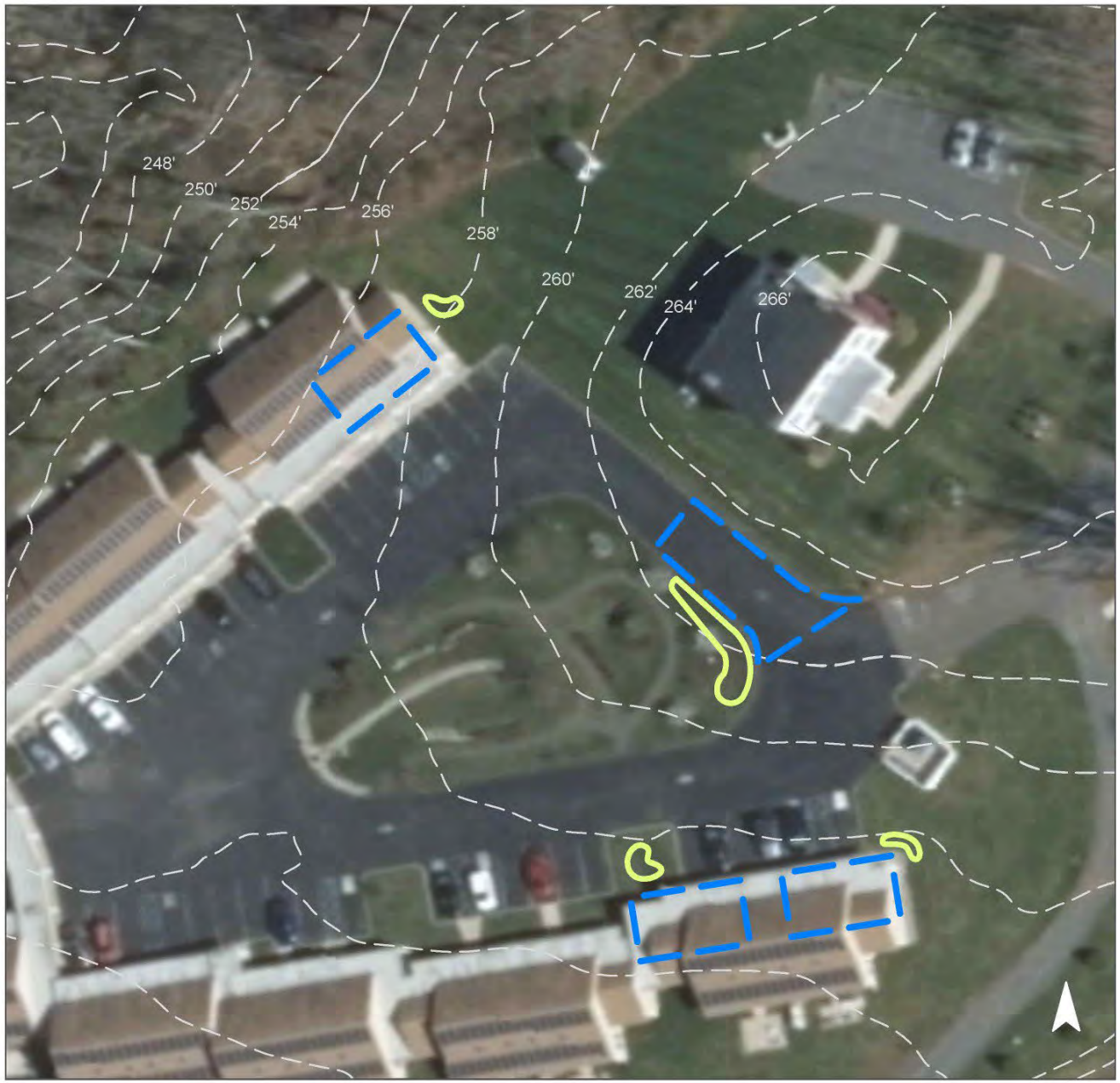
Block and Lot: Block 44, Lot 22

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'

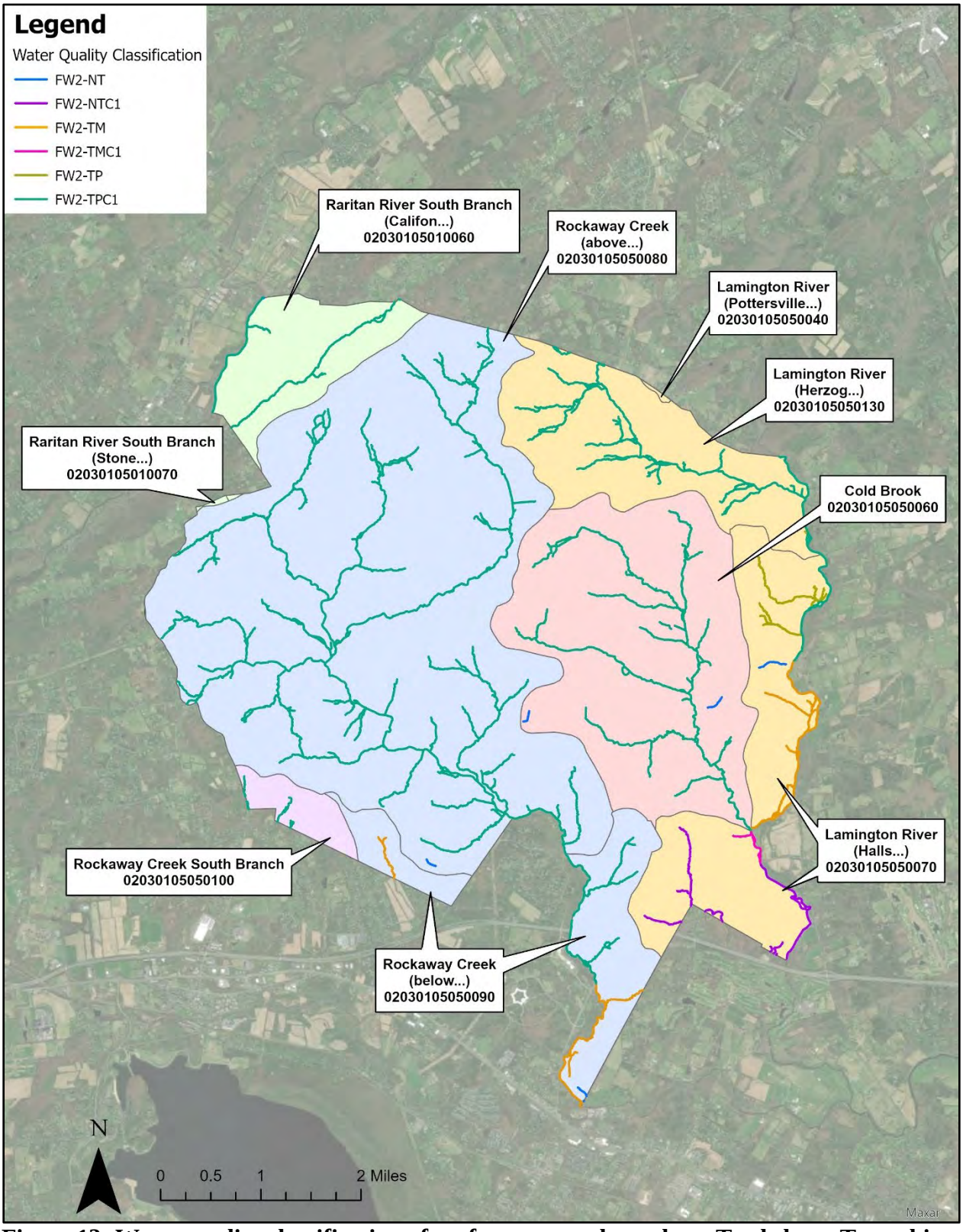


Figure 13: Water quality classification of surface waters throughout Tewksbury Township

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.

