Chester Borough

Introduction

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

Chester Borough contains portions of four subwatersheds (Table 1). There are approximately 2.3 miles of rivers and streams within the municipality; these include tributaries to Burnett Brook, Hacklebarney Brook, tributaries to the Lamington River, and Peapack Brook and its tributaries. Chester Borough is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area (WMA) 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Chester Borough

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

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

A geographic information system (GIS) was used to visualize data pertaining to the existing stormwater infrastructure, land cover, watershed delineation, and water quality classification and impairments within separate layers. Datasets from the New Jersey Department of Environmental Protection's (NJDEP's) GIS database was used to populate the watershed inventory map, from which the relevant data were isolated. Datasets representing Chester Borough's existing

stormwater infrastructure were provided by the municipality and were manipulated, if necessary, for the specific purposes of this report.

Analysis by Municipality

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

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

The Q-Farms in the study area of Chester Borough, which includes the entire municipality, have been identified (see Figure 6). Table 5 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 7 illustrates the land use on the Q-Farms, which is summarized in Table 6. There are 31.3 acres of agricultural land use in Chester Borough, all of which lie within the study area for this Watershed Restoration and Protection Plan. There are 9 Q-Farms in Chester Borough, totaling 108.0 acres. Within the 9 Q-Farms, there are approximately 27.2 acres of agricultural land use. Aerial photography (see Figure 8) was used to identify areas where riparian buffers may be able to be enhanced to further protect the waterways from agricultural impacts. Based upon the aerial photograph and site visits, recommendations for the agricultural lands in the study area in Chester Borough are presented in Table 7.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. Four HUC14s are included in the study area (02030105050030, 02030105050040, 02030105060020, 02030105060050). Within these four HUC14s, there are 56.2 acres of buildings and 66.3 acres of roadway. The Watershed Restoration and Protection Plan recommends managing stormwater runoff from ¼ of 25% of the building rooftops. For the study area within Chester Borough, approximately 3.5 acres of rooftop runoff would be managed with 0.70 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study

area within Chester Borough, approximately 6.6 acres of roadway would be managed, or 1.8 miles of roadway.

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

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

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

Water Quality Classification

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

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

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

Finally, there are three antidegradation classifications assigned to all New Jersey surface waters. Outstanding National Resource Waters (ONRW) is the most protective classification and applies to all F1 and PL waters. No degradation is permitted in ONRW waters. Category One waters (C1) are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. Category Two waters (C2) permit some measurable degradation in water quality, but the changes must be limited and justified. C2 is the default classification for all surface waters that are not categorized as F1, PL, or C1.

There are three classifications that apply to the streams in Chester Borough. Figure 11 depicts the water quality classifications of surface waters throughout Chester Borough and Table 9 summarizes the total miles and percentage of each surface water quality classification in the municipality.

