

Mine Hill Township

Introduction

Located in Morris County in New Jersey, Mine Hill Township covers about 3.0 square miles. With a population of 4,015 (2020 United States Census), Mine Hill Township consists of 44.3% of urban land uses by area. Of that urban land use, approximately 38.7% is comprised of medium-density residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 49.4% of Mine Hill Township.

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

Table 1: Subwatersheds of Mine Hill Township

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

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

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

Analysis by Municipality

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

For the area of the municipality in the study area, a stormwater facilities analysis was completed. Two sources were used to identify stormwater facilities. The first data source was the New Jersey Hydrologic Modeling Database (SCS, 2024) that was prepared by the Soil Conservation Districts (SCD) and Rutgers University. The second data source was the NJDEP 2020 land use/land cover GIS Layer. Land use data uses a land use code (1499) to identify stormwater basins. No stormwater basins were identified in the study area within Mine Hill Township.

The Q-Farms in Mine Hill Township have been identified (see Figure 5). Table 4 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. The Q-Farms in the study area of Mine Hill Township have been identified (see Figure 6 and Table 5). It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 7 illustrates the land use on the Q-Farms, which is summarized in Table 6. There are 27.0 acres of agricultural land use in Mine Hill Township, of which, 20.5 acres lie within the study area for this Watershed Restoration and Protection Plan. There is one Q-Farm and a portion of one Q-Farm in the study area within Mine Hill Township, totaling 23.4 acres. Within the one Q-Farm and portion of one Q-Farm, there are approximately 18.6 acres of agricultural land use. Aerial photography (see Figure 8) was used to identify areas where riparian buffers may be able to be enhanced to further protect the waterways from agricultural impacts. For the Q-Farms in Mine Hill Township, no site visits were conducted.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. One HUC14 is included in the study area (02030105050010). Within this one HUC14, there are 23.3 acres of buildings and 38.0 acres of roadway. The Watershed Restoration and Protection Plan recommends managing stormwater runoff from $\frac{1}{4}$ of 25% of the building rooftops. For the study area within Mine Hill Township, approximately 1.5 acres of rooftop runoff would be managed with 0.29 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Mine Hill Township, approximately 3.8 acres of roadway would be managed, or 1.0 mile of roadway.

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

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

The Property Class 15 parcels for Mine Hill Township are shown in Figure 9 and presented in Table 7. When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 10). Available information for each parcel in the study area is presented in Table 8. Class 15E parcels were excluded from the assessment. Three of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 8 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 11 shows parcels within the entire municipality that offer opportunities to be retrofitted with green infrastructure. These sites are included in the Impervious Cover Reduction Action Plan that was completed by the RCE Water Resources Program for the municipality.

Water Quality Classification

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

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

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

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

There are three classifications that apply to the streams in Mine Hill Township. Figure 12 depicts the water quality classifications of surface waters throughout Mine Hill Township and Table 9 summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