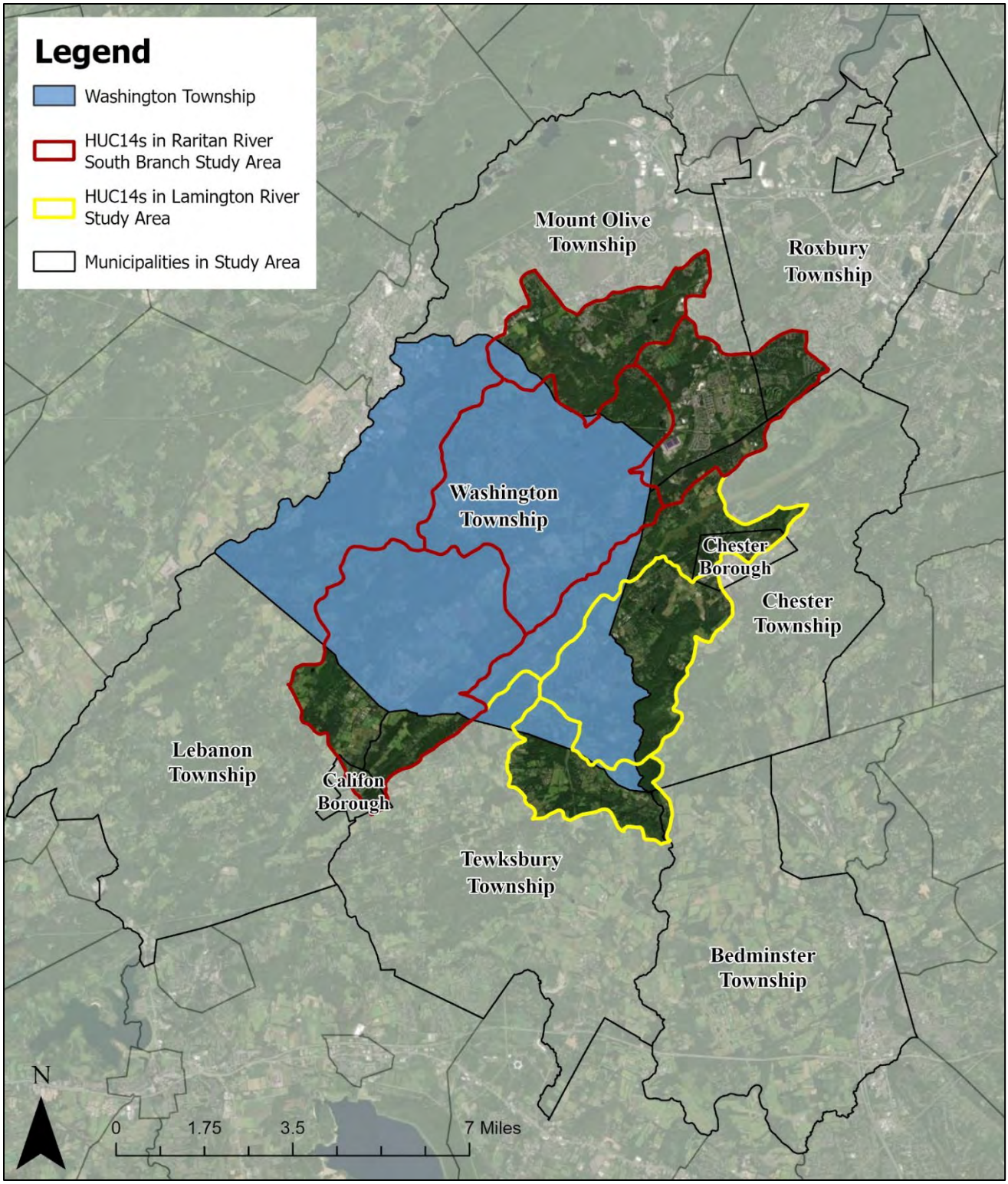


Figure 1: Municipalities in the Study Area

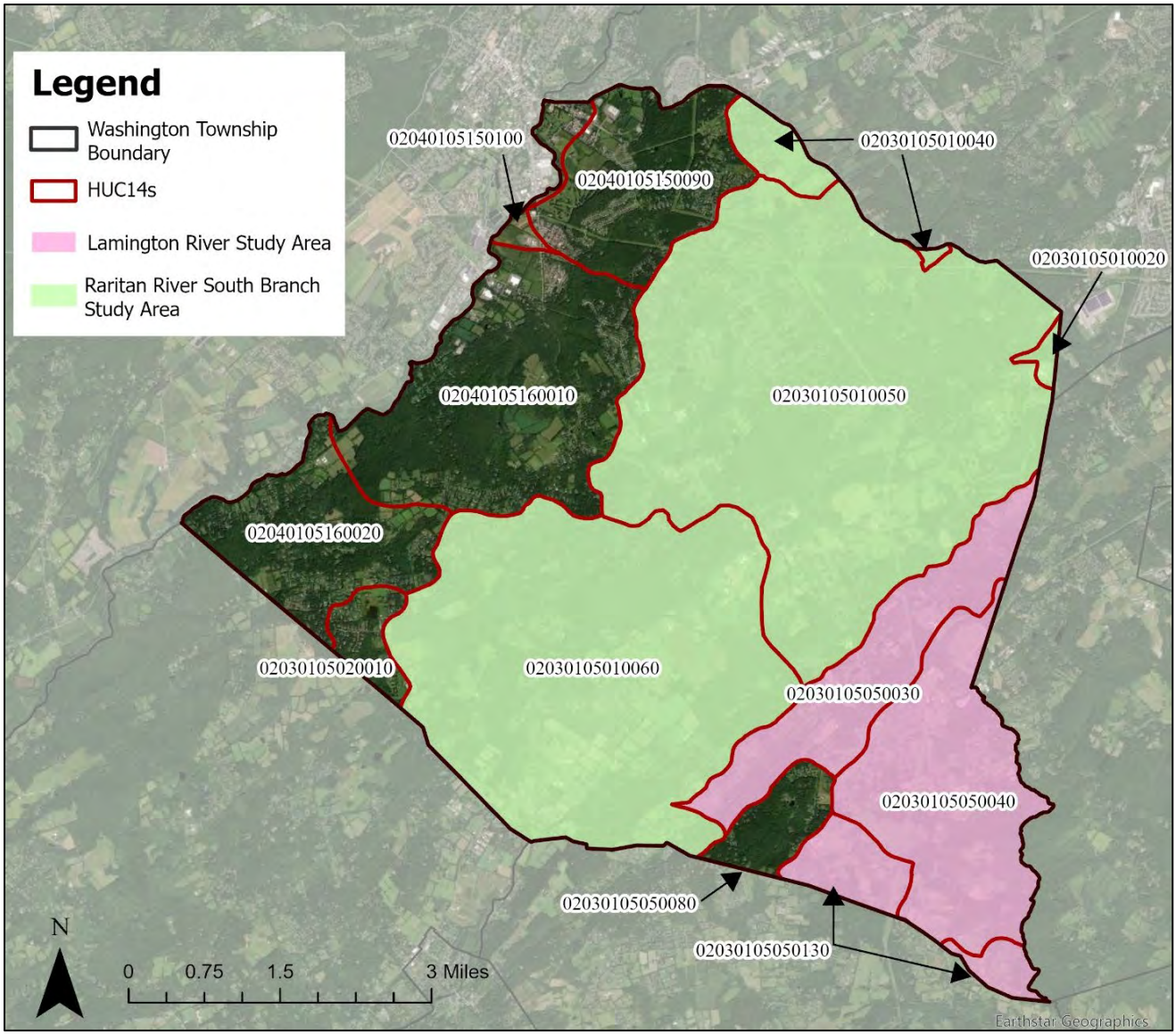


Figure 2: Portions of thirteen HUC14s are in Washington Township

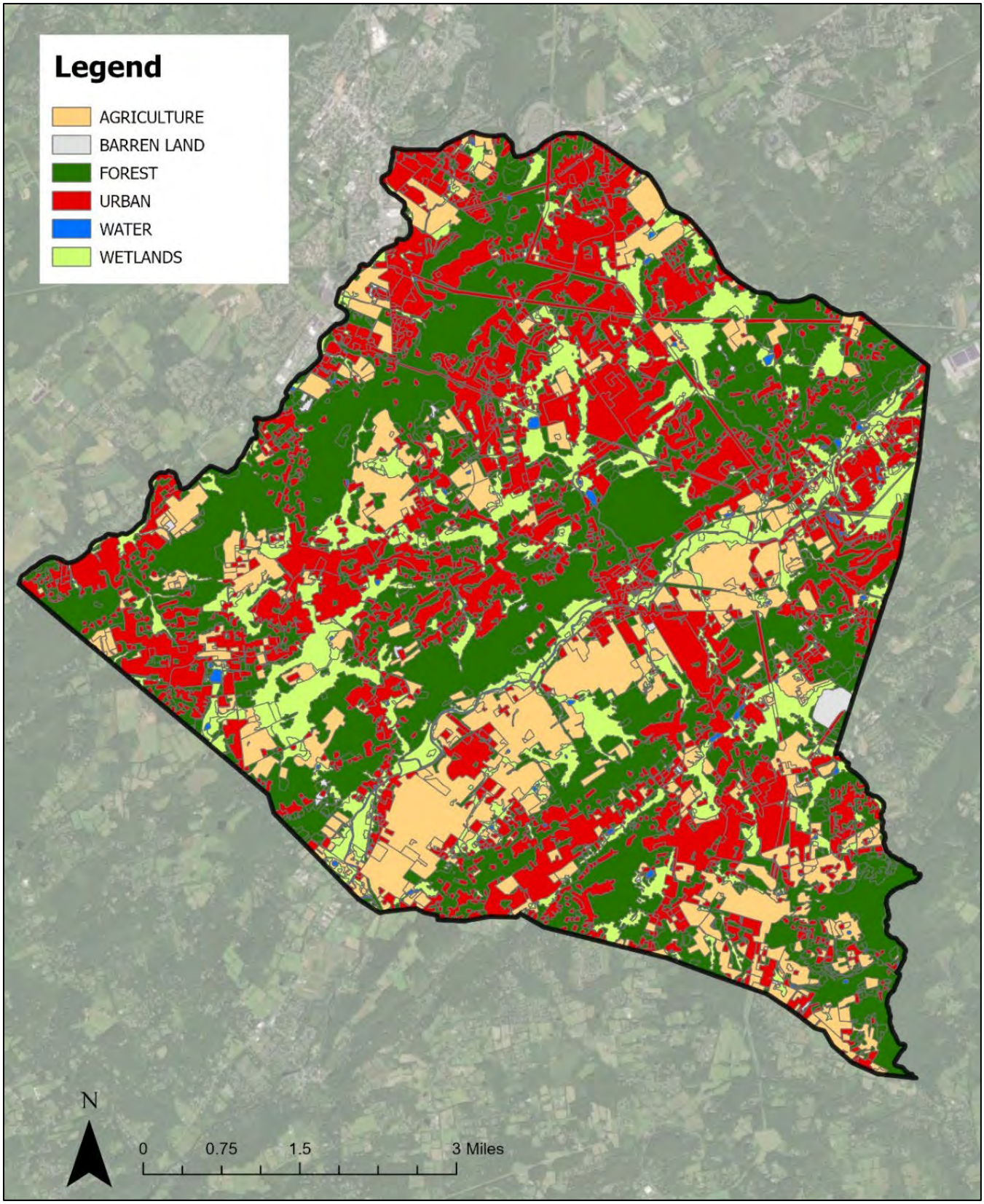


Figure 3: Land Use in Washington Township

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.