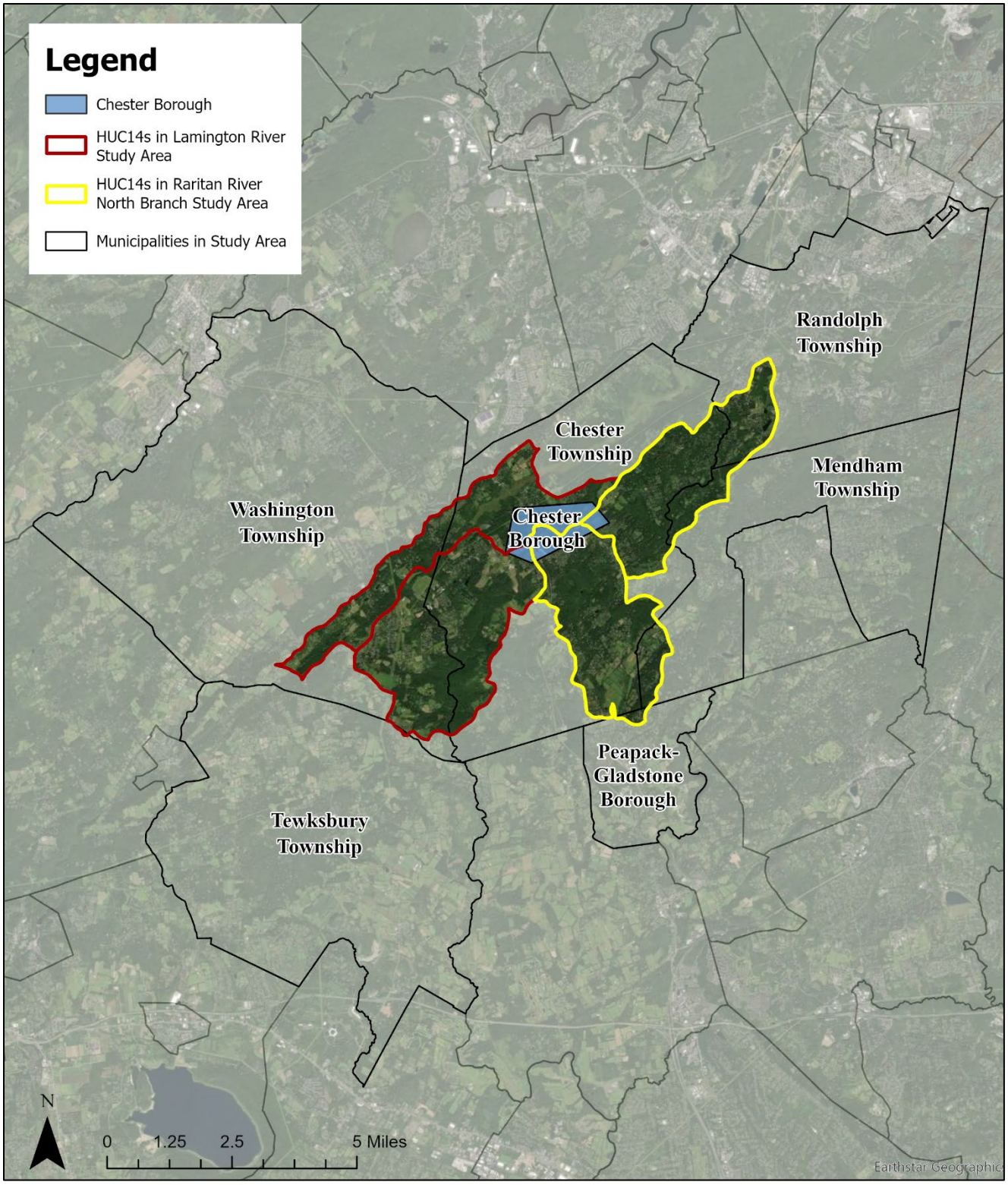


Figure 1: Municipalities in the Study Area

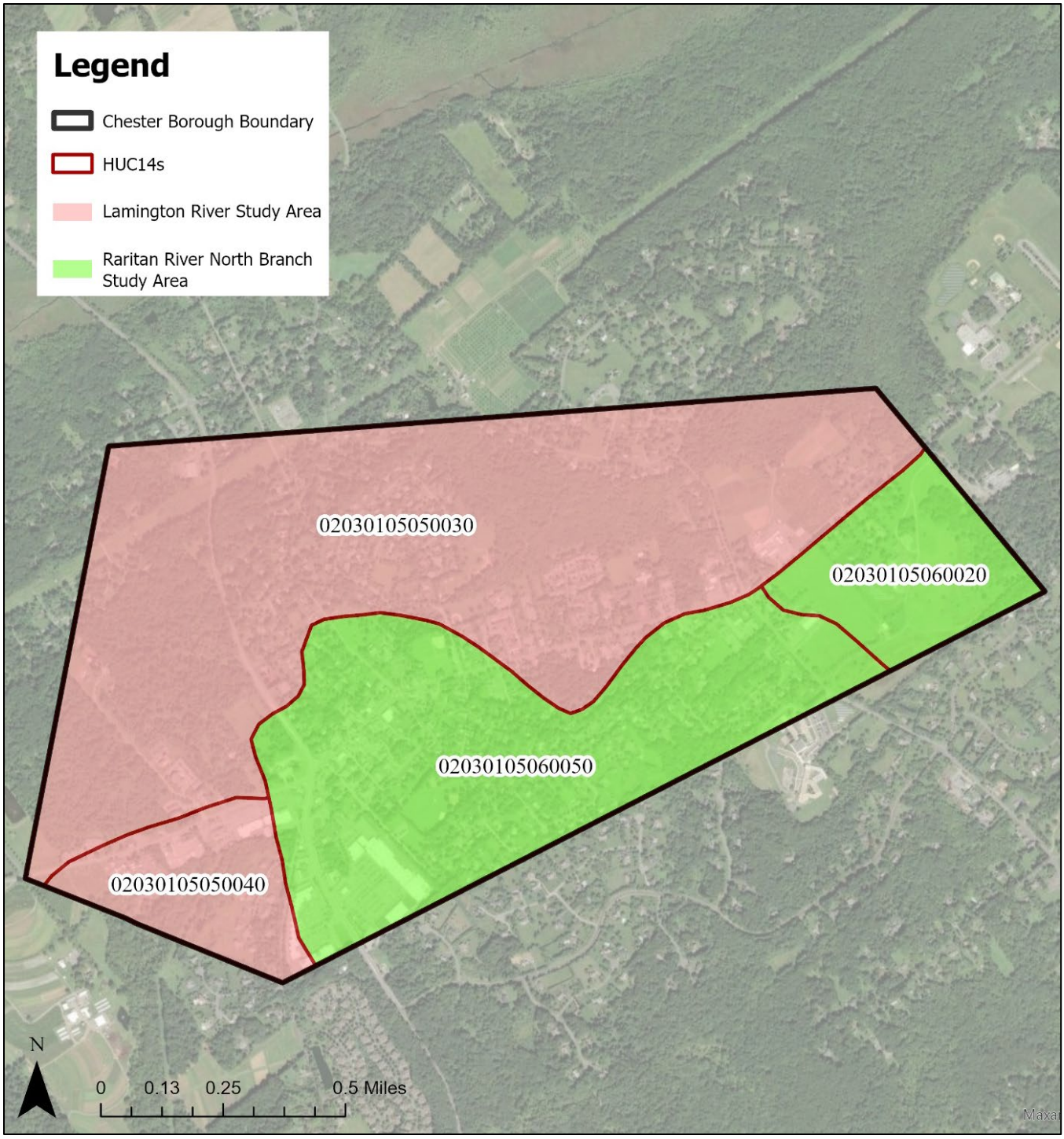


Figure 2: Portions of four HUC14s are in Chester Borough

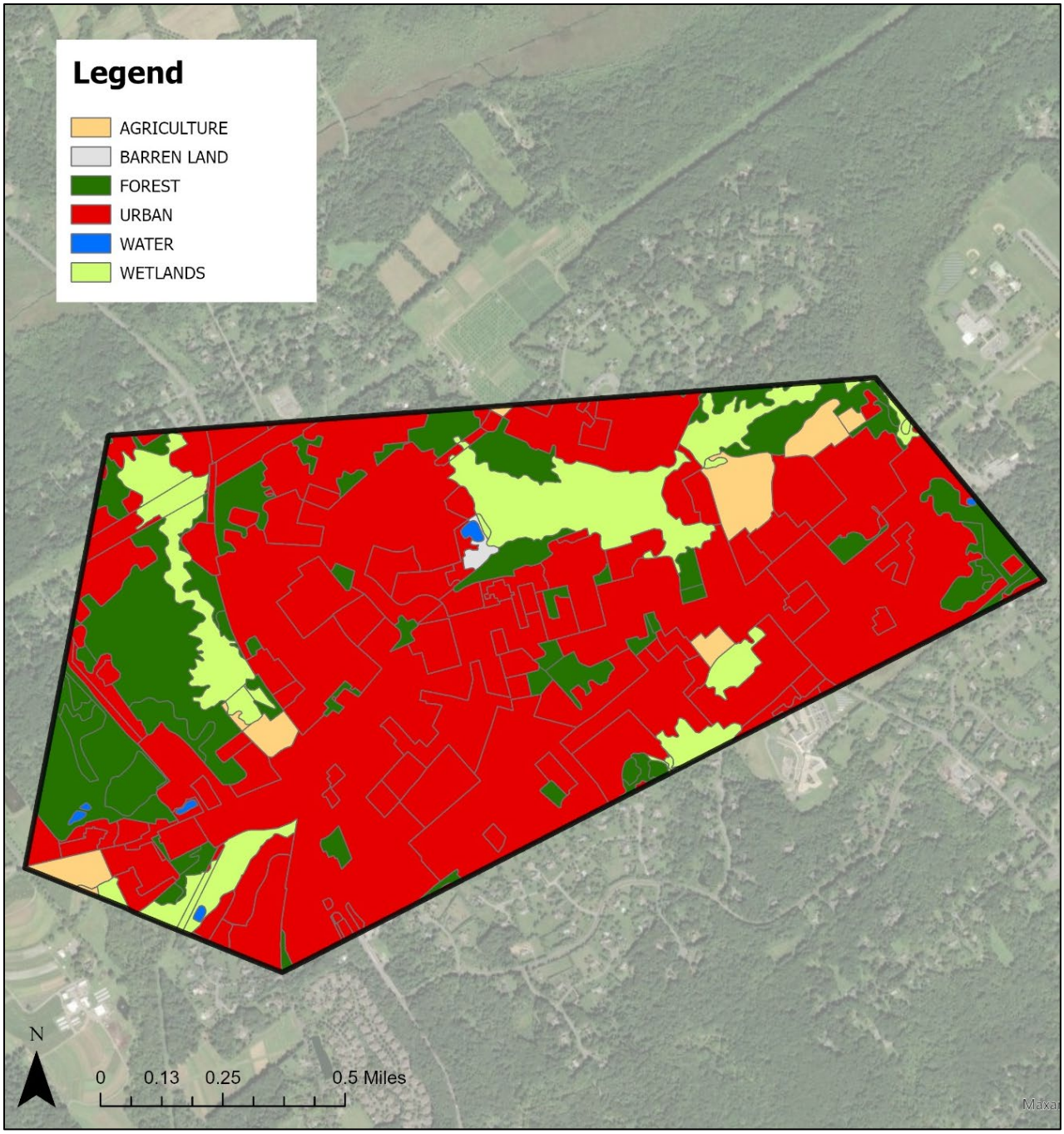


Figure 3: Land Use in Chester Borough

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

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

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

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Chester Borough that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These surfaces include rooftops, roadways, sidewalks, and other paved areas. These impervious cover values were used to estimate the impervious coverage for Chester Borough. Based upon the NJDEP impervious surface data, Chester Borough has impervious cover totaling 25.7%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Chester Borough is shown in Figure 4.