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

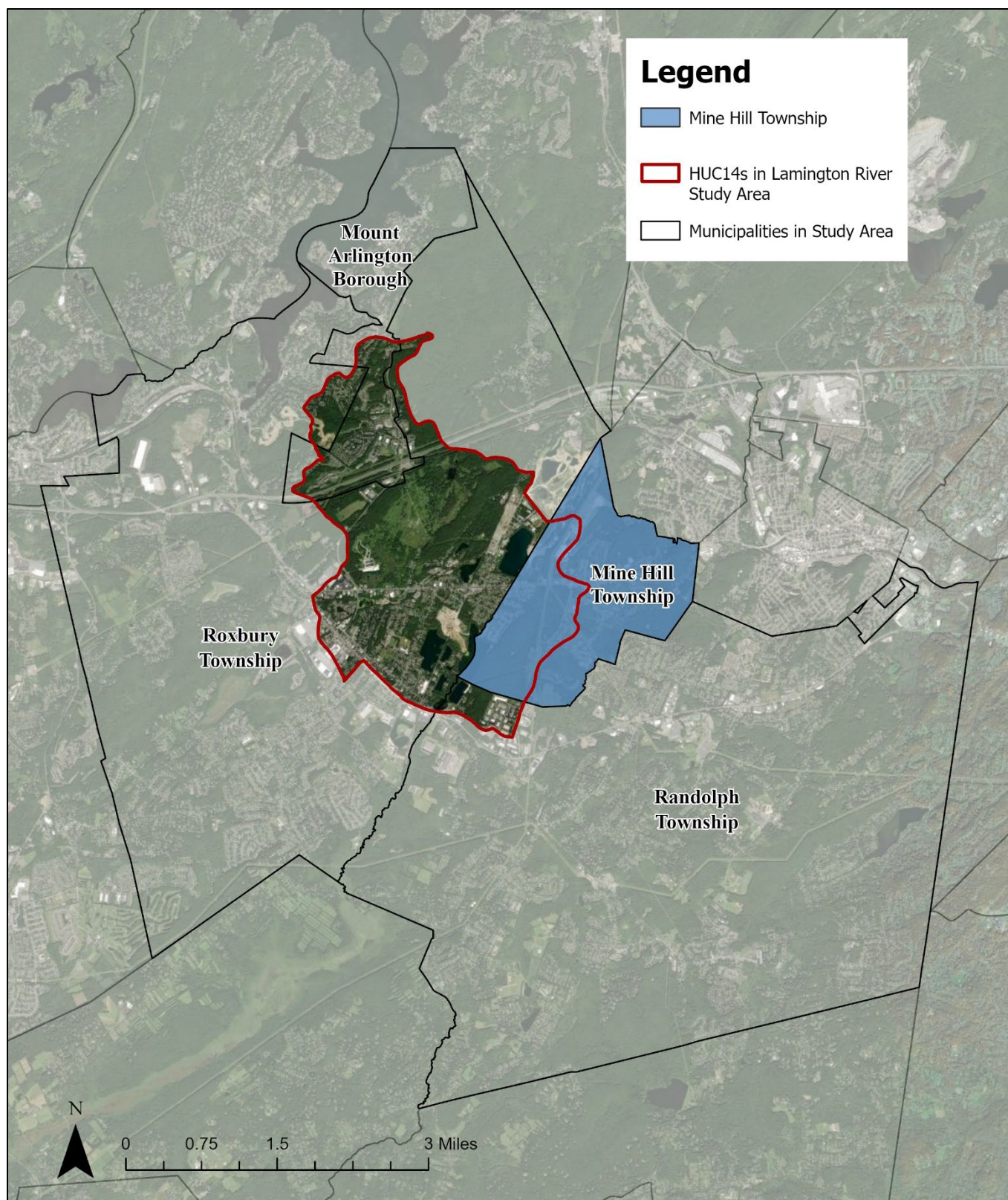


Figure 1: Municipalities in the Study Area

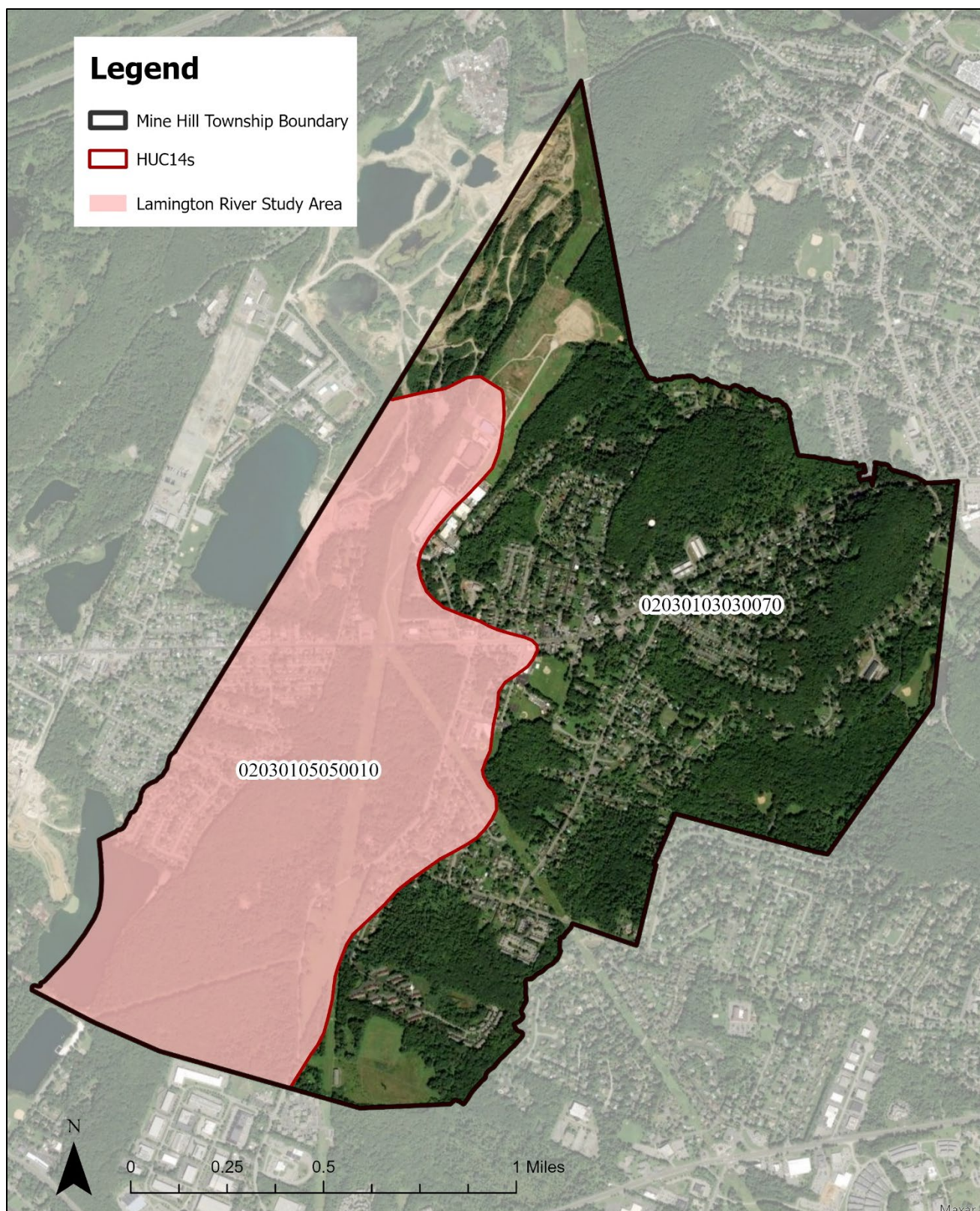


Figure 2: Portions of two HUC14s are in Mine Hill Township

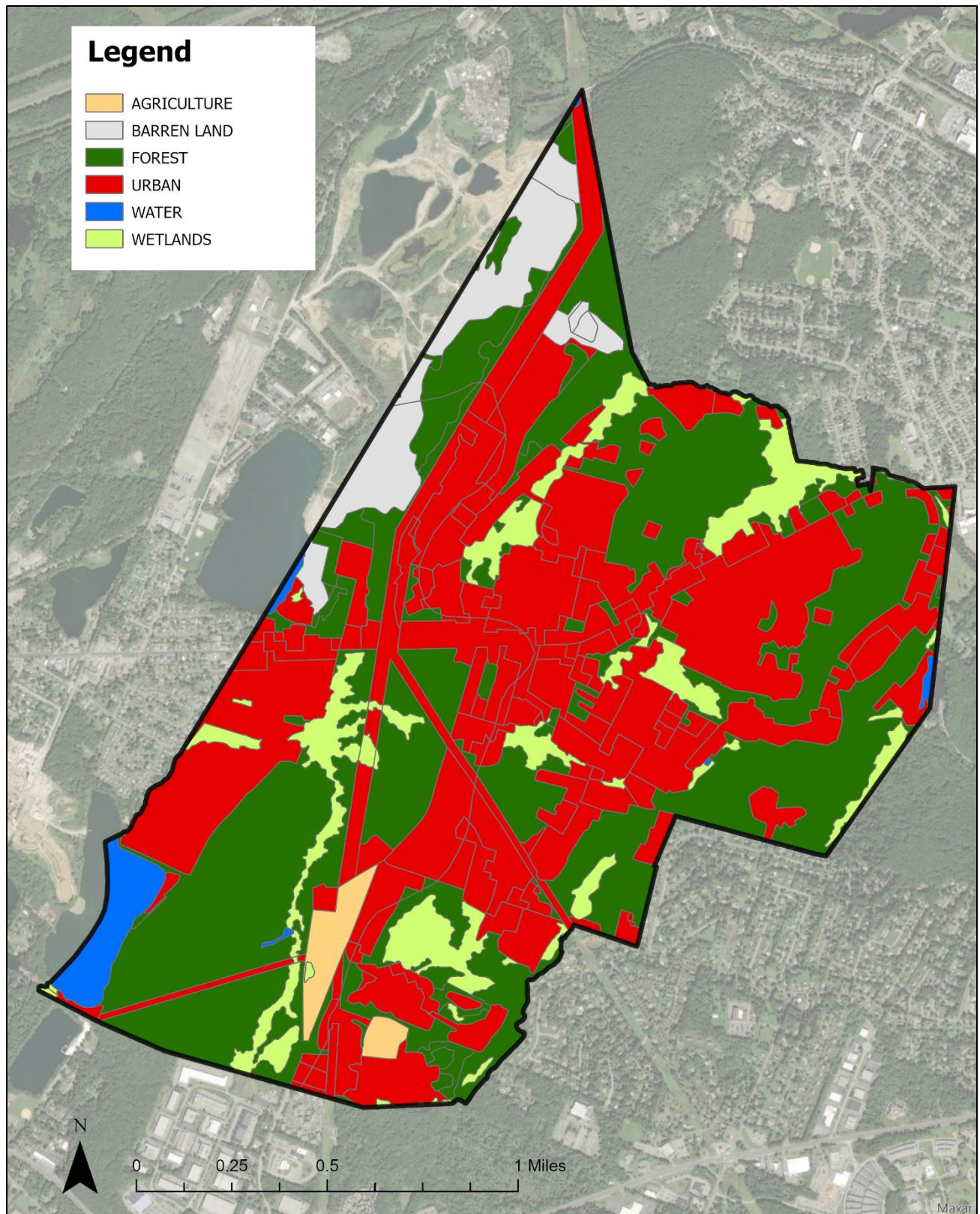


Figure 3: Land Use in Mine Hill Township

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

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

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Mine Hill Township that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These surfaces include rooftops, roadways, sidewalks, and other paved areas. These impervious cover values were used to estimate the impervious coverage for Mine Hill Township. Based upon the NJDEP impervious surface data, Mine Hill Township has impervious cover totaling 16.5%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Mine Hill Township is shown in Figure 4.

The literature suggests a link between impervious cover and stream ecosystem impairment (Schueler, 1994; Arnold and Gibbons, 1996; May et al., 1997). Impervious cover may be linked to the quality of lakes, reservoirs, estuaries, and aquifers (Caraco et al., 1998), and the amount of impervious cover in a watershed can be used to project the current and future quality of

streams. Based on scientific literature, Caraco et al. (1998) classified urbanizing streams into the following three categories: sensitive streams, impacted streams, and non-supporting streams.

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

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

Based upon this information, Mine Hill Township’s impervious cover percentage would suggest that its waterways are primarily impacted and most likely contributing to not meeting the state’s surface water quality standards.