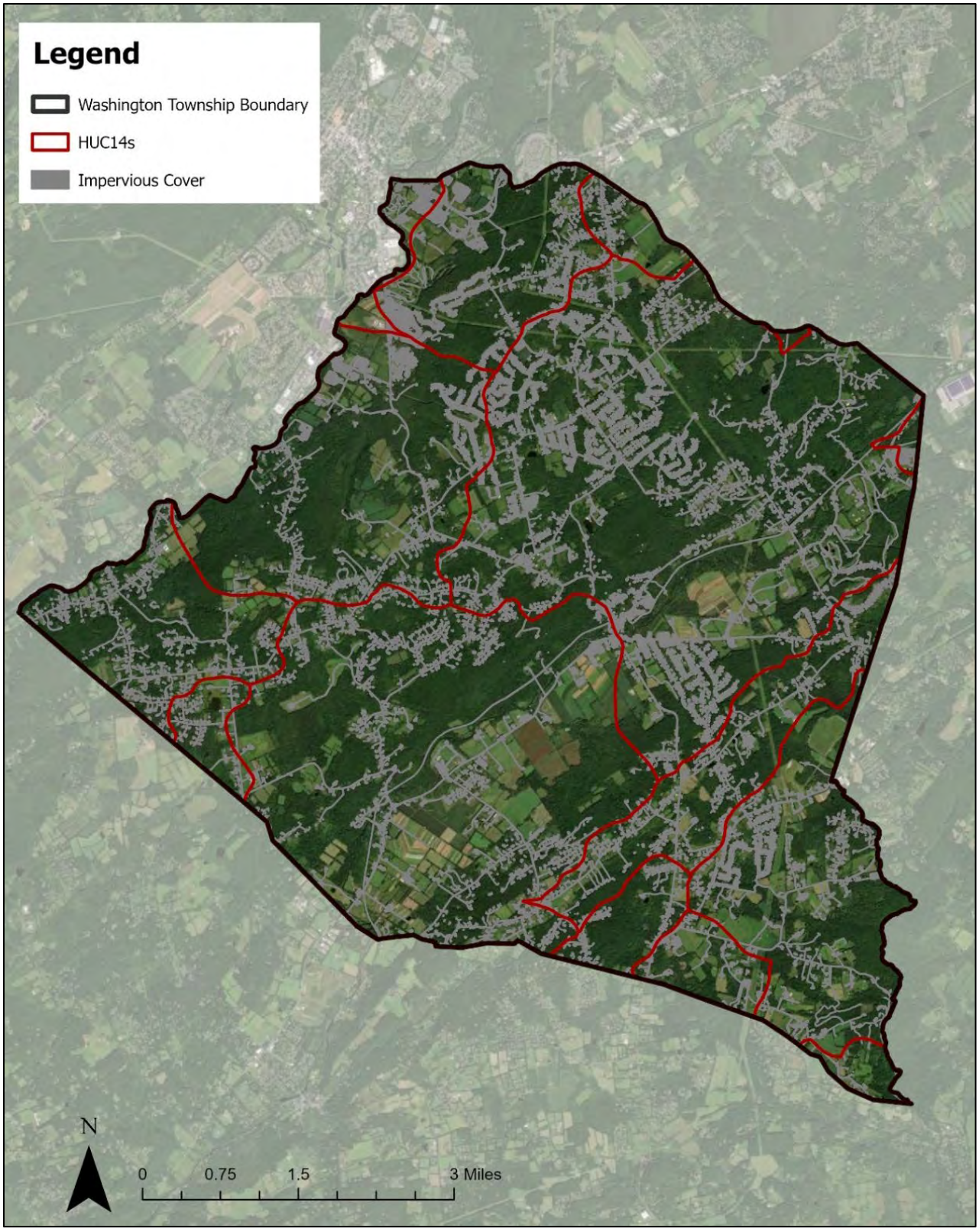


Figure 4: Impervious Cover in Washington Township

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%**

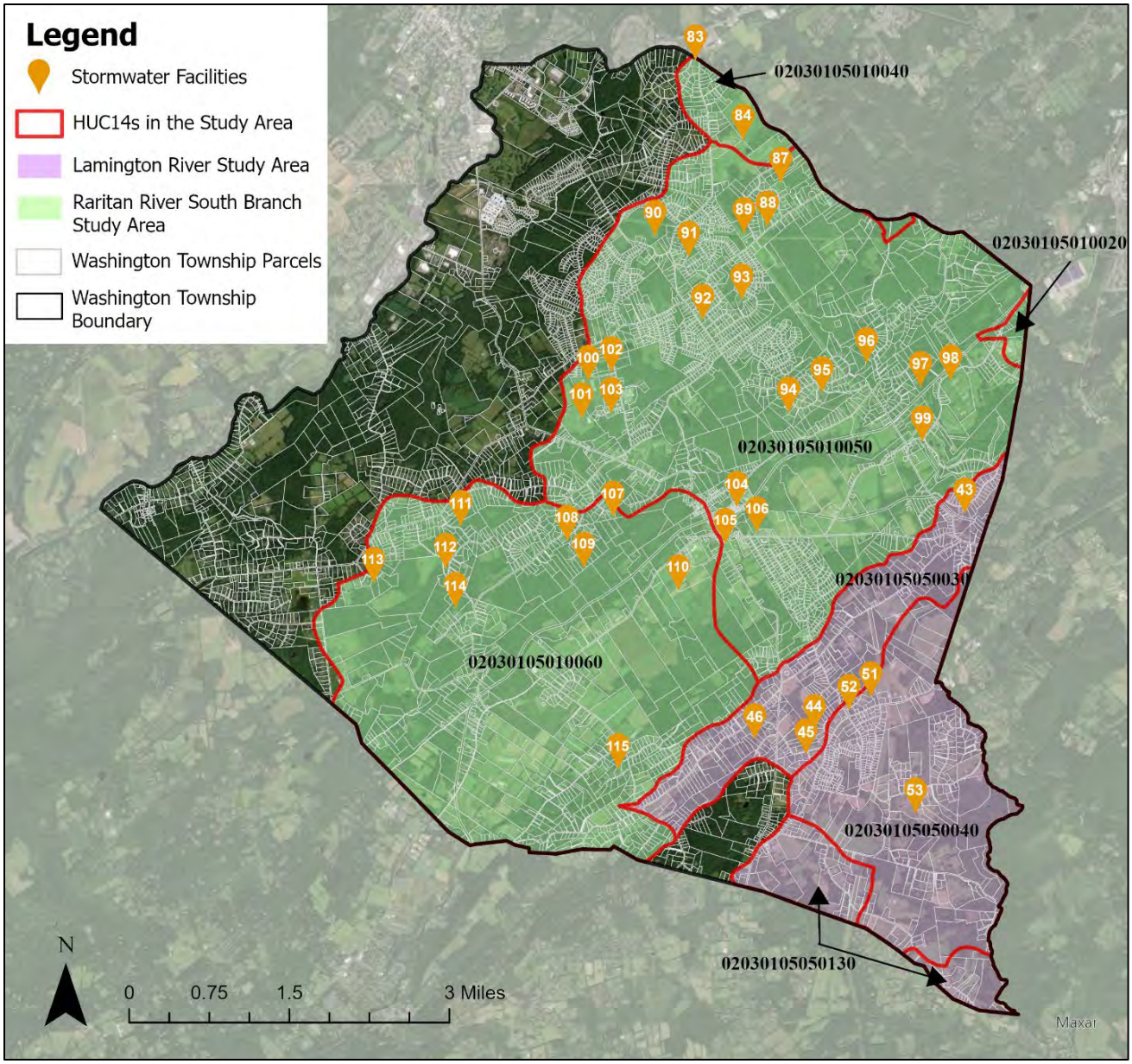


Figure 5: Stormwater Facilities in the Study Area of Washington Township

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

Lamington River South Branch		
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

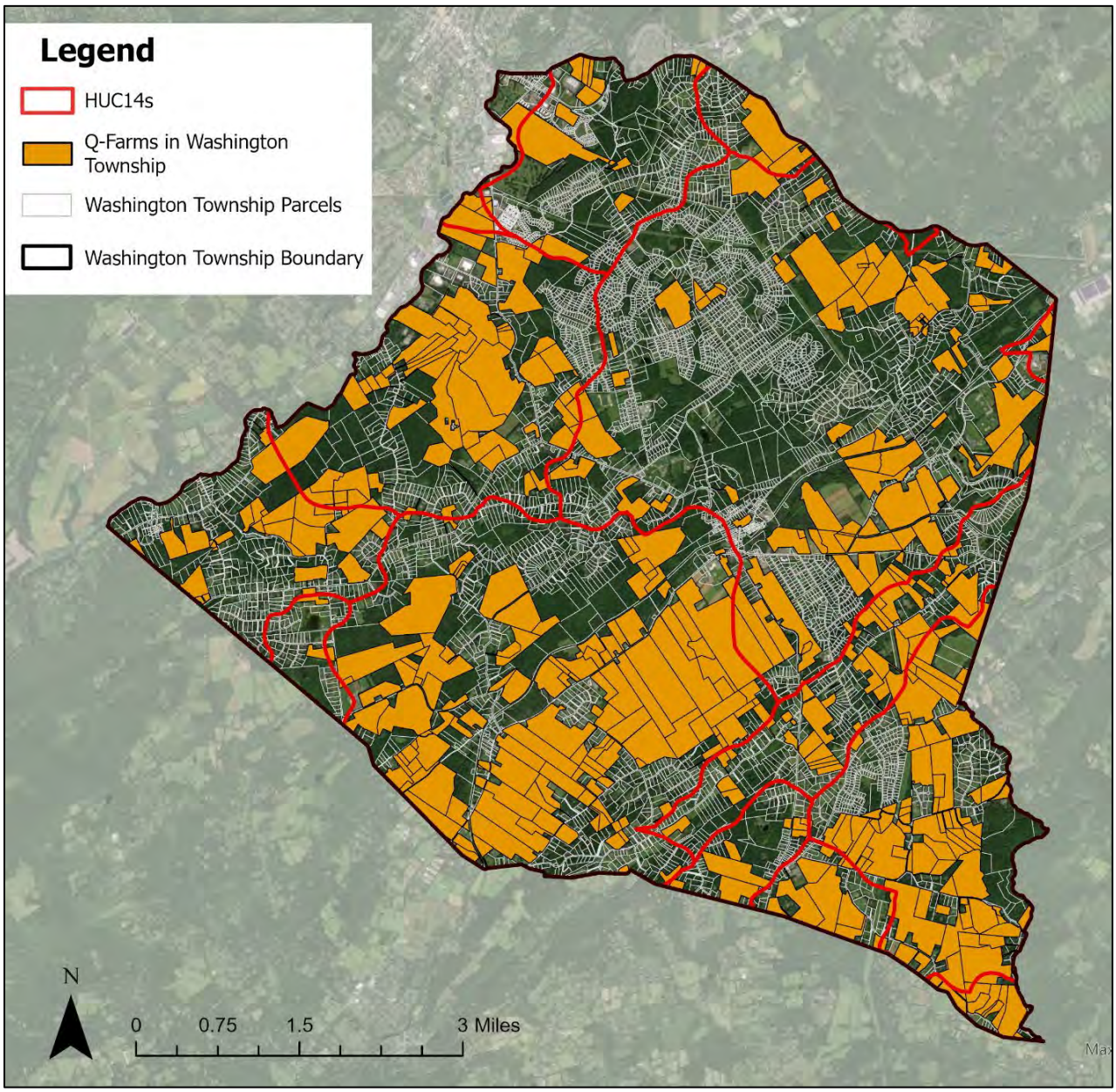


Figure 6: Q-Farm Parcels in Washington Township

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
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	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