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

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

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

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

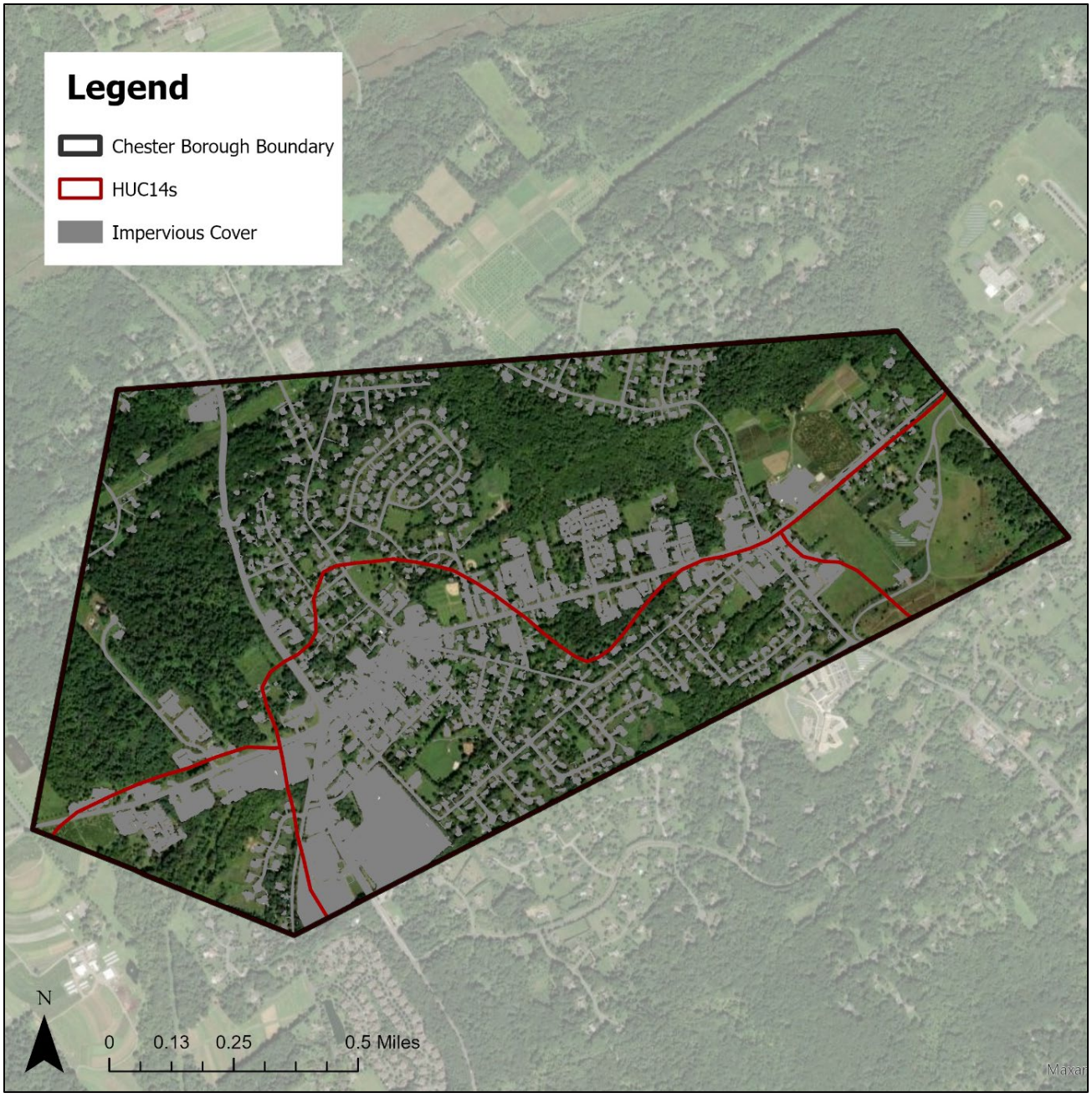


Figure 4: Impervious Cover in Chester Borough

Table 3: Impervious Cover Analysis by HUC14 for Chester Borough

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

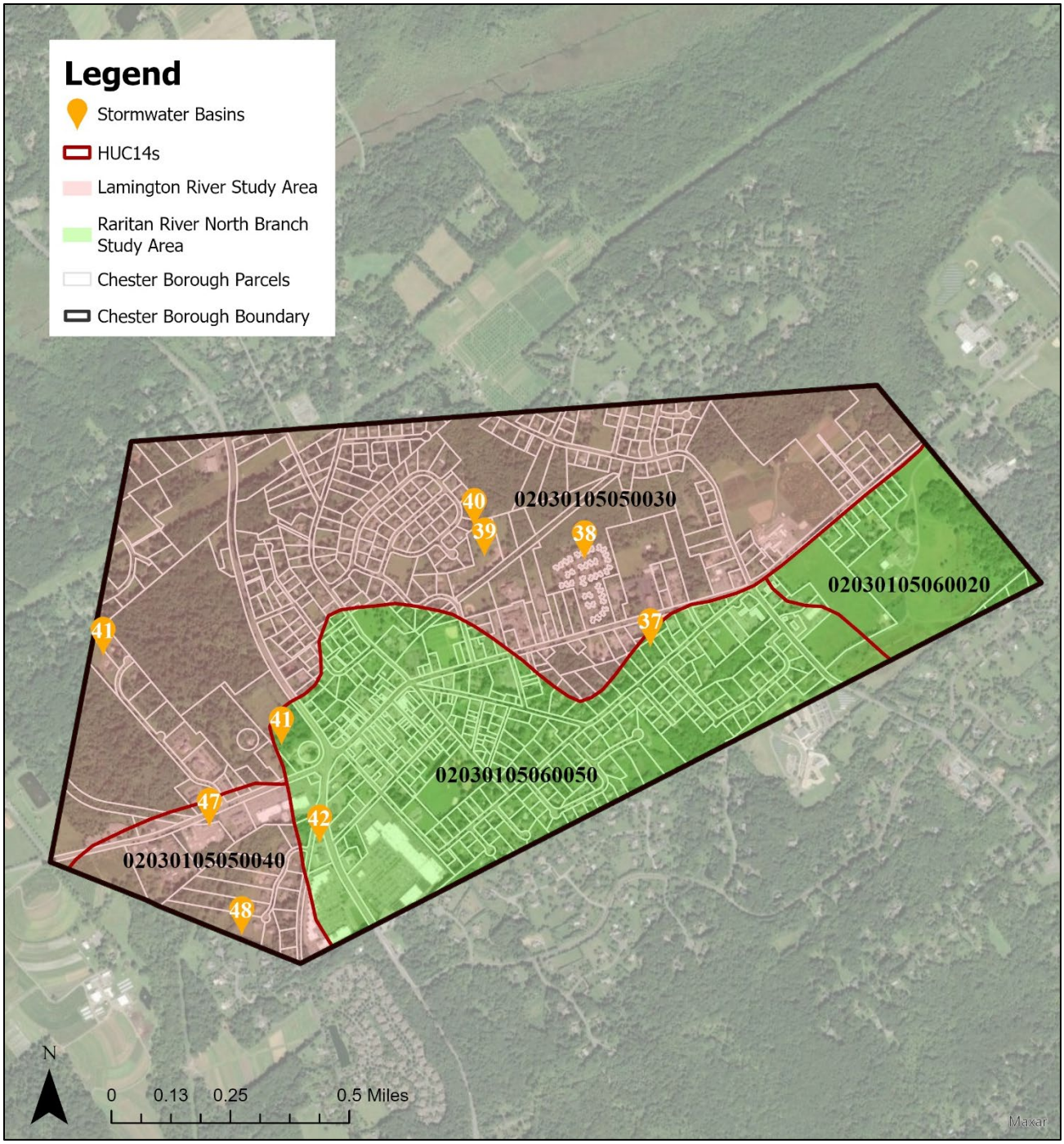


Figure 5: Stormwater Facilities in the Study Area of Chester Borough

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

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

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

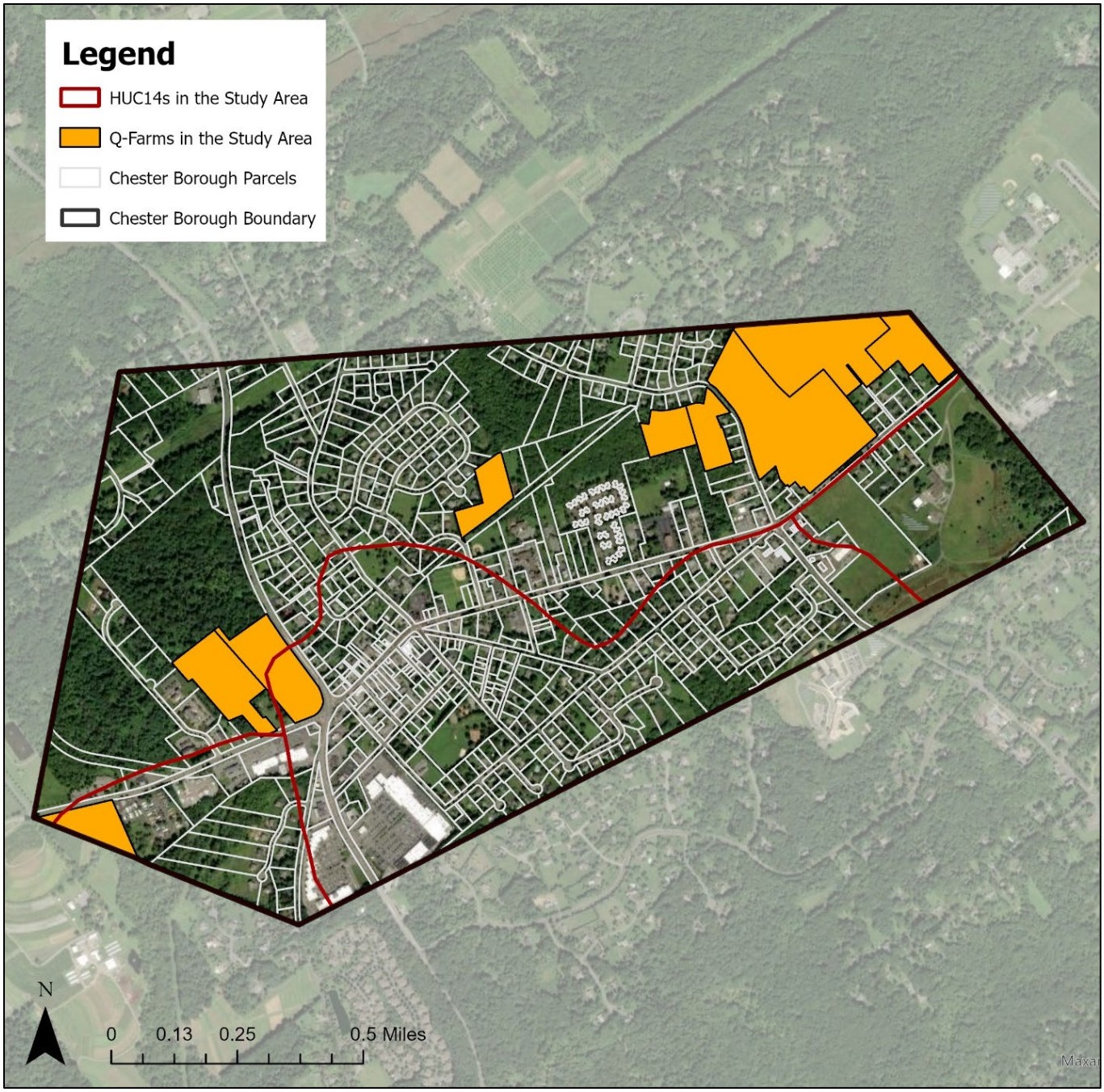


Figure 6: Q-Farm Parcels in the Study Area of Chester Borough

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

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

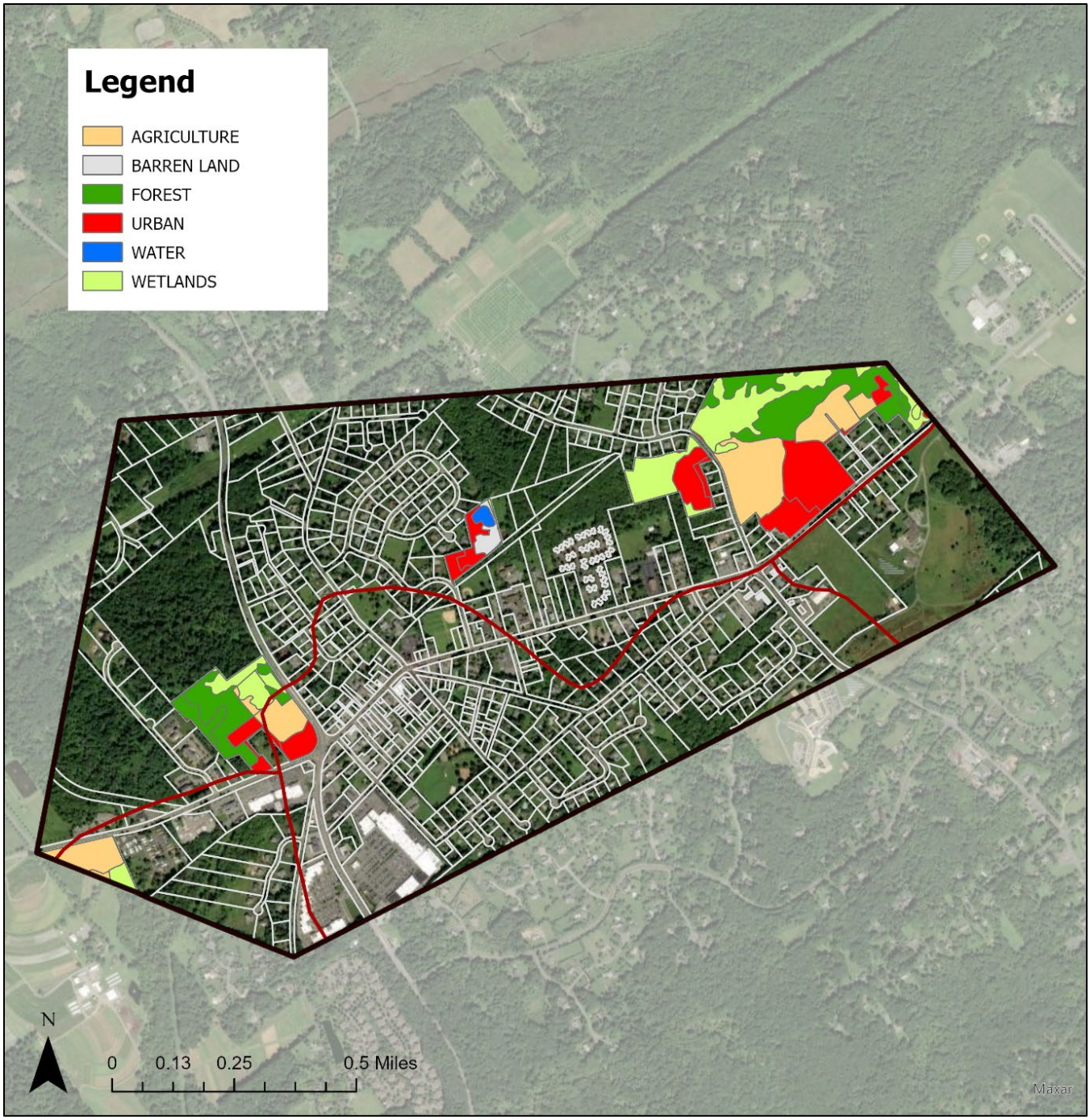


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Chester Borough

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

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

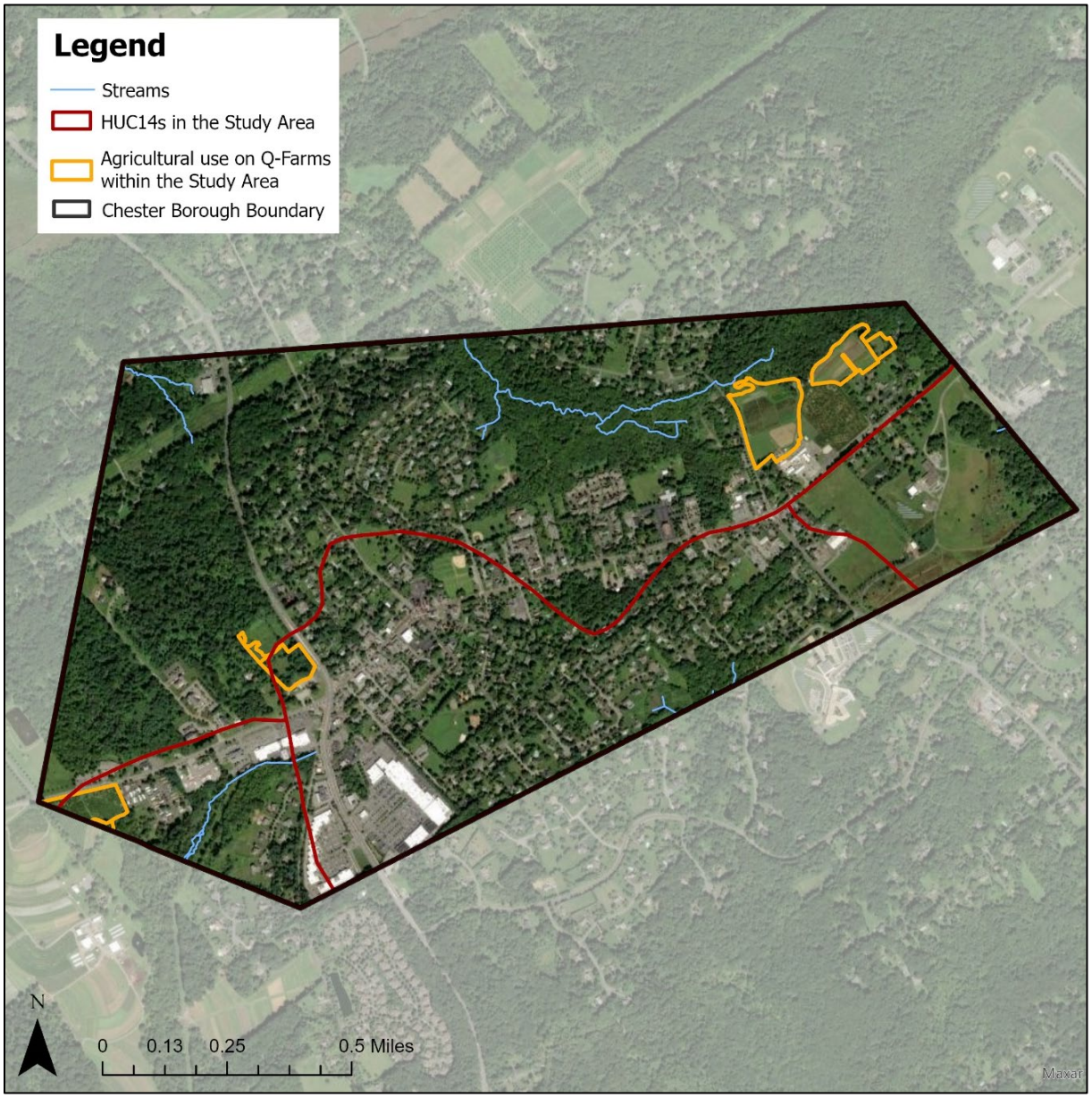


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Chester Borough

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

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

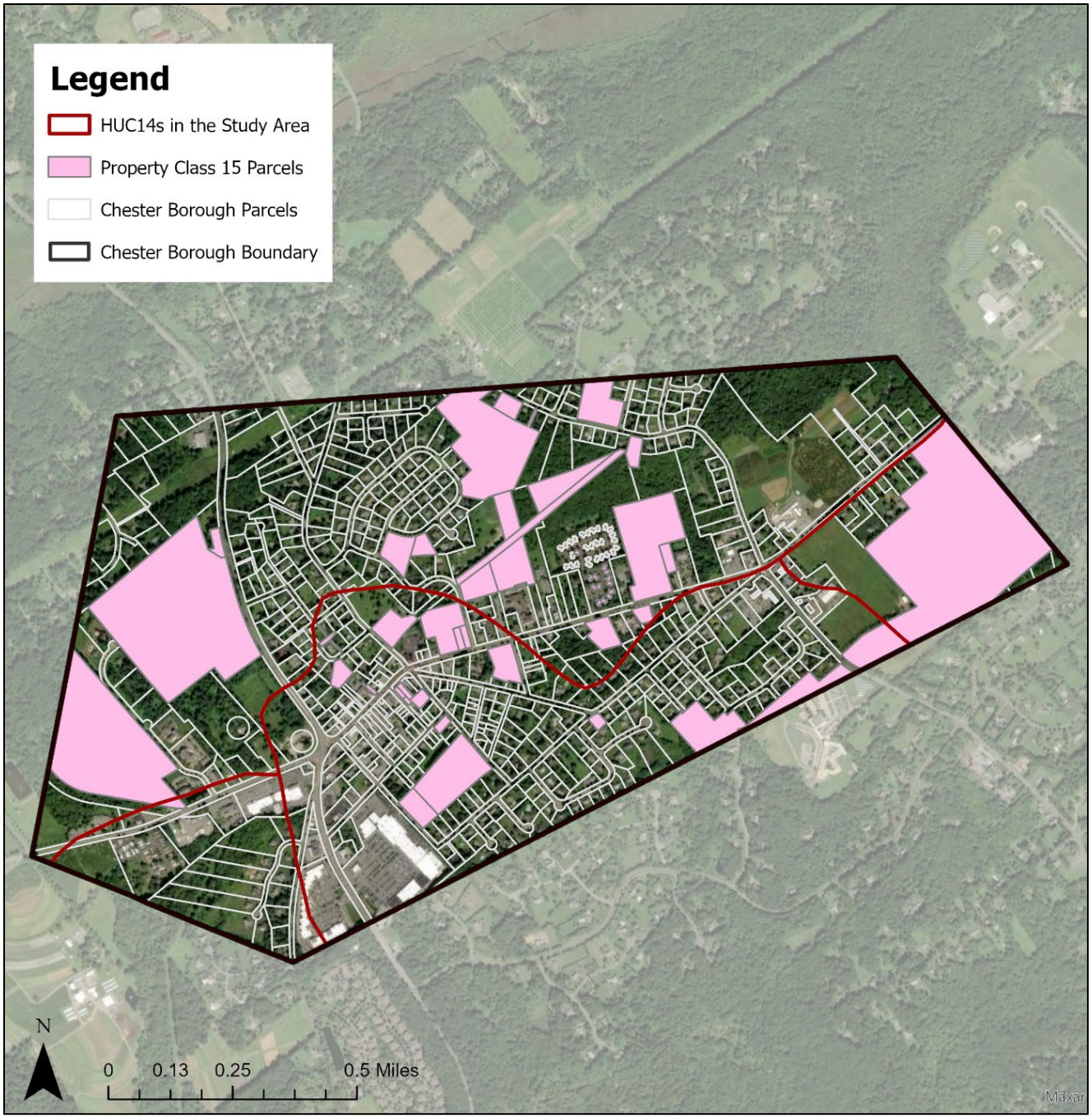


Figure 9: Property Class 15 Parcels in the Study Area of Chester Borough

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

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

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

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

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

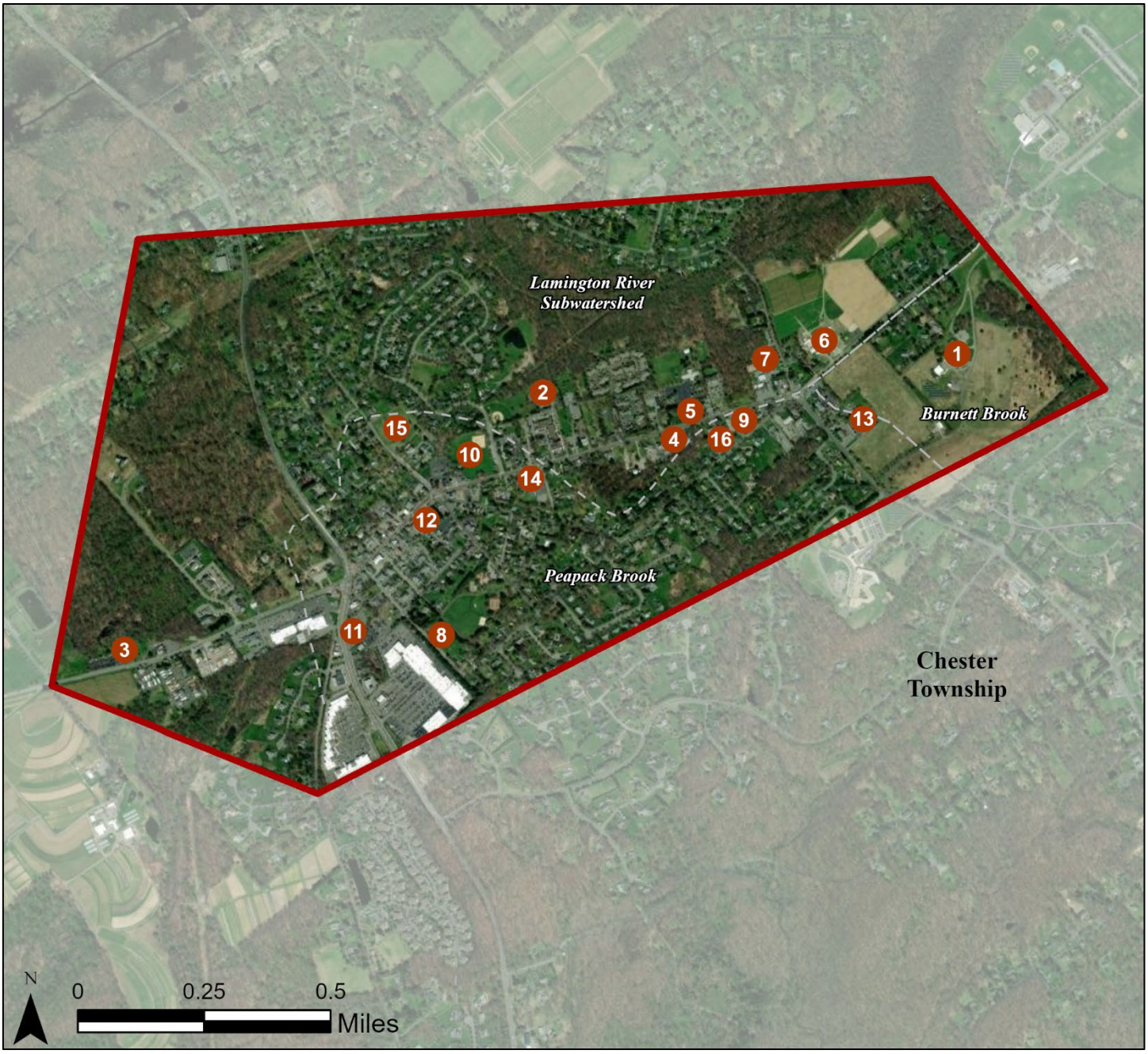


Figure 10: Sites with Green Infrastructure Opportunities in Chester Borough

CHESTER BOROUGH OFFICE

RAP ID: 1

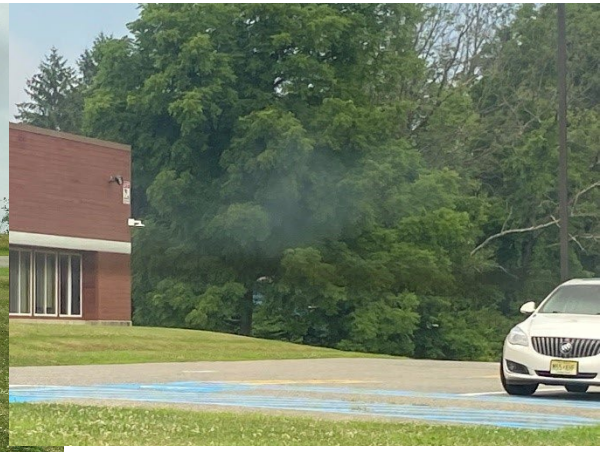
Subwatershed: Burnett Brook

HUC14 ID: 02030105060020

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

Address: 50 North Road
Chester, NJ 07930

Block and Lot: Block 115, Lot 17



Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway and parking lot. Trench drains will be required for some of these gardens. Existing parking spaces in the northern and southern parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
9	234,240	11.3	118.3	1,075.5	0.183	7.30

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	3,660	0.108	15	7,640	0.29	915	$9,150
Pervious pavement	19,110	0.566	84	39,860	1.50	6,990	$174,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chester Borough Office

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

0 50' 100'

CHESTER SENIOR HOUSING

RAP ID: 2

Subwatershed: Lamington River

Site Area: 171,540 sq. ft.

Address: 1 Cole Court
Chester Borough, NJ 07930

Block and Lot: Block 110, Lot 4

Two rain gardens can be installed west of the two buildings to accumulate and infiltrate stormwater runoff from the buildings. Additionally, porous pavement can be used to capture stormwater from the parking lot in front of the main building. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
24	40,325	1.9	20.4	185.1	0.031	1.11

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.042	7	2,980	0.11	405	$2,025
Pervious pavement	0.178	30	12,640	0.48	1,450	$36,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chester Senior Housing

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

0 30' 60'

CHESTER LIBRARY

RAP ID: 3

Subwatershed: Lamington River

Site Area: 393,550 sq. ft.

Address: 250 West Main Street
Chester, NJ 07930

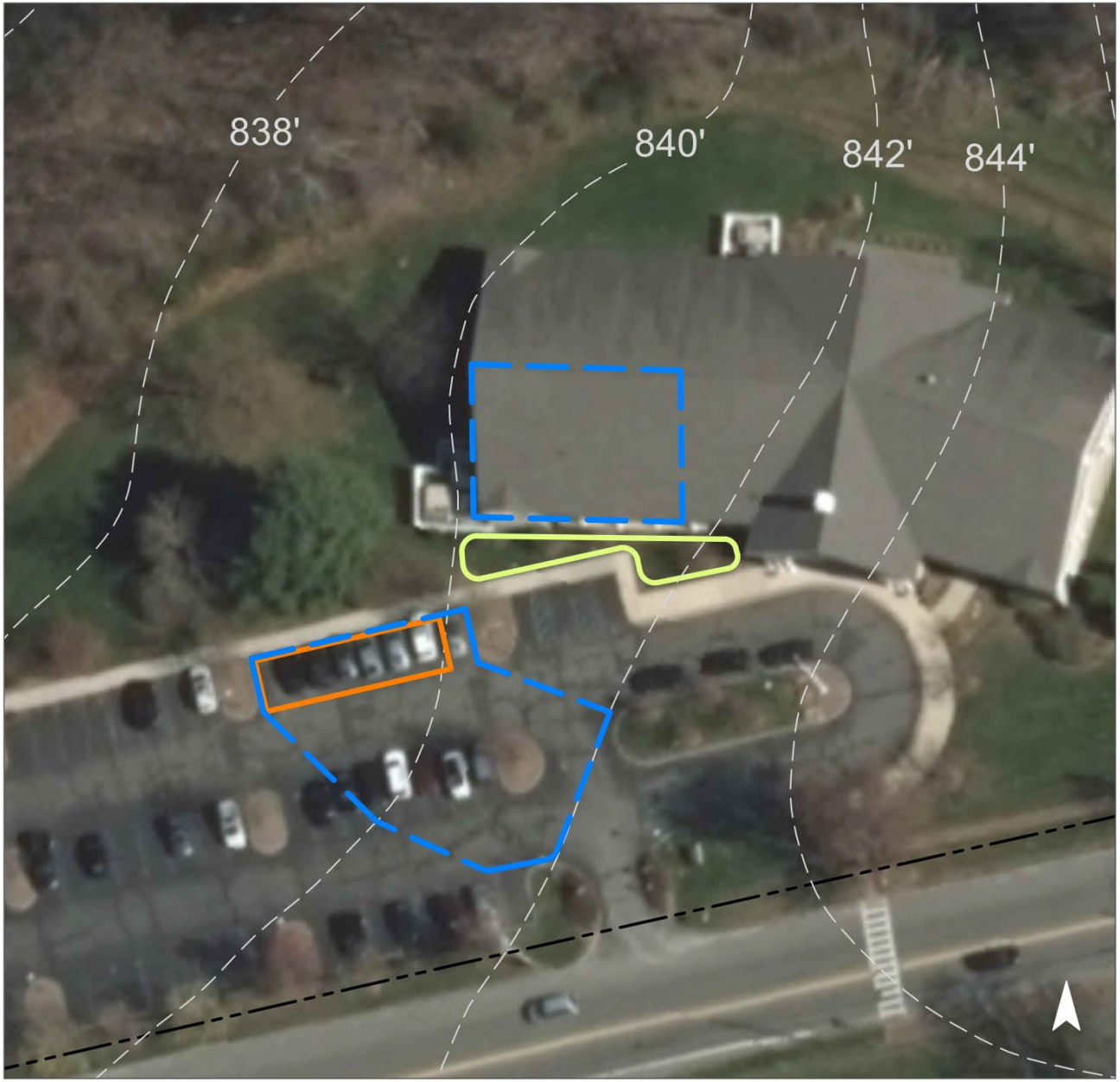
Block and Lot: Block 101, Lot 21

Parking spaces in the parking lot to the west of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot, before it enters the nearby storm drain. A rain garden can be installed south of the building to capture, filter, and infiltrate stormwater runoff from the roof if the front downspouts are disconnected. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
17	68,470	3.3	34.6	314.4	0.053	1.88

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.089	15	6,310	0.24	860	$4,300
Pervious pavement	0.157	26	11,120	0.42	1,055	$26,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Library

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

0 25' 50'

COLONIAL PROSPECT LODGE #24 MASONIC LODGE

RAP ID: 4

Subwatershed: Lamington River

HUC14 ID: 02030105050030

Site Area: 29,963 sq. ft.