Figure 4: Impervious Cover in Mine Hill Township

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

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

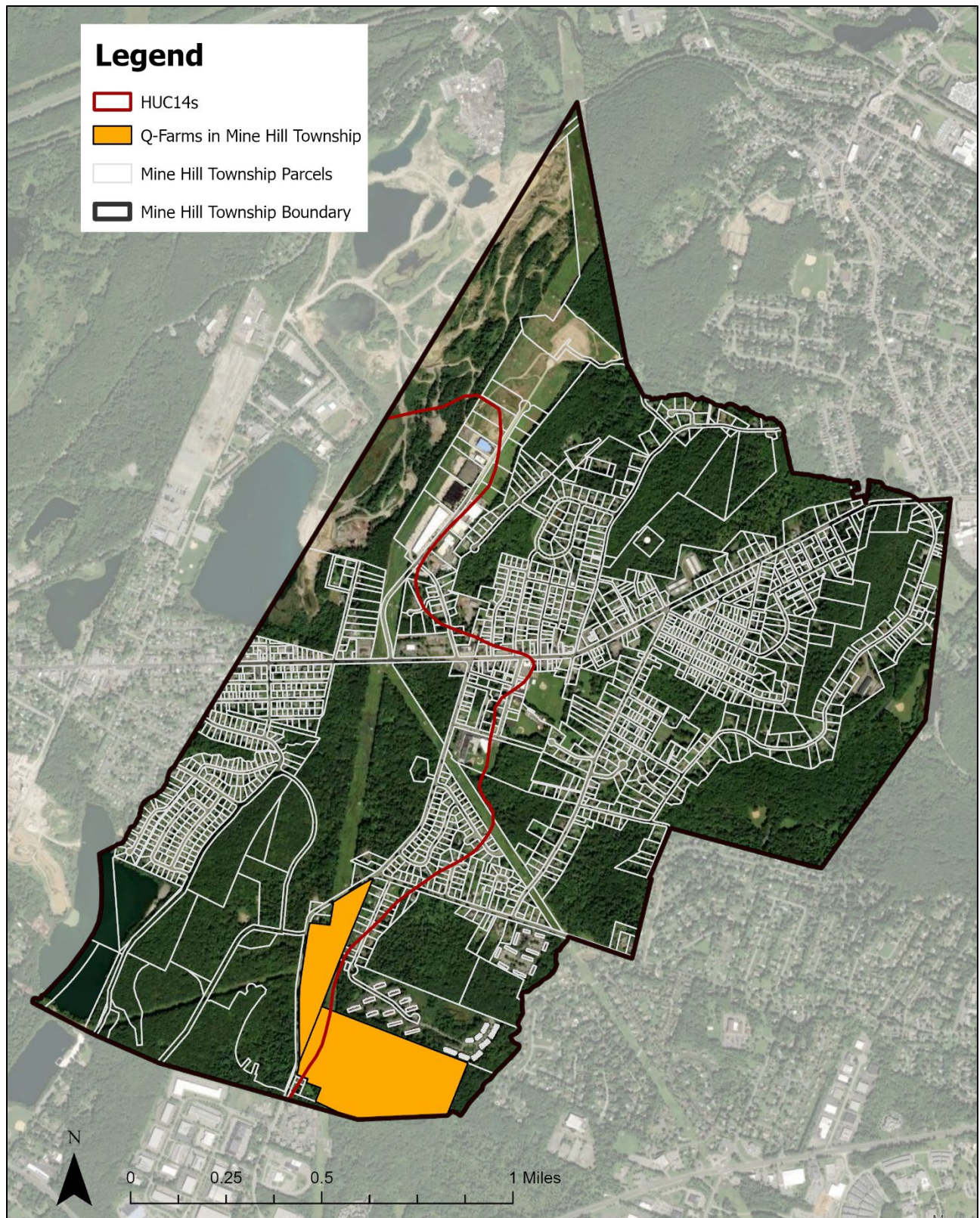


Figure 5: Q-Farm Parcels in Mine Hill Township

Table 4: Q-Farm Parcels in Mine Hill Township