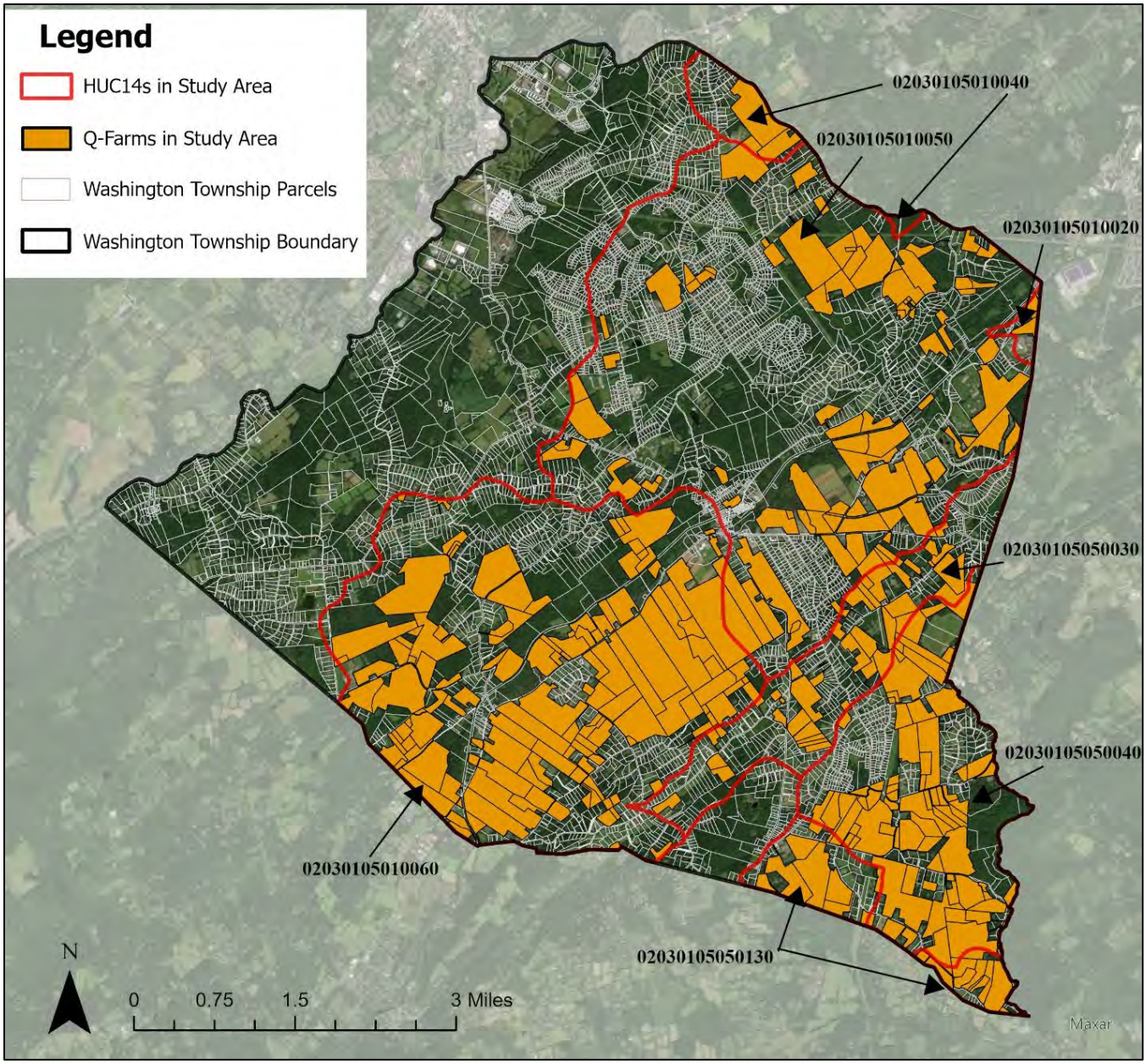


Figure 7: Q-Farm Parcels in the Study Area of Washington Township

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

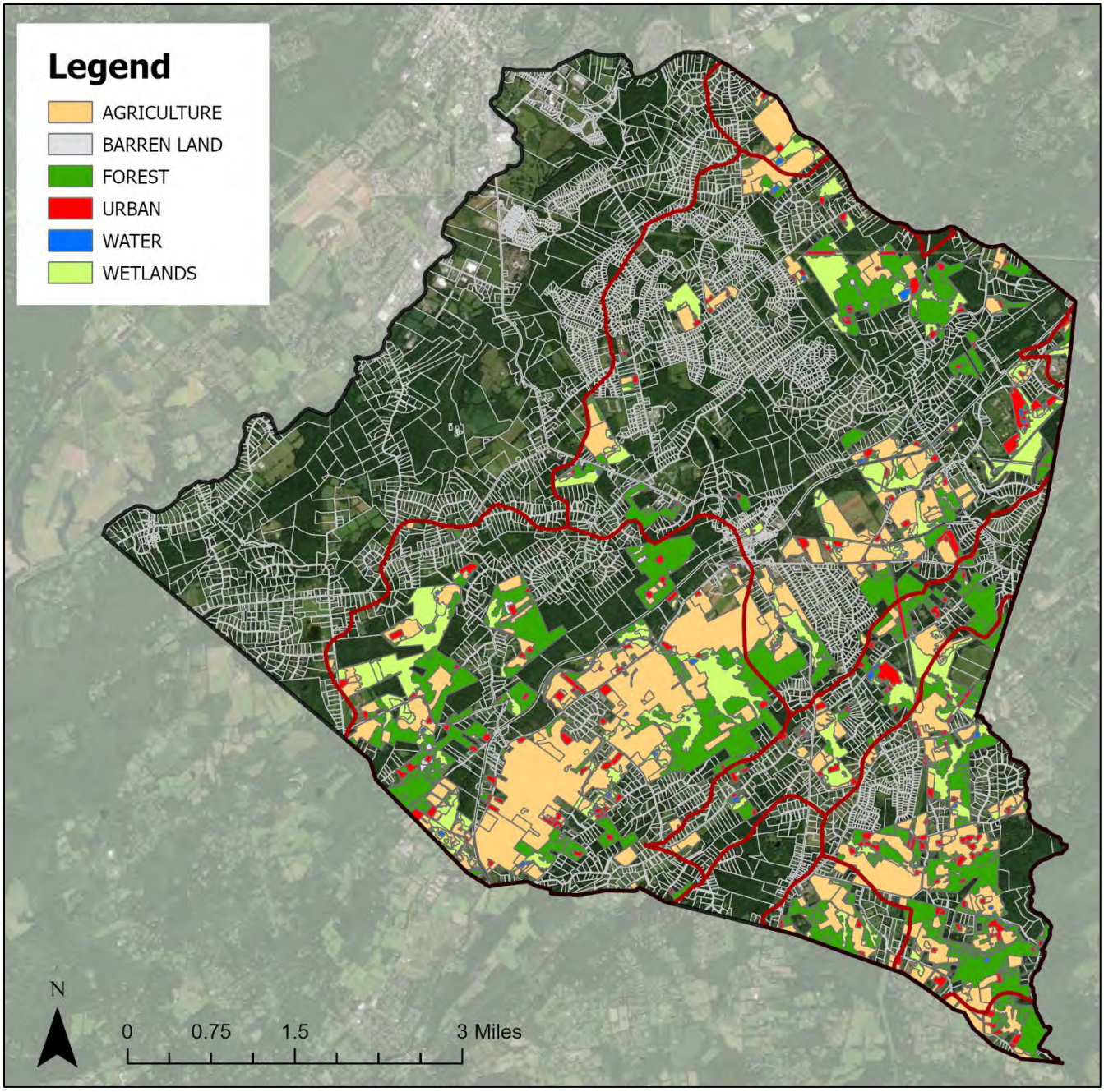


Figure 8: Land Use on Q-Farms Parcels in the Study Area of Washington Township

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**

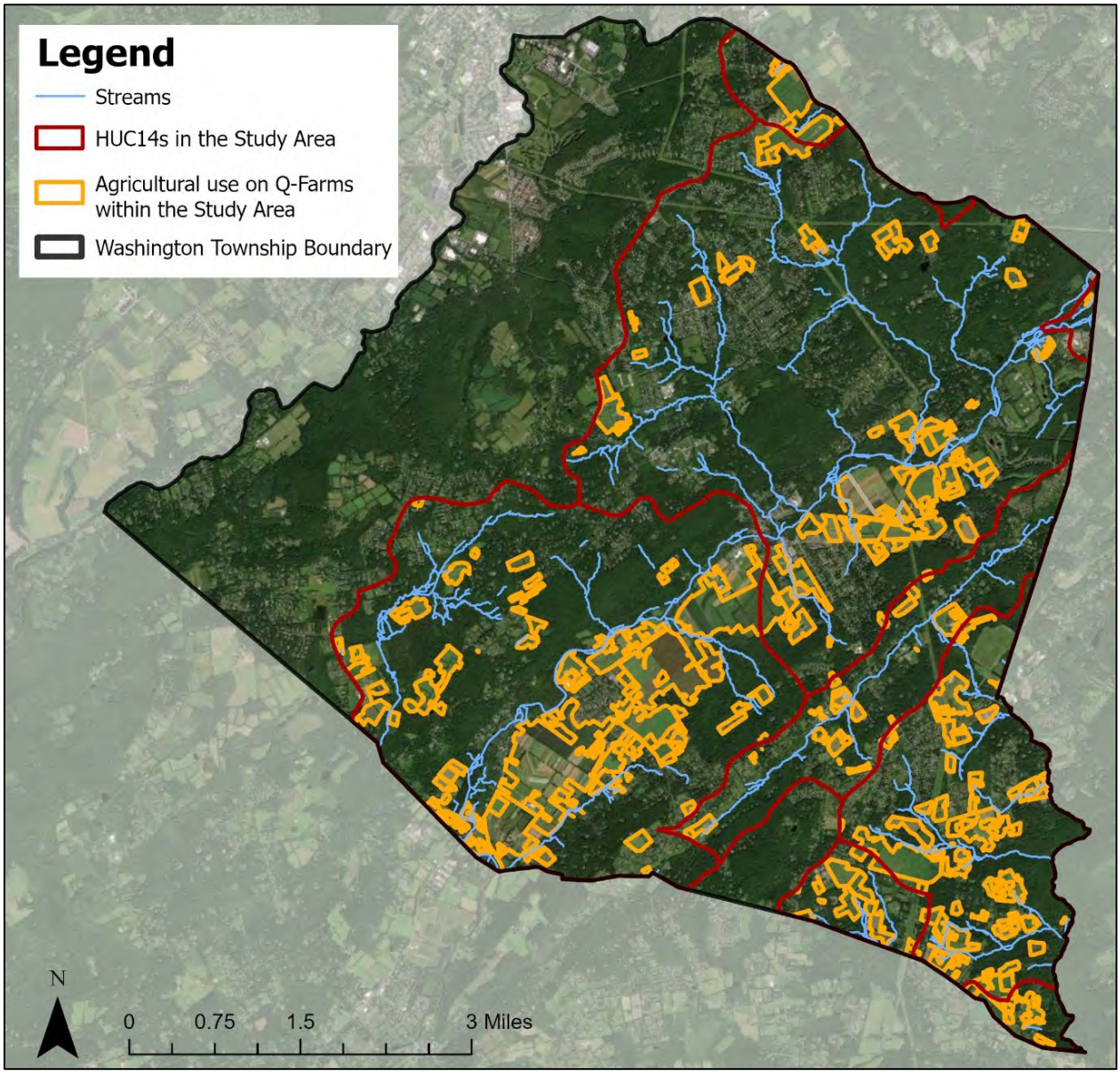


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Washington Township