Address: 370 Main Street
Chester, NJ 07930

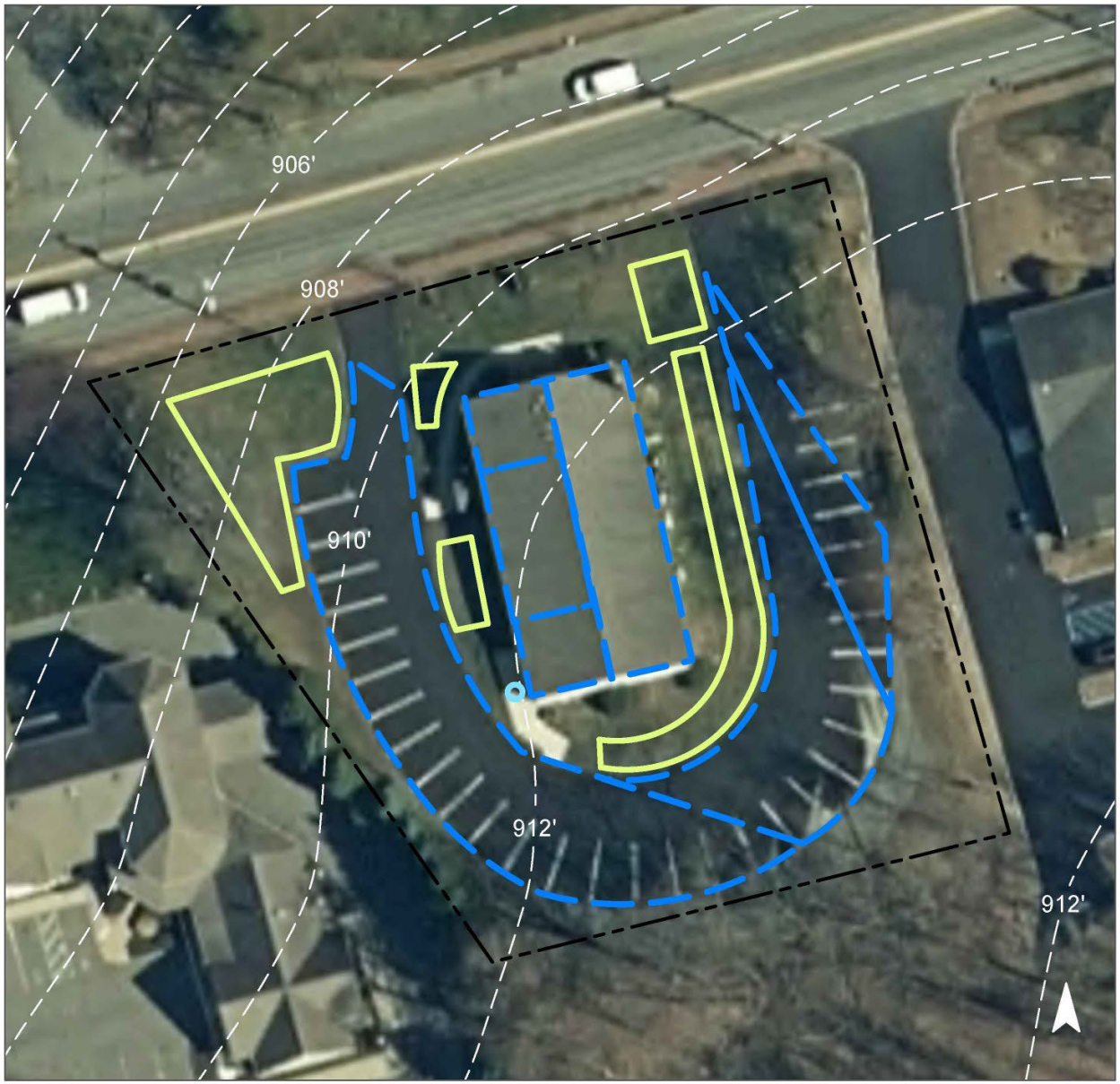
Block and Lot: Block 119, Lot 11

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway and rooftop. This will require downspout disconnections, trench drains, and in some cases downspout redirection beneath the sidewalk. A cistern can be installed to the southwest of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
58	17,428	0.8	8.8	80.0	0.014	0.54

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	12,090	0.358	53	25,220	0.95	3,025	$30,250
Rainwater harvesting	430	0.013	2	350	N/A	350 (gal)	$1,050

GREEN INFRASTRUCTURE RECOMMENDATIONS



Colonial Prospect Lodge
#24 Masonic Lodge

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

0 20' 40'

ST. LAWRENCE CHURCH

RAP ID: 5

Subwatershed: Lamington River

Site Area: 534,640 sq. ft.

Address: 375 Main Street
Chester, NJ 07930

Block and Lot: Block 110, Lot 32

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

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

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

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. Lawrence Church

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

0 25' 50'

STONY HILL FARM MARKET

RAP ID: 6

Subwatershed: Lamington River

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

Address: 15 North Road
Chester Borough, NJ 07930

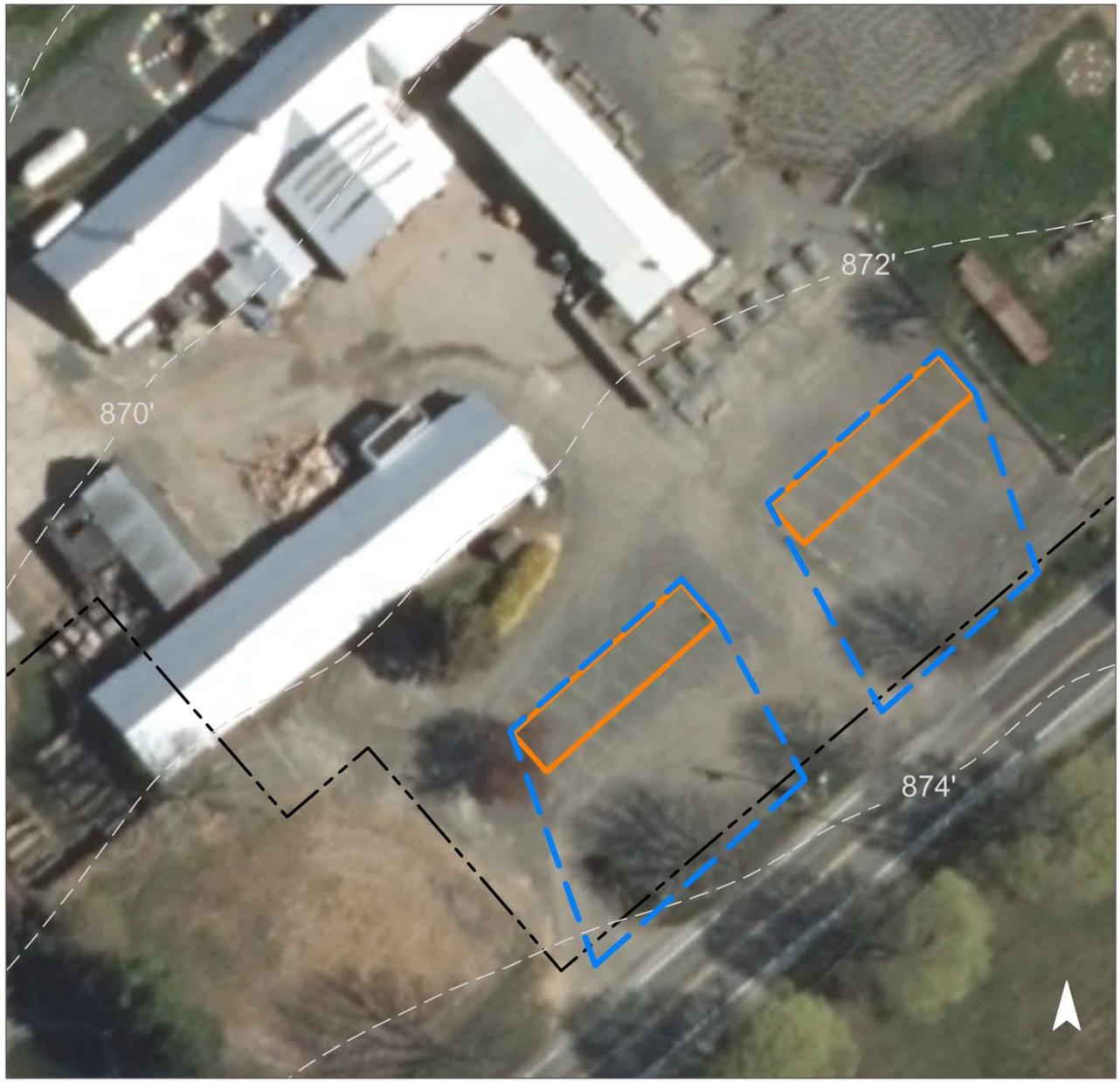
Block and Lot: Block 114, Lot 15

Pervious pavement can be installed in the parking lot to capture the stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
3	39,515	1.9	20.0	181.4	0.031	1.08

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.316	53	22,460	0.84	2,700	$67,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Stony Hill Farm Market

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

0 25' 50'

SUBURBAN HILLS SCHOOL

RAP ID: 7

Subwatershed: Lamington River

Site Area: 53,755 sq. ft.

Address: 41 Oakdale Road
Chester Borough, NJ 07930

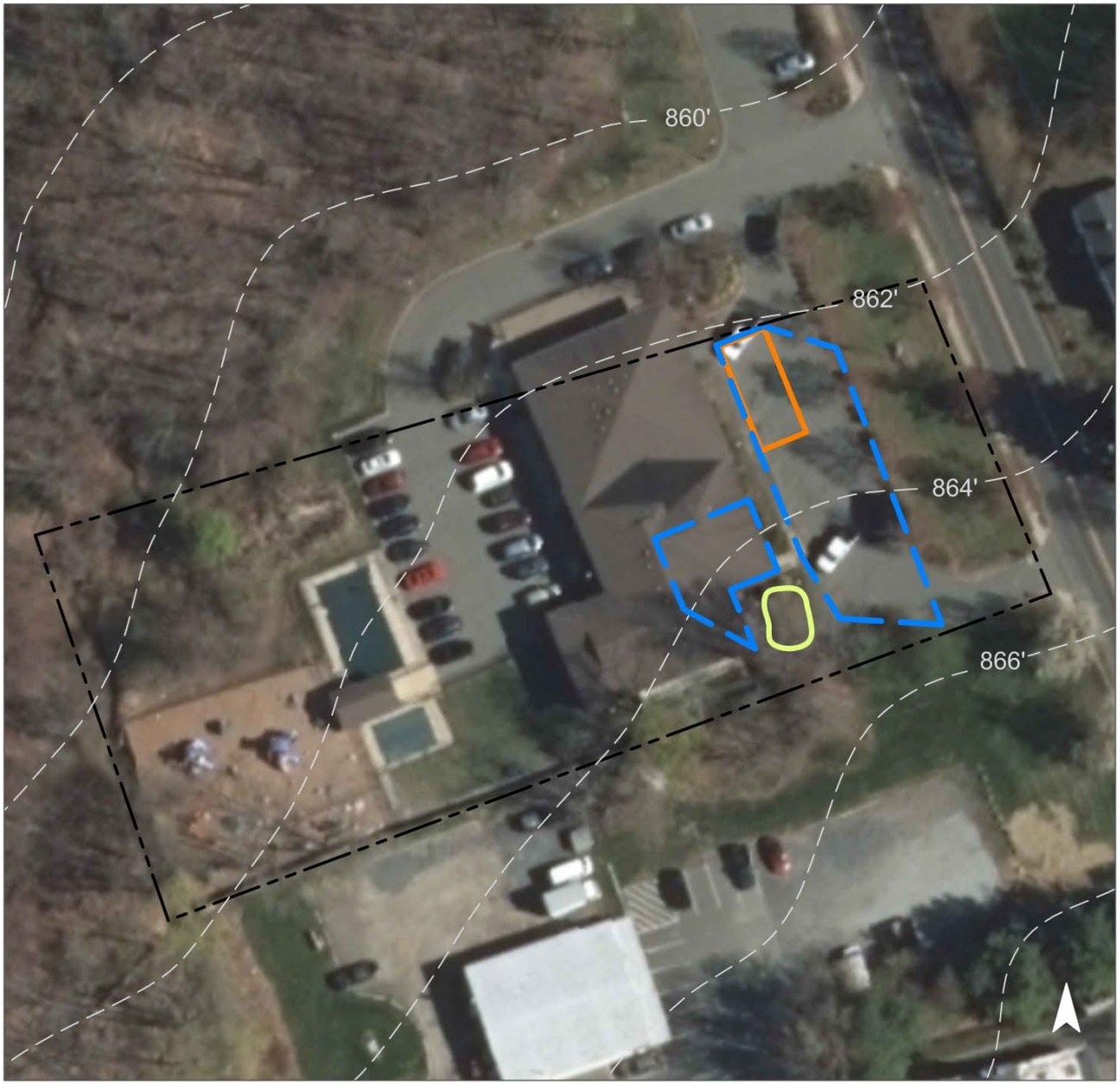
Block and Lot: Block 110, Lot 25

Parking spaces in the parking lot to the northeast of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A rain garden can be installed in the turfgrass area near the entrance of the building to capture, treat, and infiltrate stormwater runoff from the roof. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
64	34,200	1.6	17.3	157.0	0.027	0.94

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



Suburban Hills School

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

0 30' 60'

BORO OF CHESTER RECREATION OFFICE

RAP ID: 8

Subwatershed: Peapack Brook

HUC14 ID: 02030105060050

Site Area: 84,985 sq. ft.

Address: 107 Seminary Avenue
Chester, NJ 07930

Block and Lot: Block 127, Lot 13

Rain gardens can be installed to the northwest of the parking lot and to the southeast of the building to capture, treat, and infiltrate the stormwater runoff from the parking lot and building rooftop. This will require curb cuts and downspout redirection beneath the sidewalk. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
19	16,463	0.8	8.3	75.6	0.013	0.51

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	8,915	0.264	38	18,600	0.70	2,230	$22,300

GREEN INFRASTRUCTURE RECOMMENDATIONS

Boro of Chester Recreation Office

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

0 20' 40'

CHASE BANK

RAP ID: 9

Subwatershed: Peapack Brook

Site Area: 34,760 sq. ft.

Address: 444 East Main Street
Chester, NJ 07930

Block and Lot: Block 116, Lot 1

A rain garden can be installed north of the building to capture, treat, and infiltrate stormwater runoff from the roof and parking lot. Parking spaces near the catch basin in the rear parking lot can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
65	22,590	1.1	11.4	103.7	0.018	0.62

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.031	5	2,180	0.08	295	$1,475
Pervious pavement	0.098	16	6,930	0.26	810	$20,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Chase Bank

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

0 20' 40'

CHESTER BOROUGH PARK

RAP ID: 10

Subwatershed: Peapack Brook

Site Area: 198,640 sq. ft.

Address: 134 Main Street
Chester Borough, NJ 07930

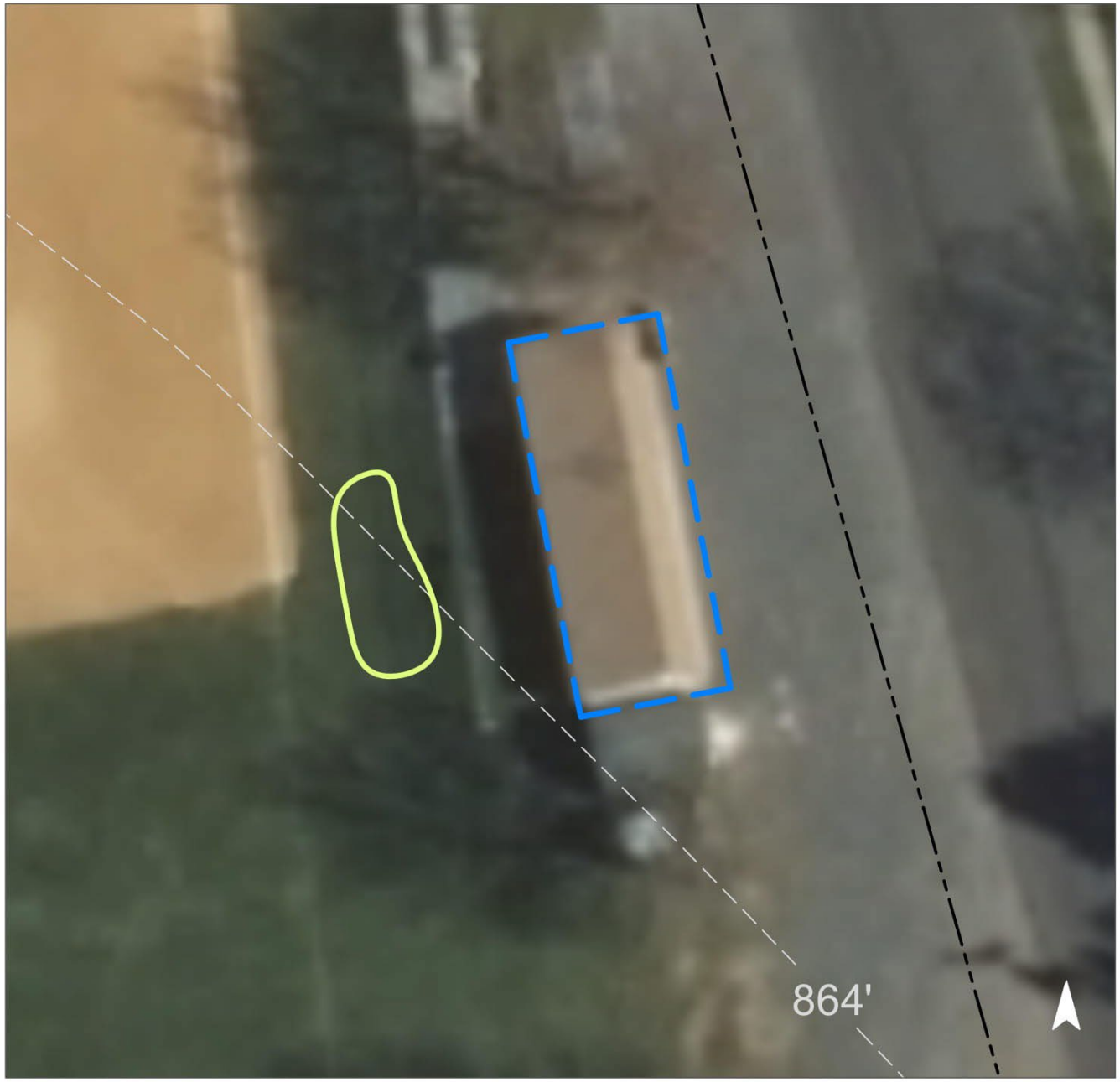
Block and Lot: Block 107, Lots 11, 12, & 13

A rain garden can be installed to the west of the building nearby the baseball field. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
10	19,760	1.0	10.0	90.7	0.015	0.54

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Borough Park

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

0 10' 20'

CHESTER DINER

RAP ID: 11

Subwatershed: Peapack Brook

Site Area: 63,920 sq. ft.

Address: 65 US-206
Chester Borough, NJ 07930

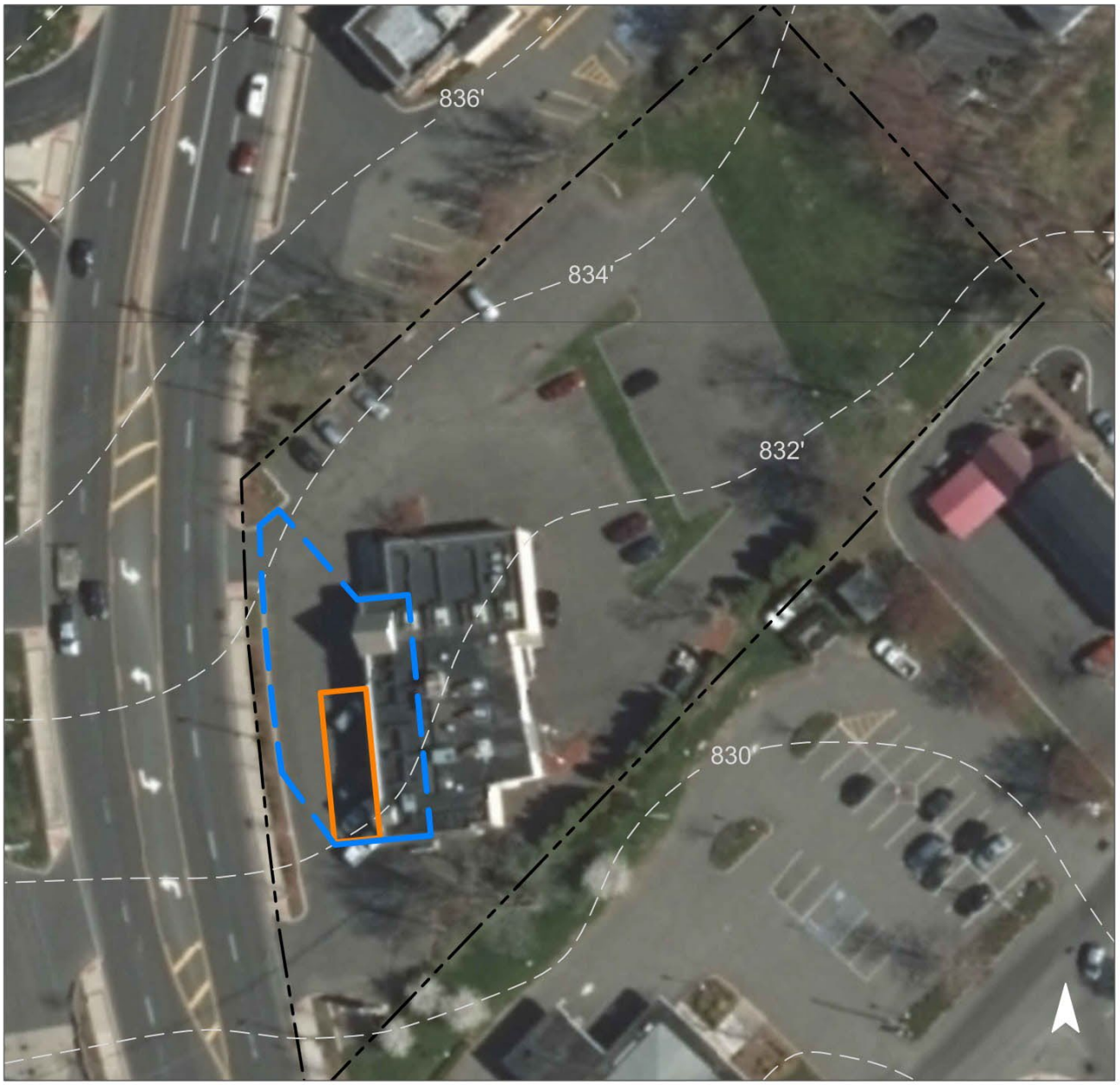
Block and Lot: Block 131, Lot 17

Porous pavement can be installed on the west side of the building to capture and infiltrate stormwater runoff from the building and surrounding area. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
75	48,190	2.3	24.3	221.3	0.038	1.32

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.155	26	11,000	0.41	1,080	$27,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Diner

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

0 30' 60'

CHESTER FIRE COMPANY

RAP ID: 12

Subwatershed: Peapack Brook

HUC14 ID: 02030105060050

Site Area: 45,869 sq. ft.