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					

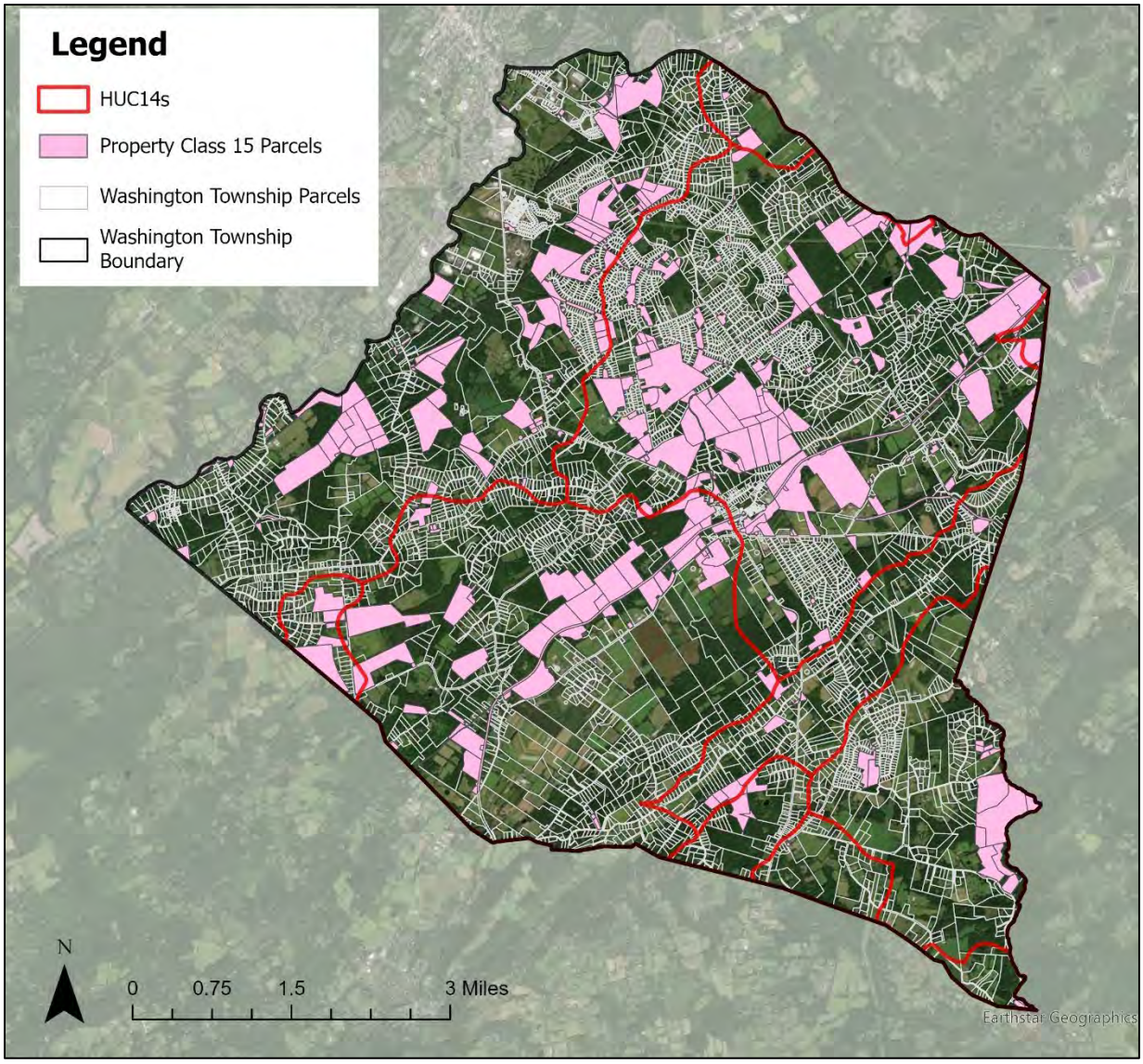


Figure 10: Property Class 15 Parcels in Washington Township

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

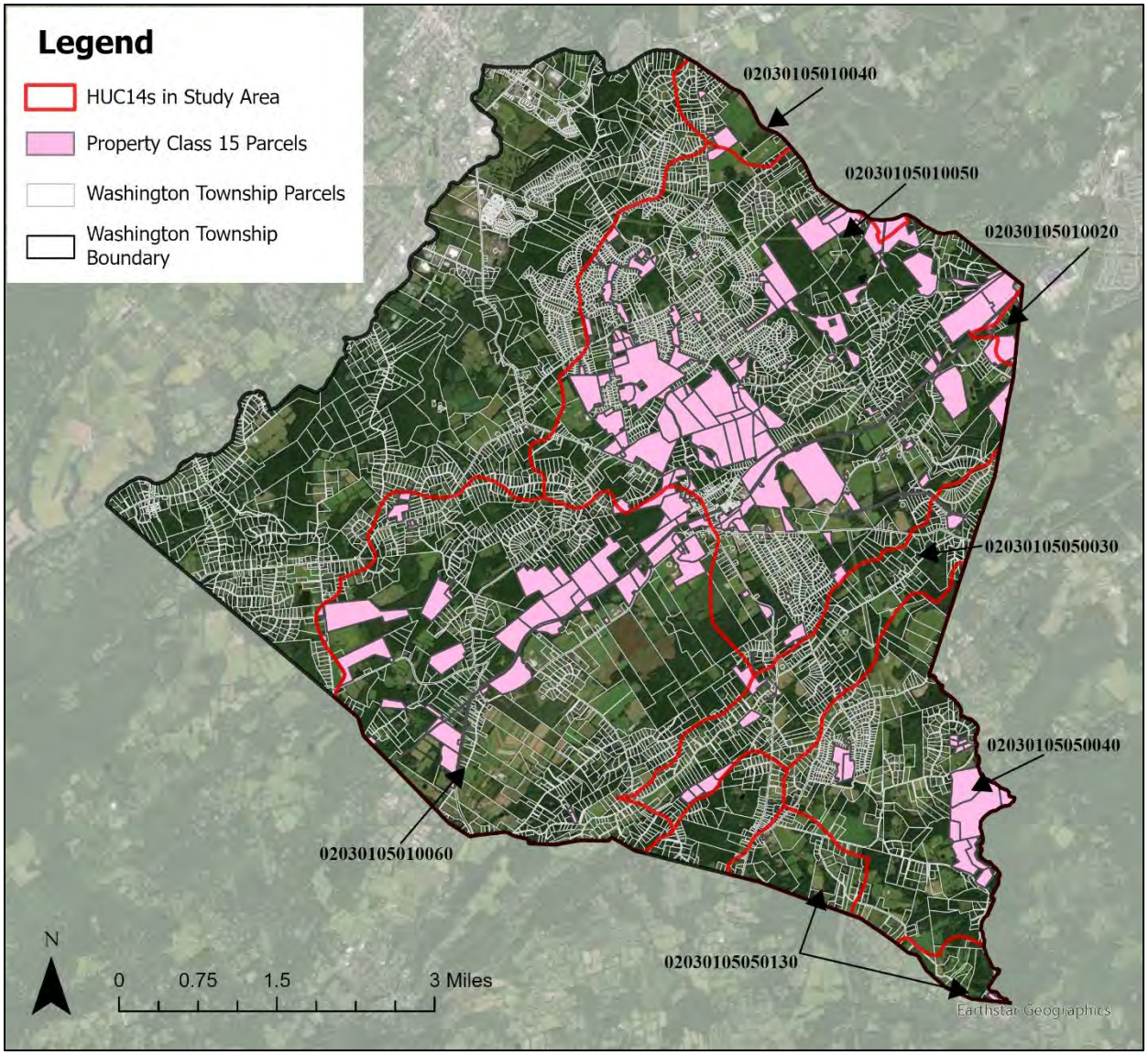


Figure 11: Property Class 15 parcels in the Study Area of Washington Township

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

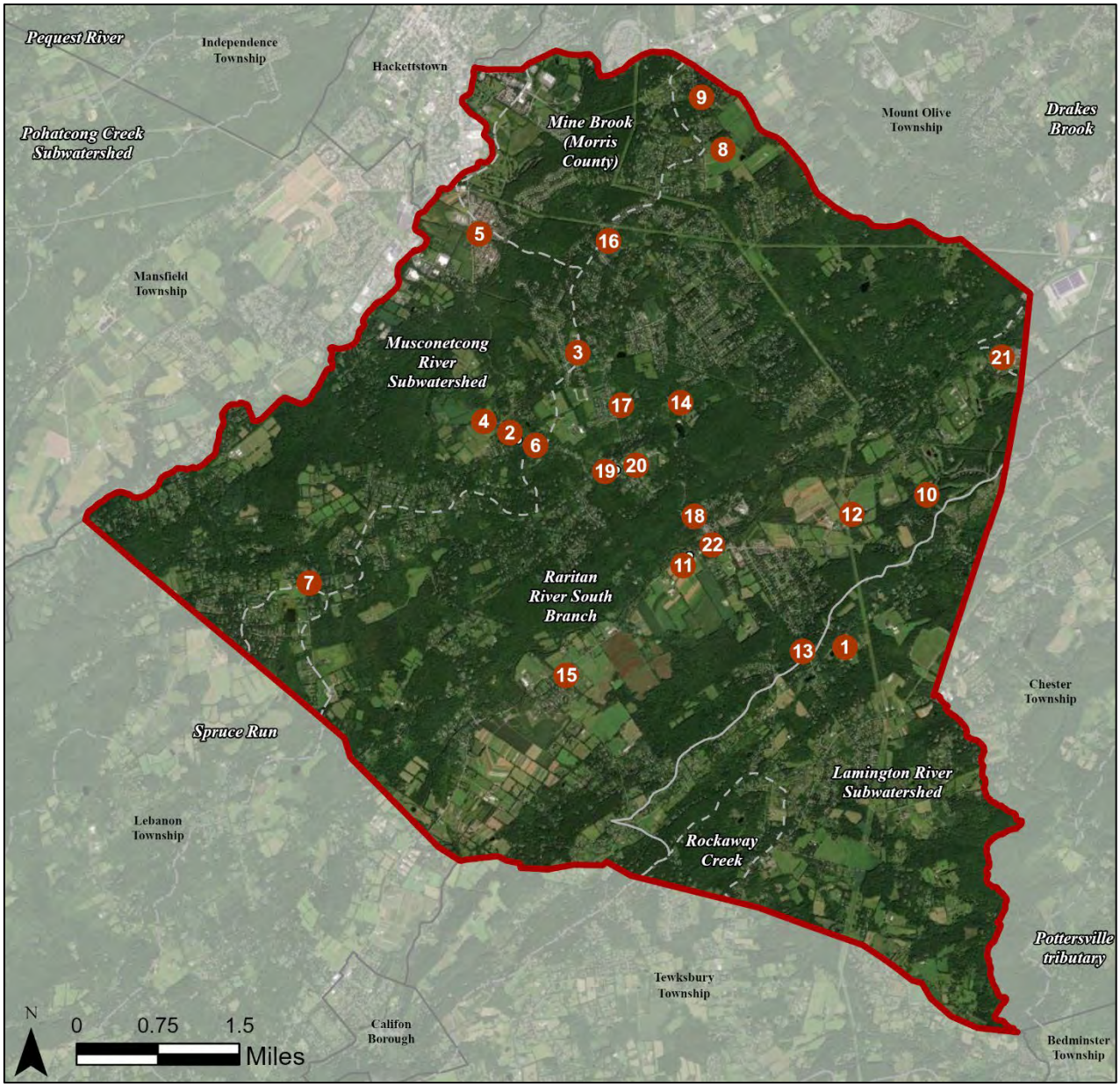


Figure 12: Sites with Green Infrastructure Opportunities in Washington Township

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

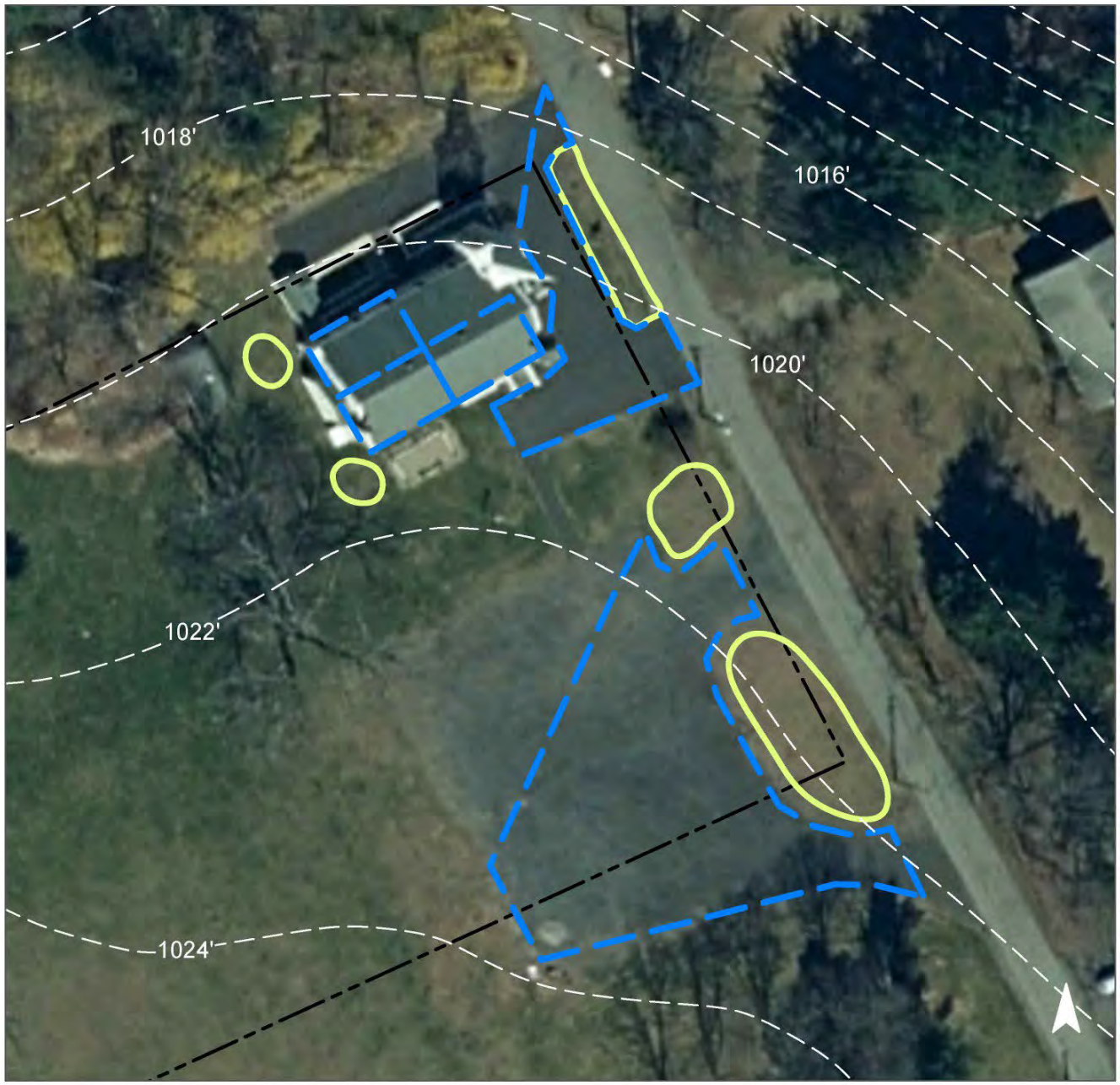
Block and Lot: Block 30, Lot 31

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

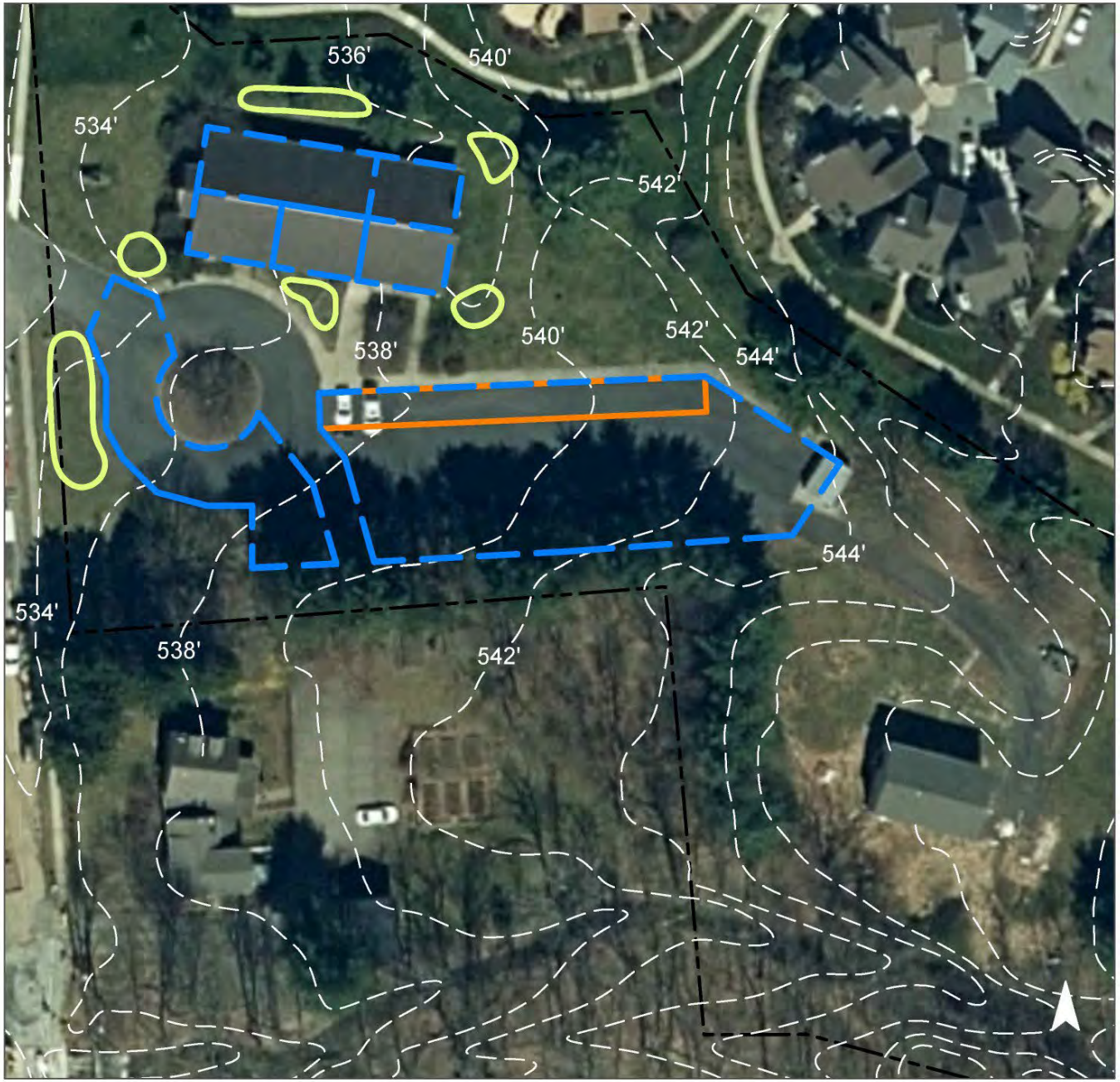
Block and Lot: Block 3.01, Lot 1

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

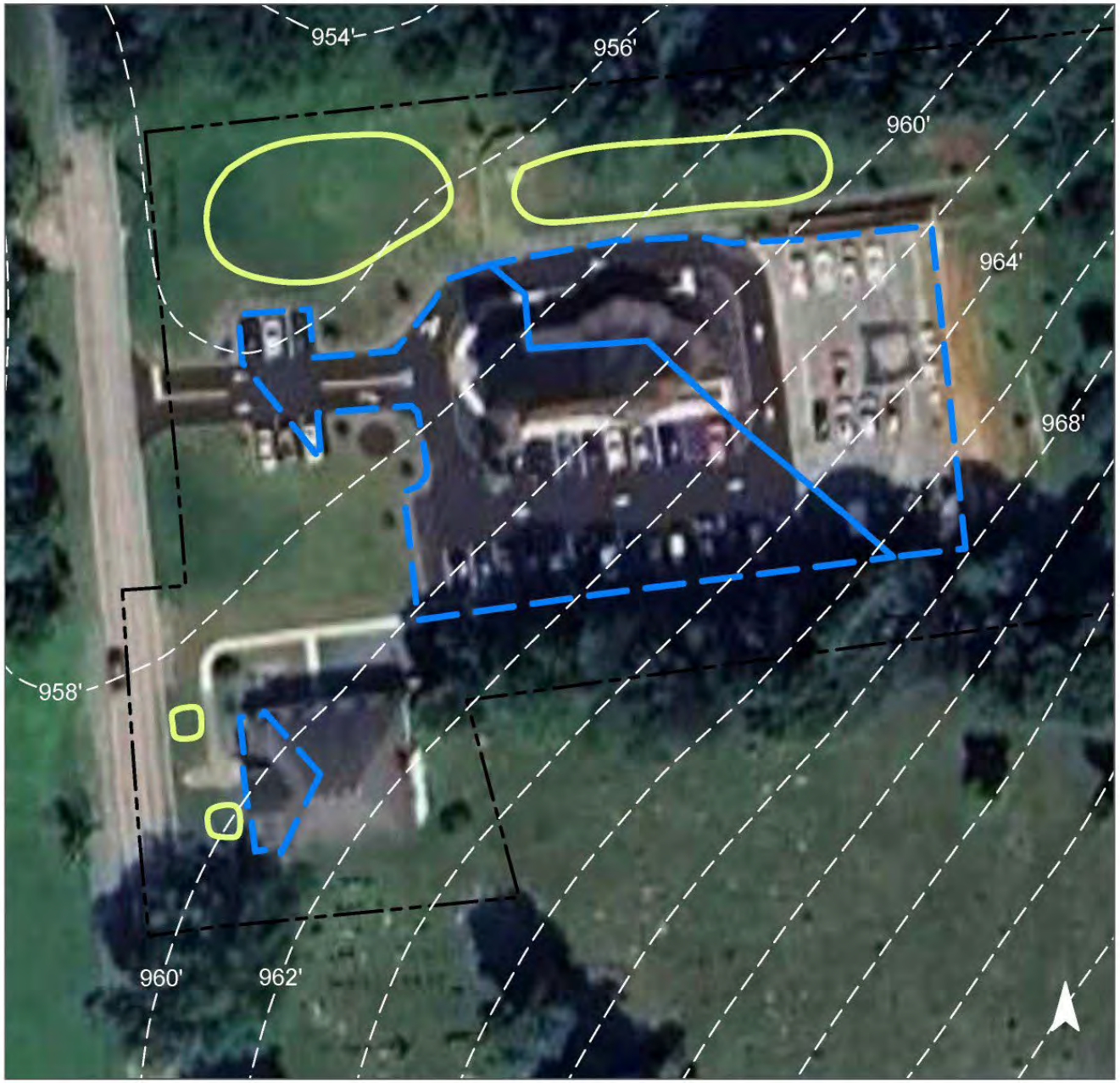
Block and Lot: Block 51, Lot 31.03

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