Address: 86 Main Street
Chester, NJ 07930

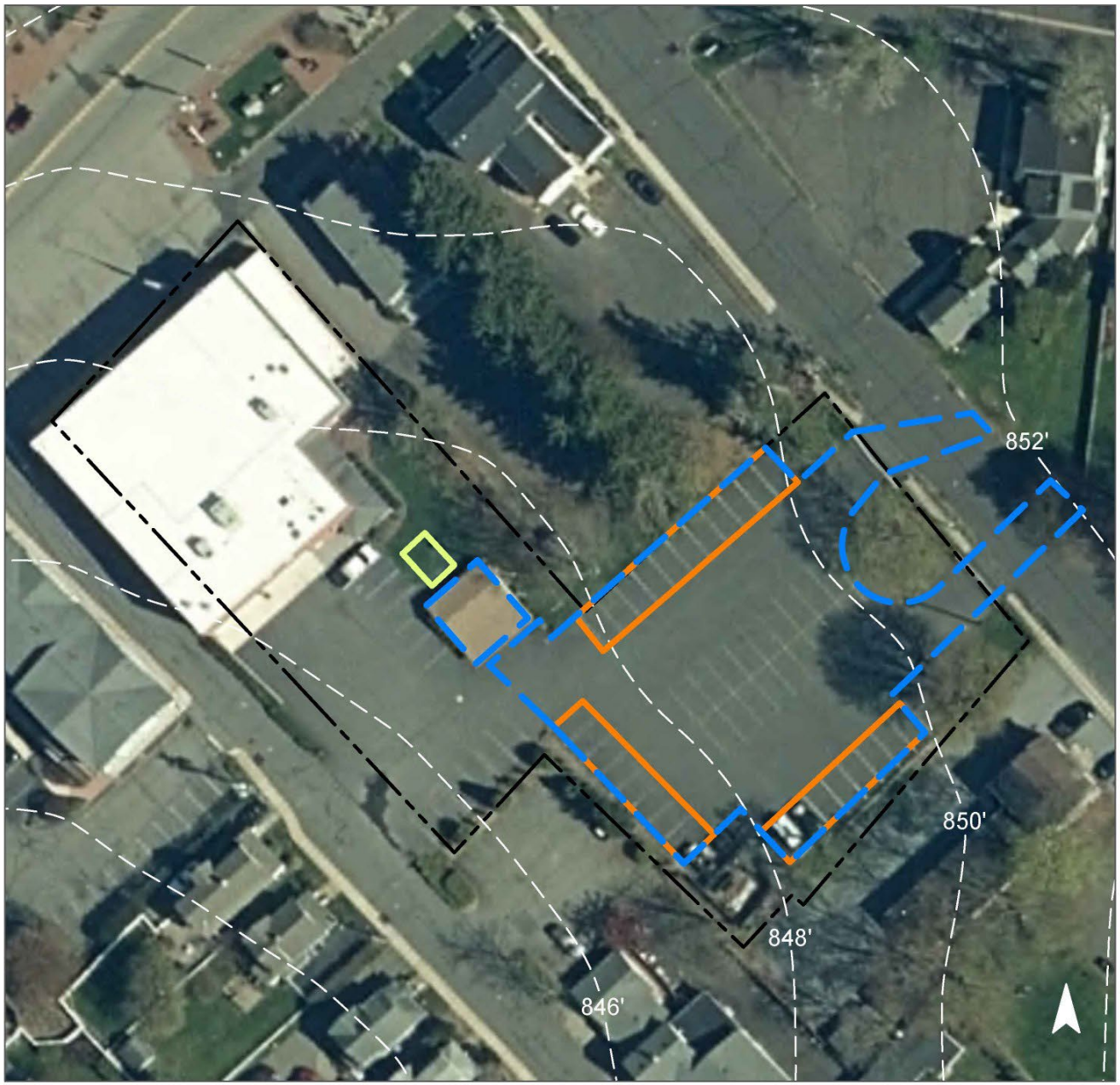
Block and Lot: Block 126, Lots 2,3,4,7 & 8

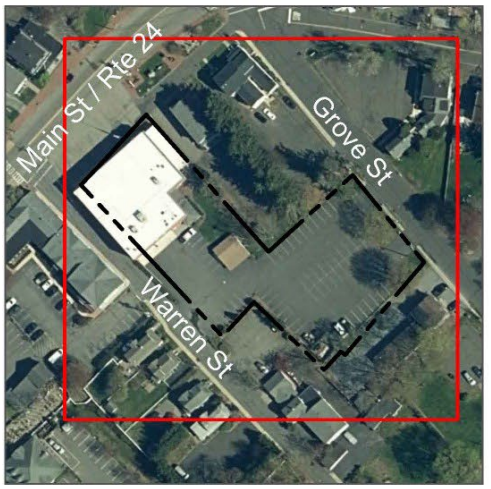
A rain garden can be installed to the west of the shed to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require a downspout disconnection. The gutters on the eastern section of the shed can also be reworked and directed towards the raingarden to increase the treated drainage area. Existing parking spaces in the eastern parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
87	39,938	1.9	20.2	183.4	0.031	1.24

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	810	0.024	4	1,690	0.06	205	$2,050
Pervious pavement	18,255	0.541	80	38,070	1.43	4,155	$103,875

GREEN INFRASTRUCTURE RECOMMENDATIONS





Chester Fire Company

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

0 30' 60'

CHESTER TENNIS CLUB

RAP ID: 13

Subwatershed: Peapack Brook

Site Area: 91,750 sq. ft.

Address: 581 Main Street
Chester, NJ 07930

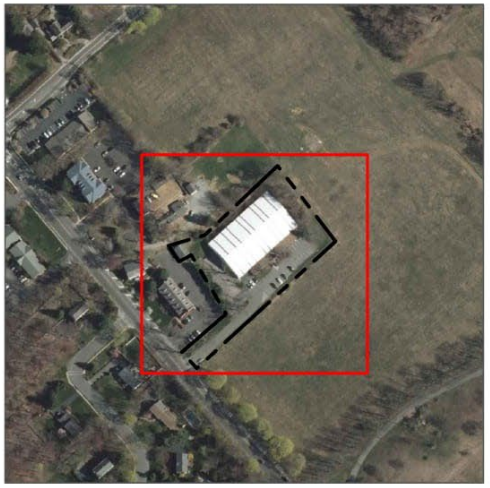
Block and Lot: Block 115, Lot 5

Parking spaces in the parking lot to the south of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the roof via the downspouts, which are disconnected. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
59	54,365	2.6	27.5	249.6	0.042	1.49

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.190	32	13,490	0.51	1,300	$32,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Chester Tennis Club

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

0 30' 60'

COMMUNITY PRESBYTERIAN CHURCH

RAP ID: 14

Subwatershed: Peapack Brook

HUC14 ID: 02030105060050

Site Area: 101,358 sq. ft.

Address: 220 Main Street
Chester, NJ 07930

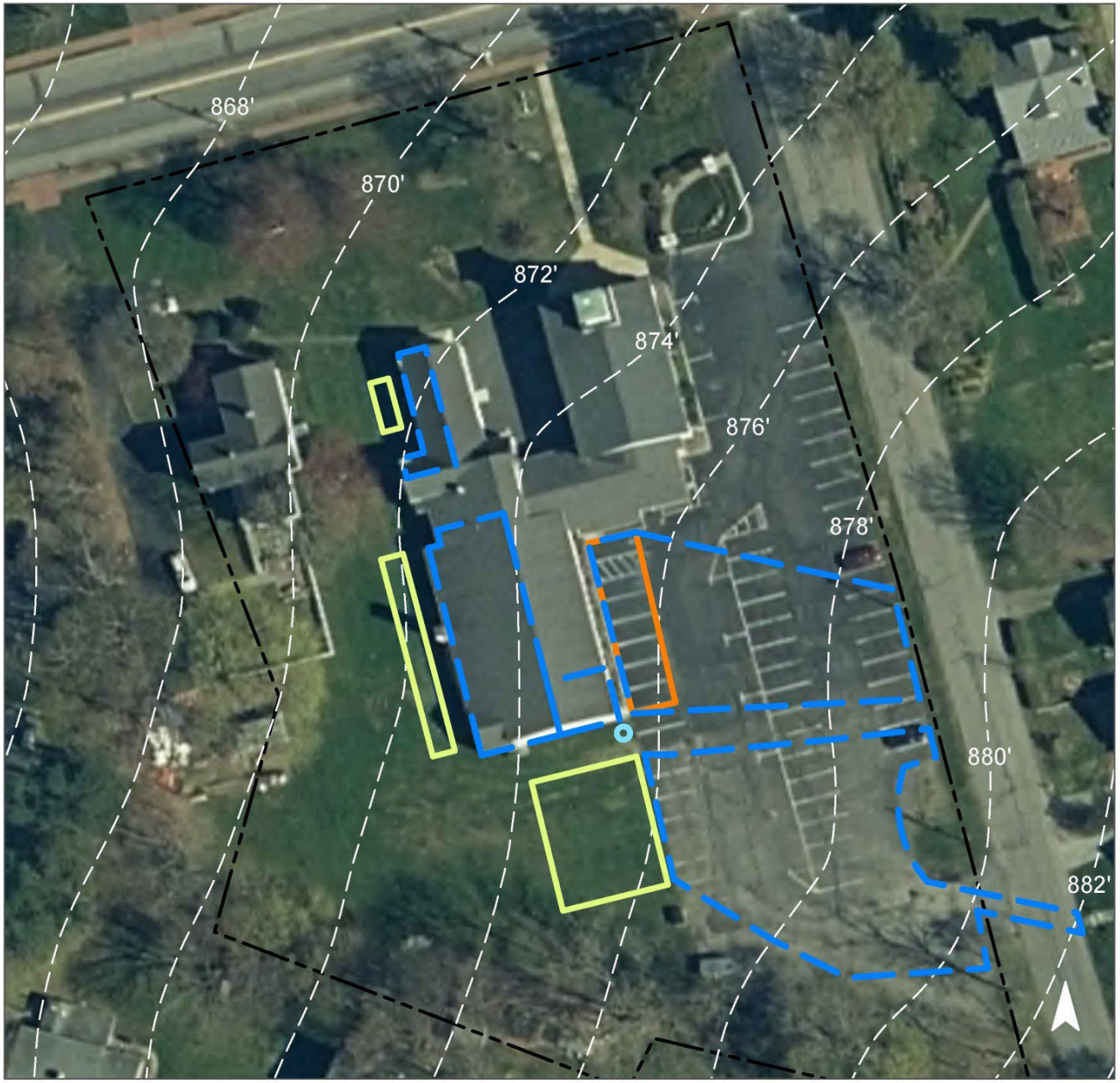
Block and Lot: Block 123, Lot 6

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops and parking lot. This will require downspout redirection and disconnections. Existing parking spaces in western section of the parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A cistern can be installed to the southeast of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as watering a garden bed. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
54	55,160	2.7	27.9	253.3	0.043	1.72

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	12,290	0.364	53	25,630	0.96	3,075	$30,750
Pervious pavement	6,735	0.199	29	14,050	0.53	1,255	$31,375
Rainwater harvesting	510	0.015	2	400	N/A	400 (gal)	$1,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Community Presbyterian Church

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

0 30' 60'