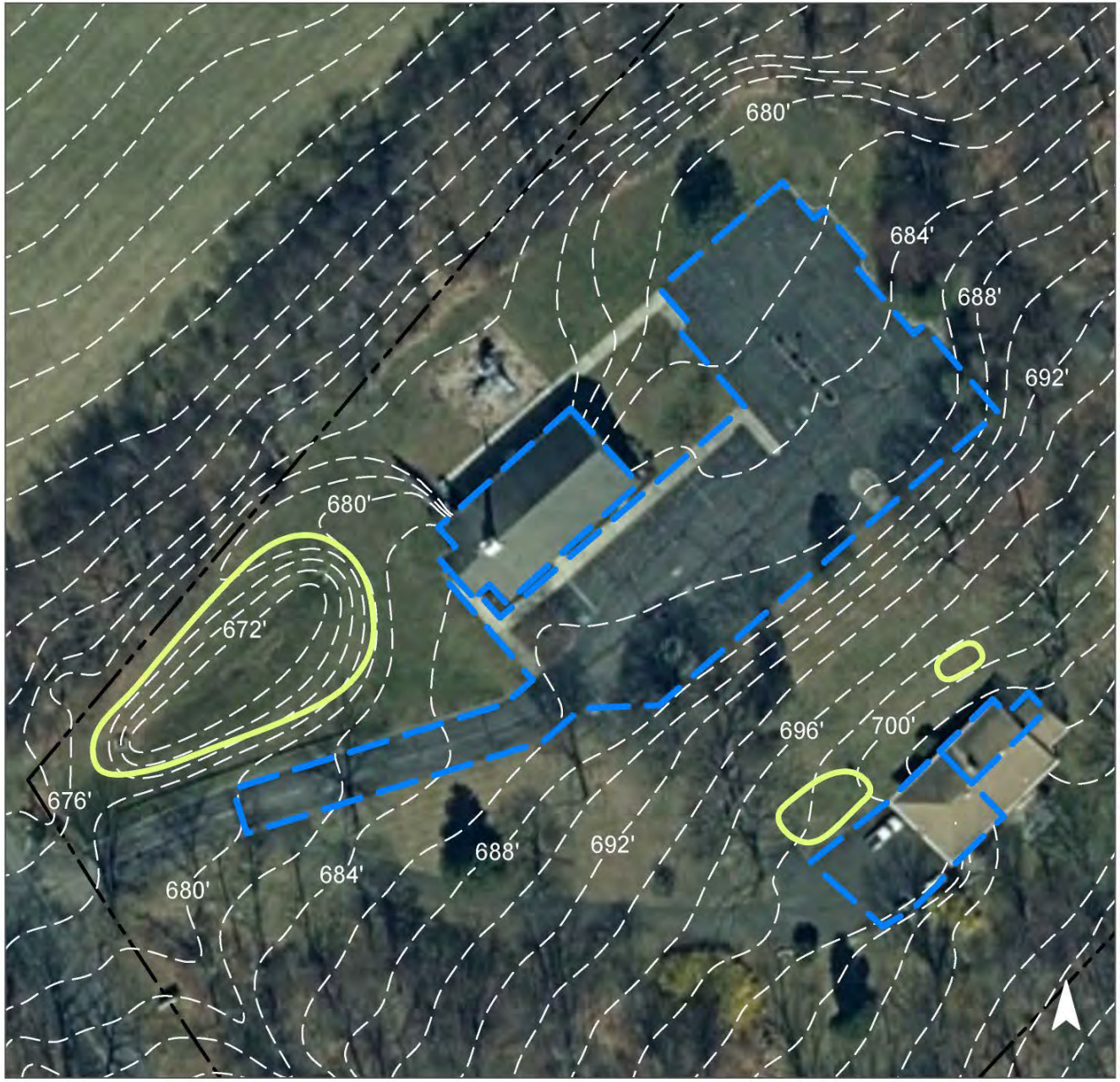
Block and Lot: Block 18.01, Lot 18

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

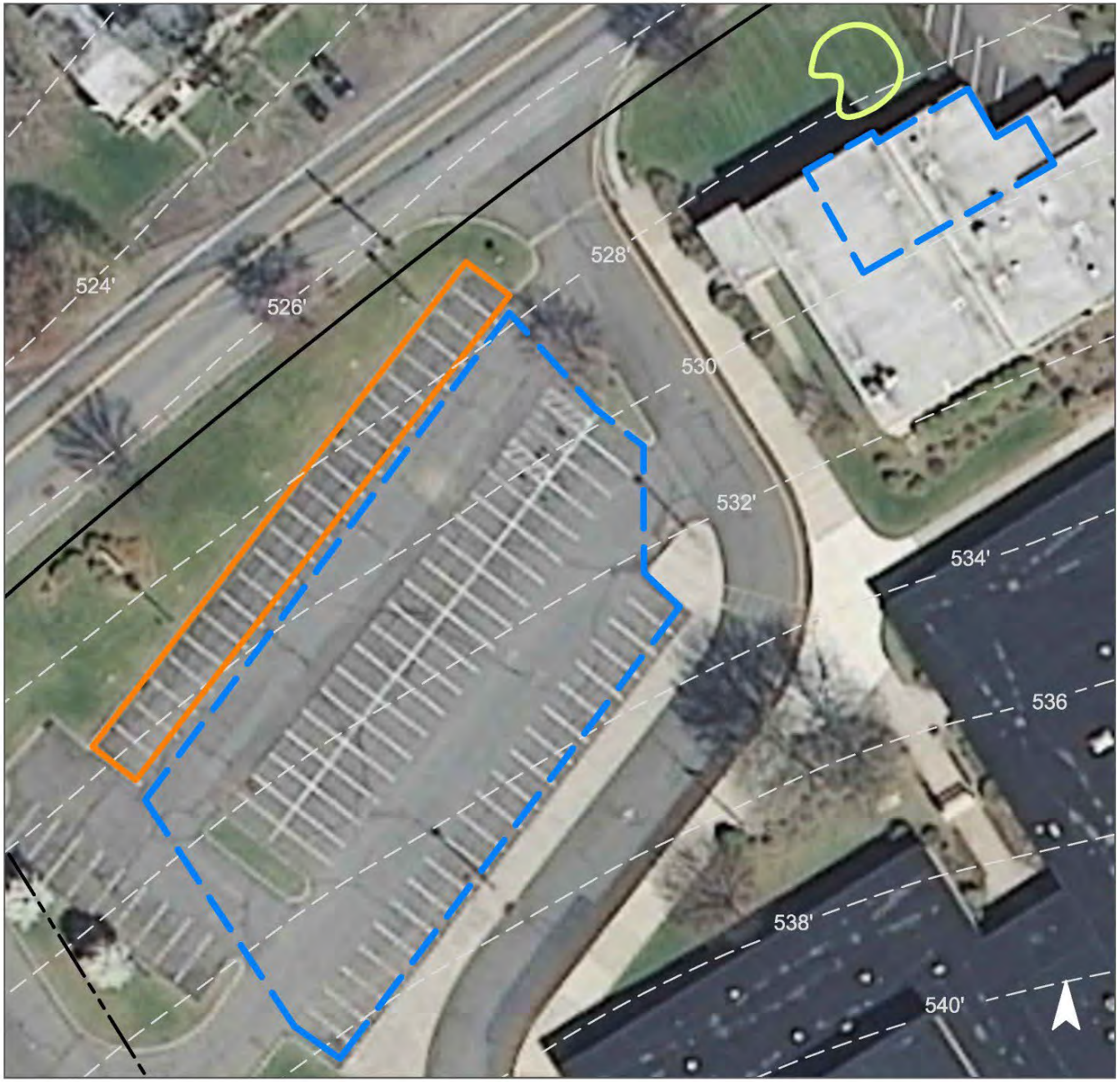
Block and Lot: Block 34 Lot 49

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

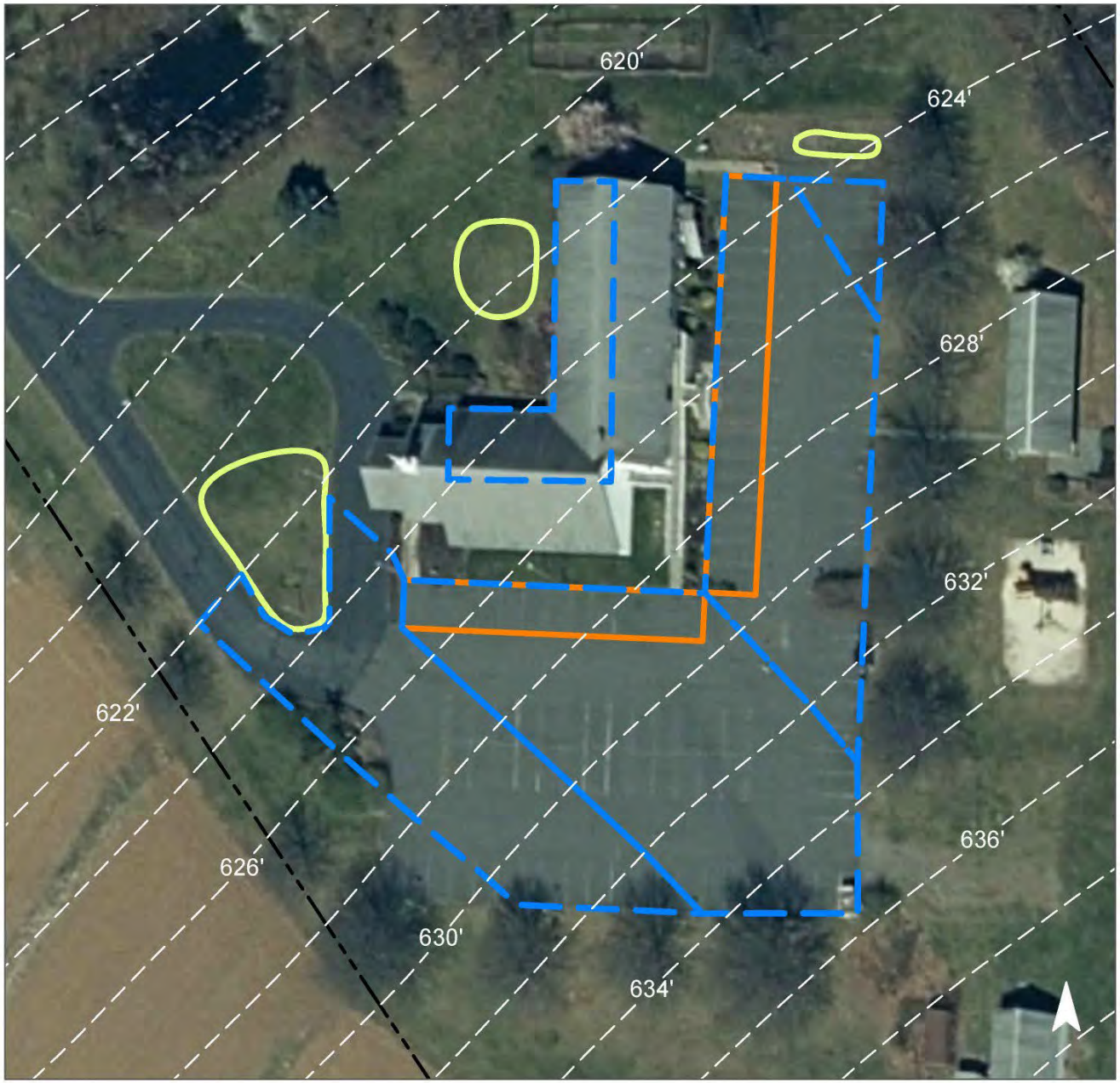
Block and Lot: Block 29, Lot 20.03

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

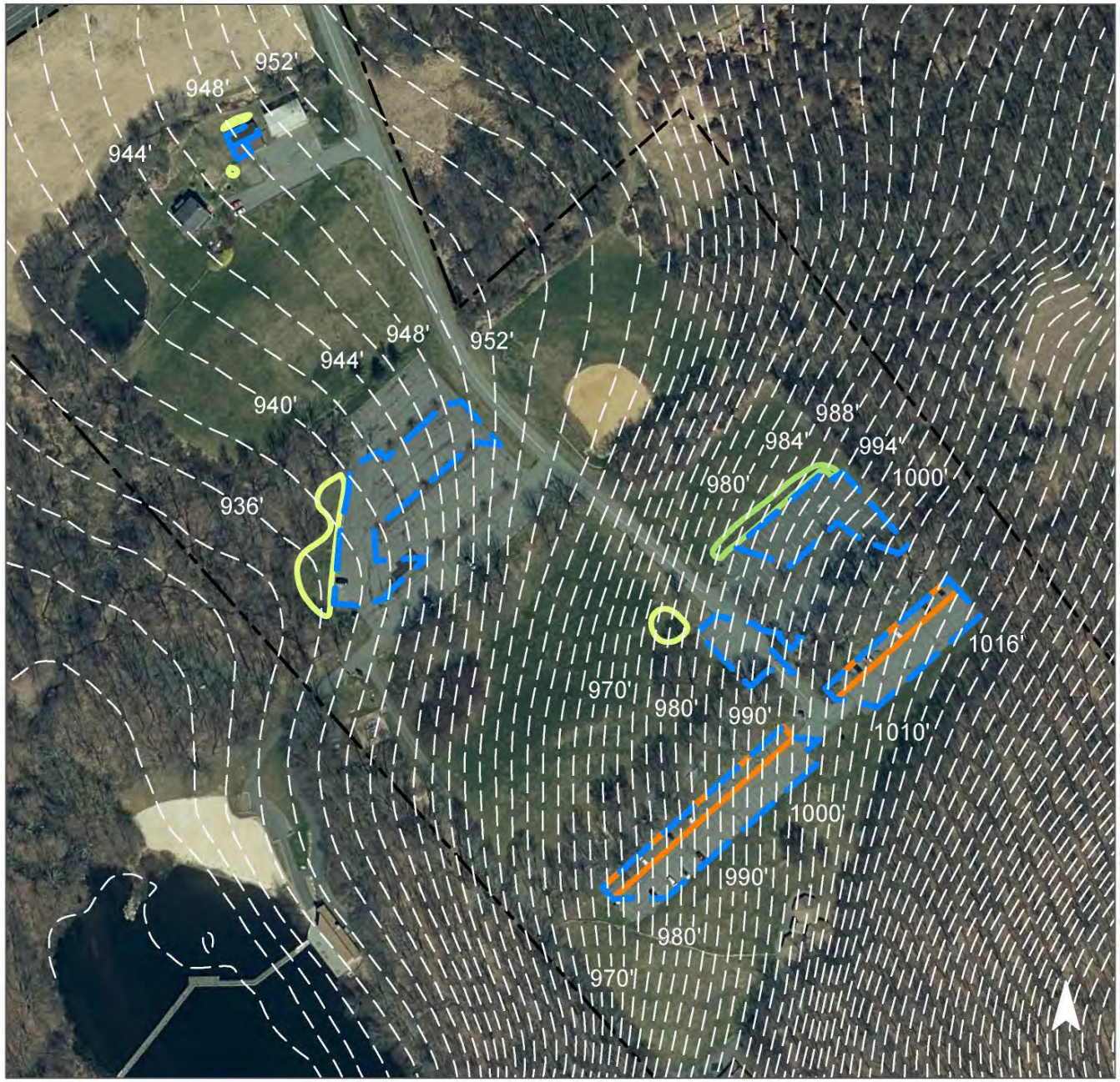
Block and Lot: Block 25, Lot 56.01,56.02