FIRST CONGREGATIONAL CHURCH

RAP ID: **15**

Subwatershed: **Peapack Brook**

HUC14 ID: **02030105060050**

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

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

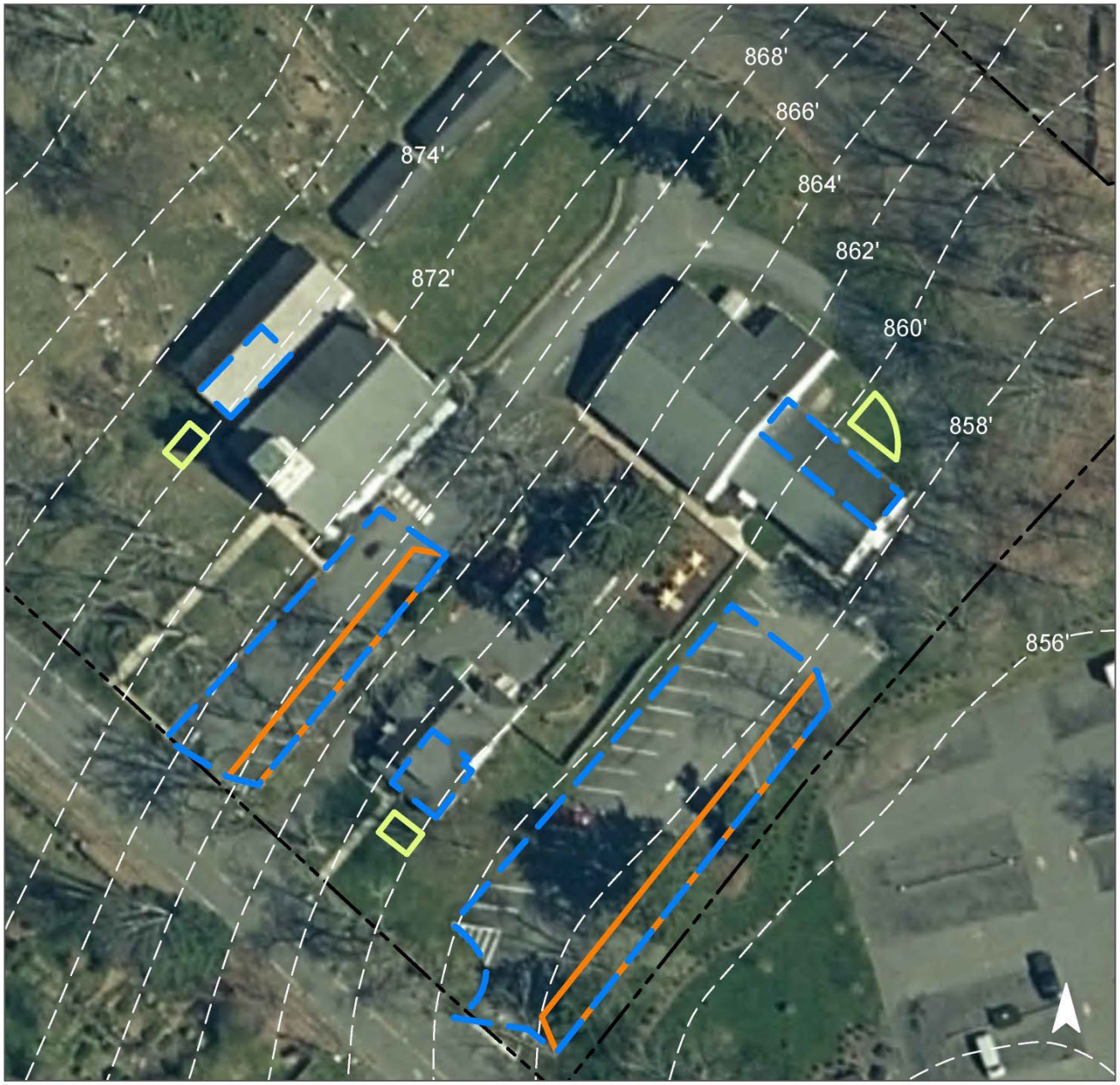
Block and Lot: **Block 107, Lots 18 & 19**

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops. This will require downspout disconnections, and in some cases downspout redirection underneath the sidewalk. Existing parking spaces in the eastern and western parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
20	55,020	2.7	27.8	252.6	0.043	1.71

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	2,090	0.062	10	4,360	0.16	520	$5,200
Pervious pavement	14,800	0.438	65	30,870	1.16	3,480	$87,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



First Congregational Church

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

0 30' 60'

UNITED STATES POSTAL SERVICE

RAP ID: 16

Subwatershed: Peapack Brook

Site Area: 47,570 sq. ft.

Address: 1 Sentry Lane
Chester, NJ 07930

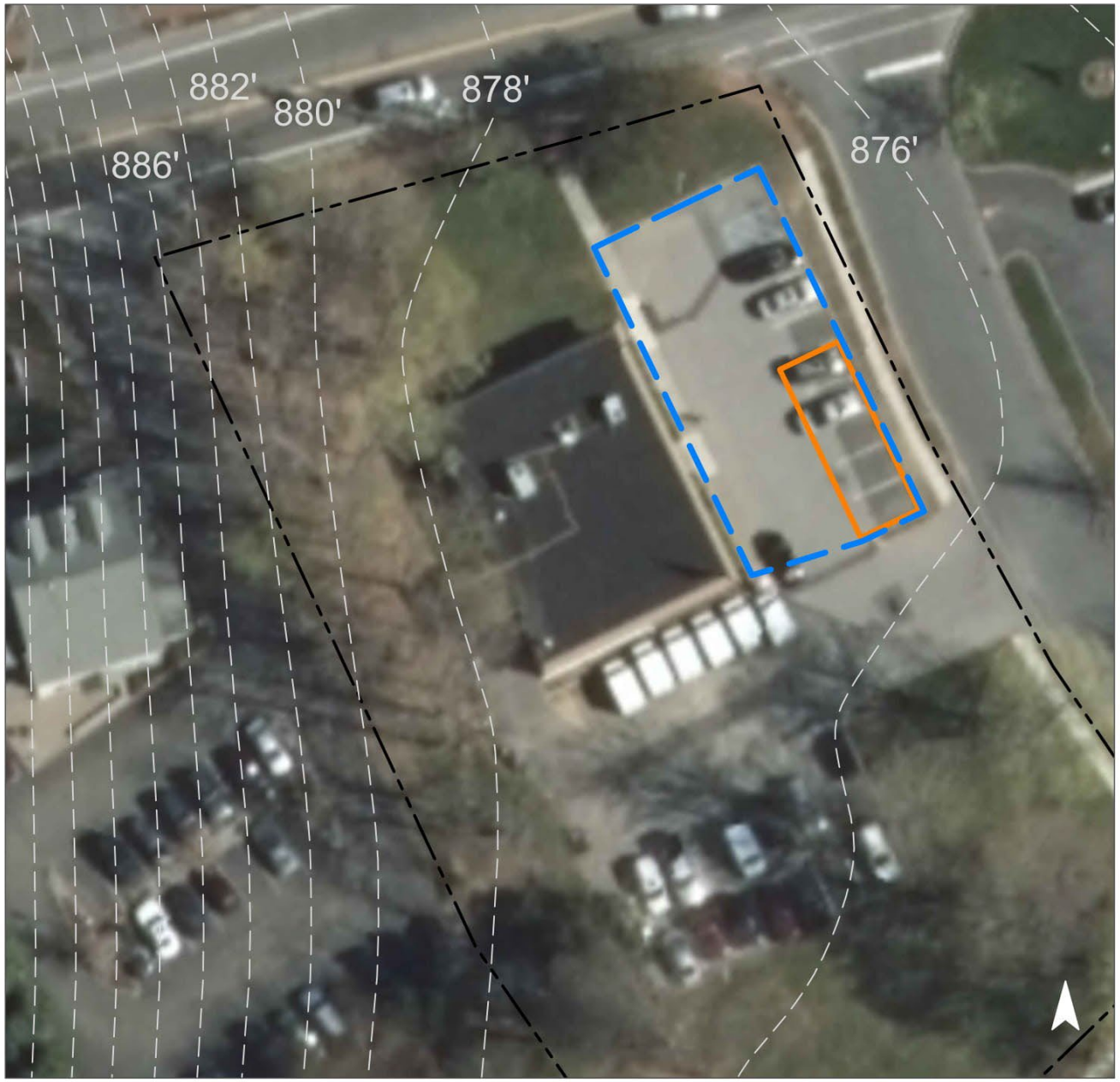
Block and Lot: Block 119, Lot 15

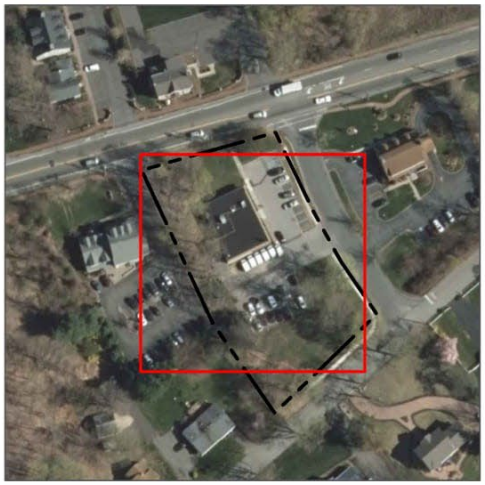
Parking spaces in the parking lot to the east of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot and the downspout. A septic system in the turfgrass area north of the building limits rain garden opportunities. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
62	29,480	1.4	14.9	135.4	0.023	0.81

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.123	21	8,750	0.33	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS





United States Postal Service

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

0 20' 40'

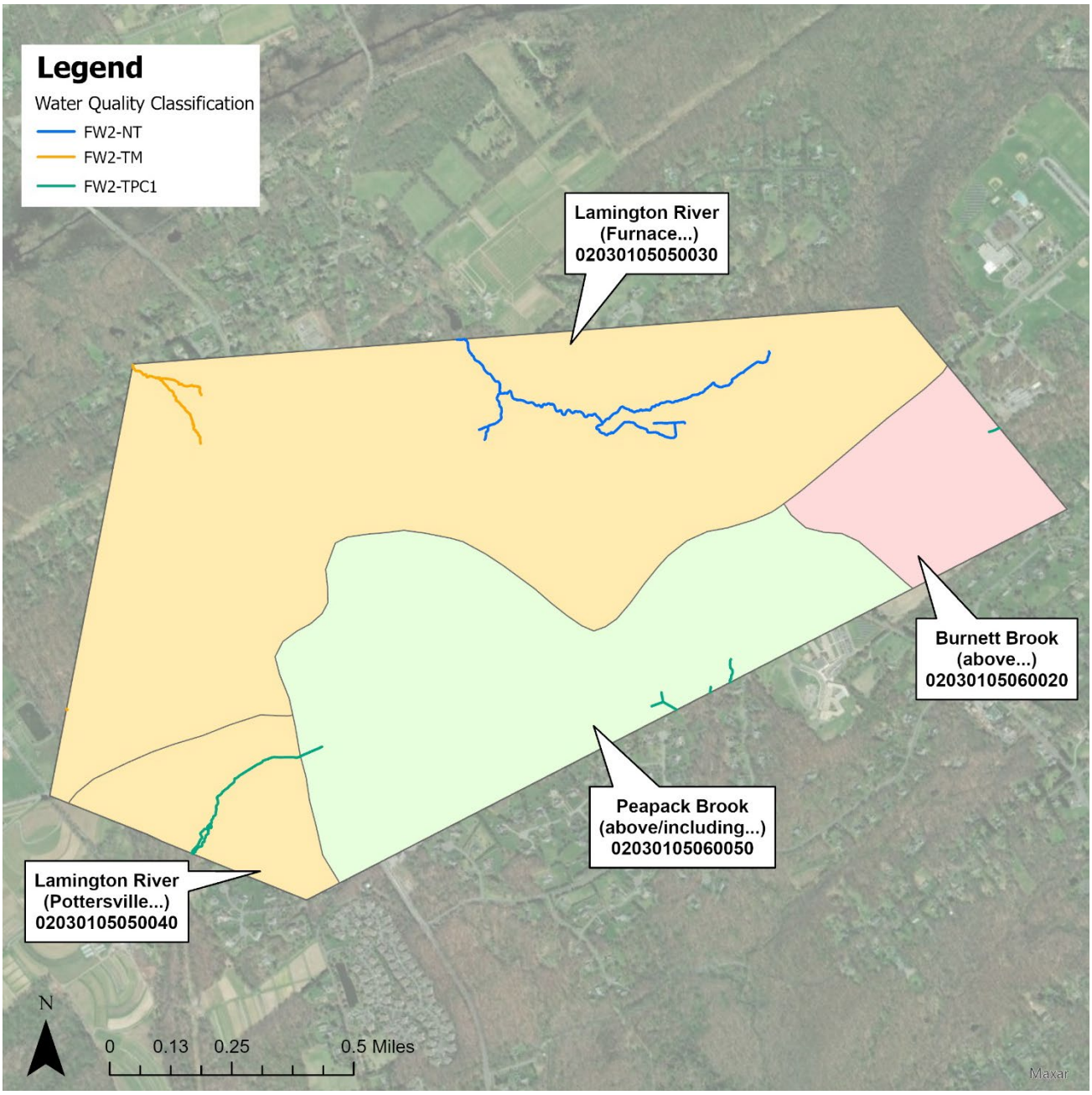


Figure 11. Water Quality Classification of Surface Waters in Chester Borough

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

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