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

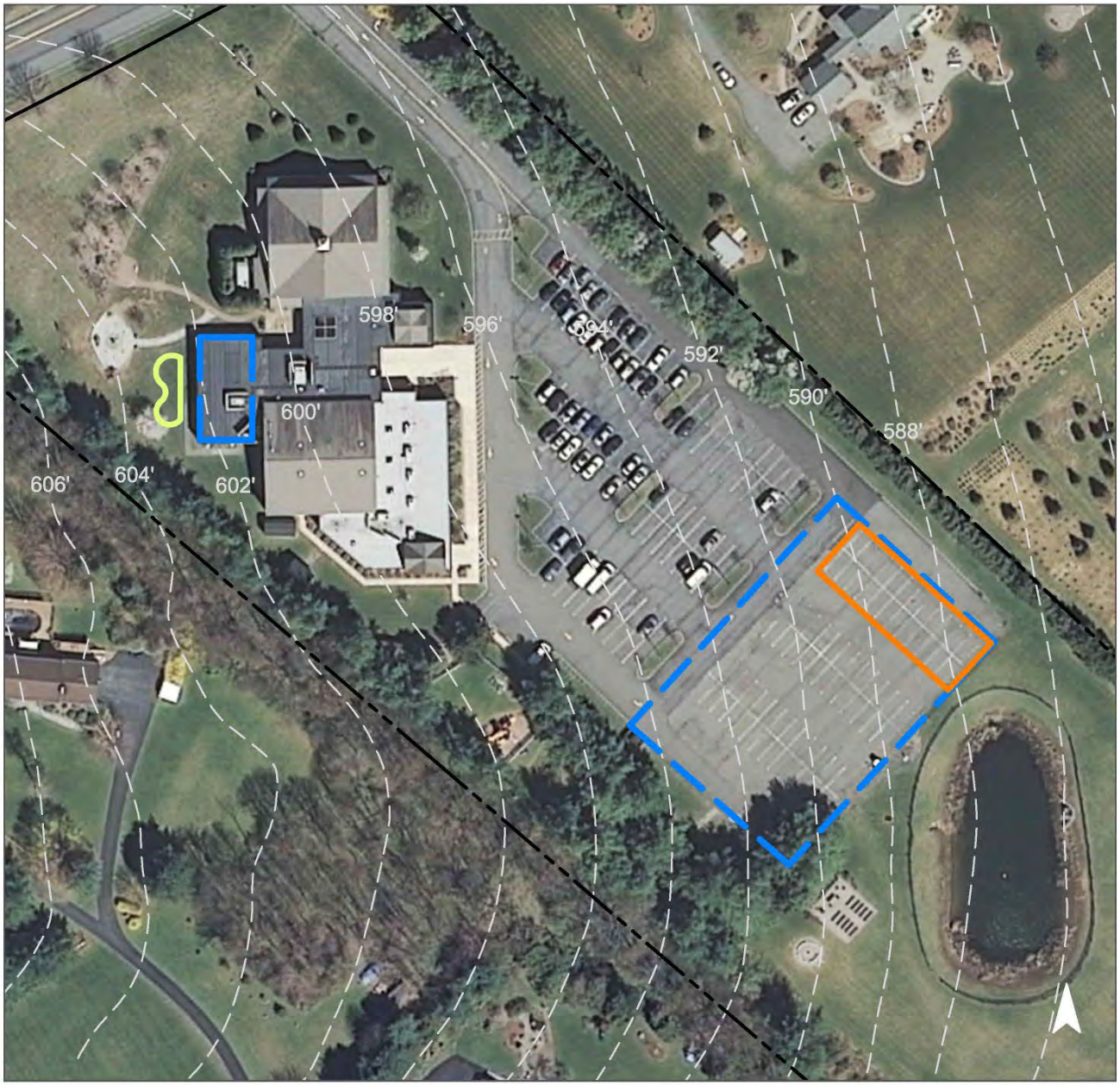
Block and Lot: Block 34 Lot 38

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

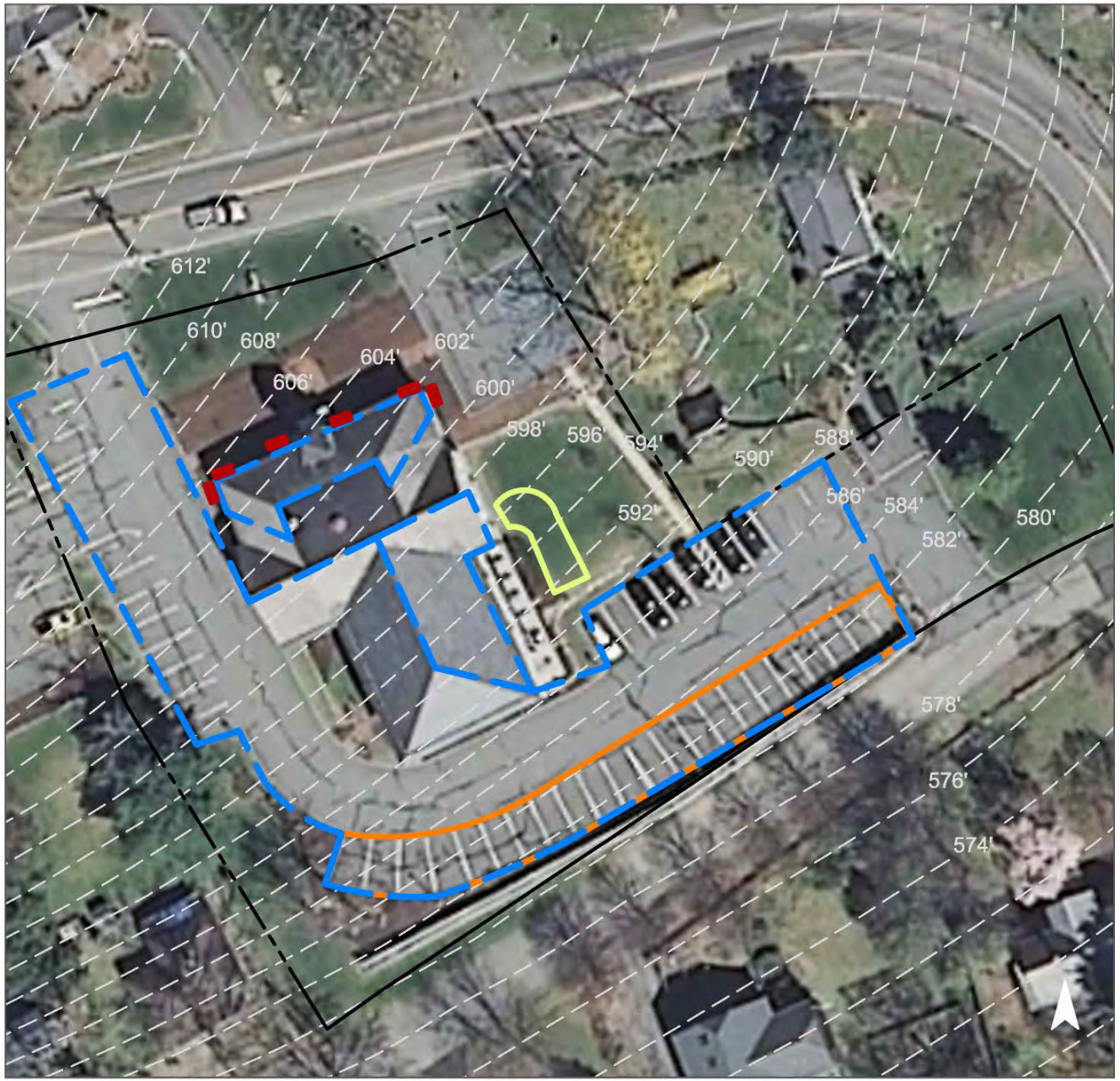
Block and Lot: Block 26 Lot 2

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

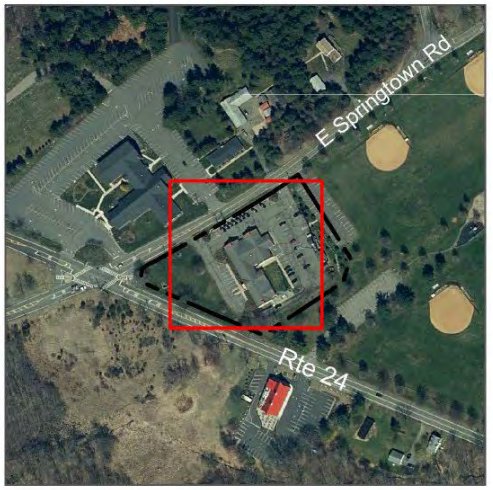
Block and Lot: Block 24, Lot 8,8.01

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'

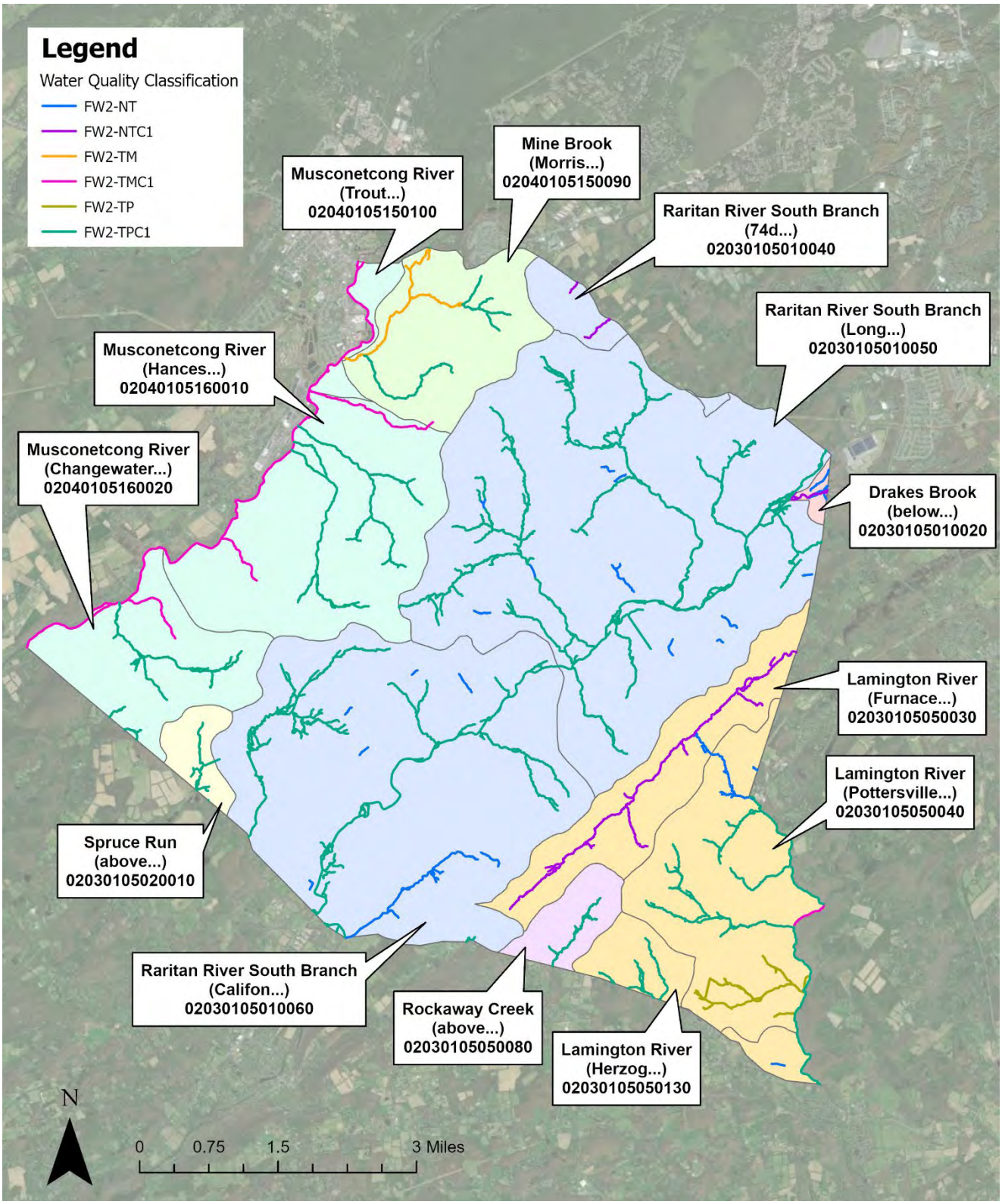


Figure 13. Water Quality Classification of Surface Waters in Washington Township

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%

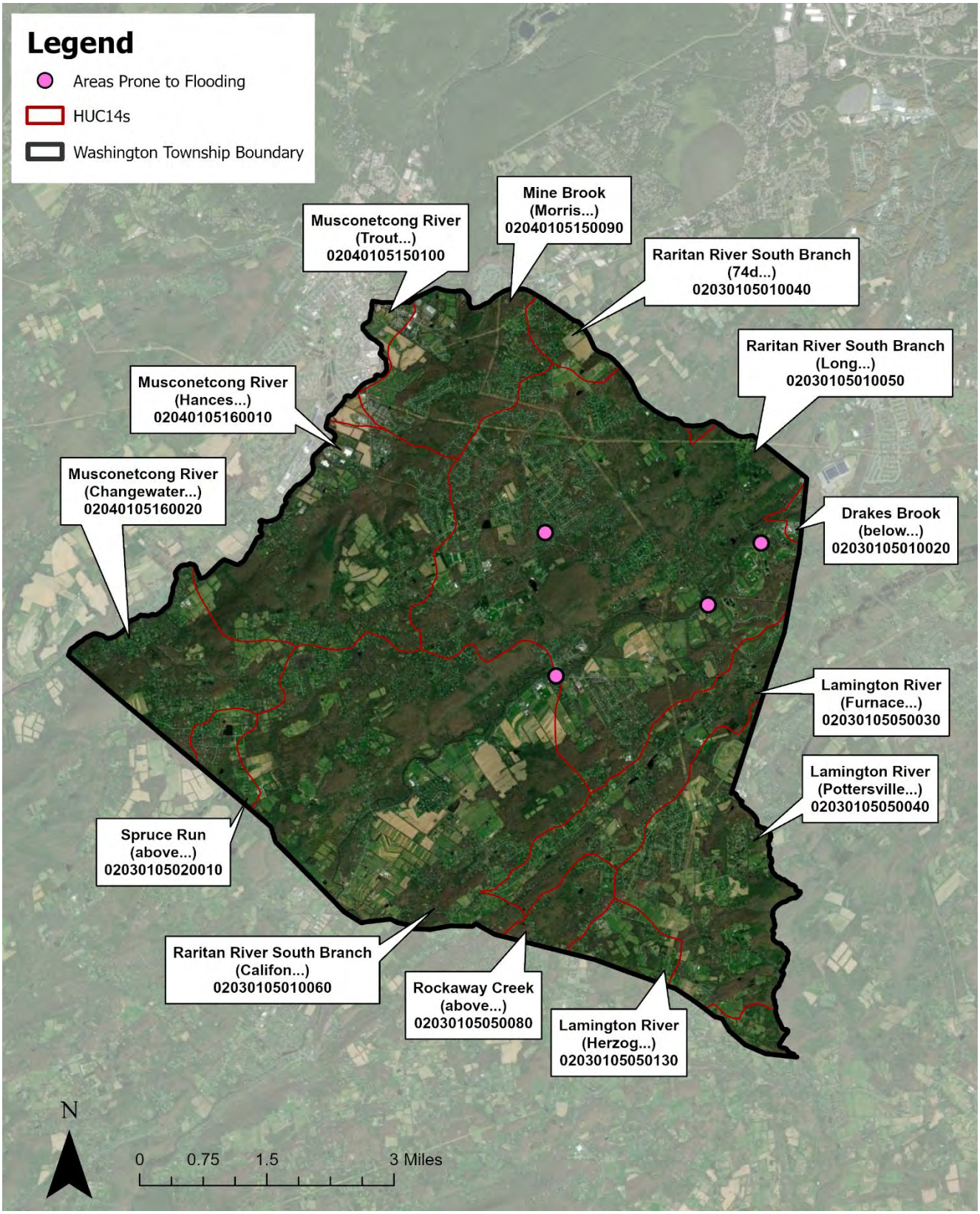


Figure 14. Areas Prone to Flooding in Washington Township