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

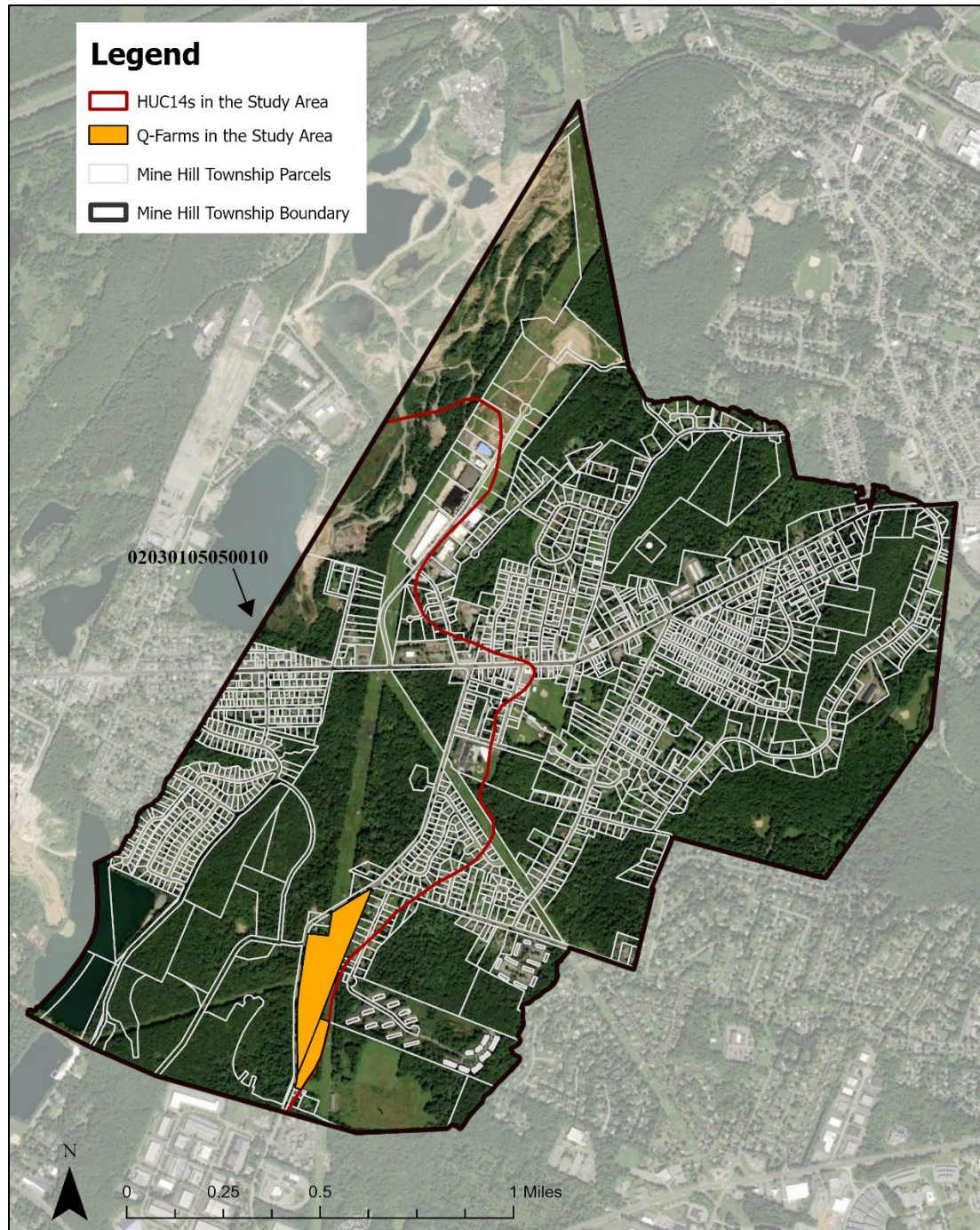


Figure 6: Q-Farm Parcels in the Study Area of Mine Hill Township

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

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

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

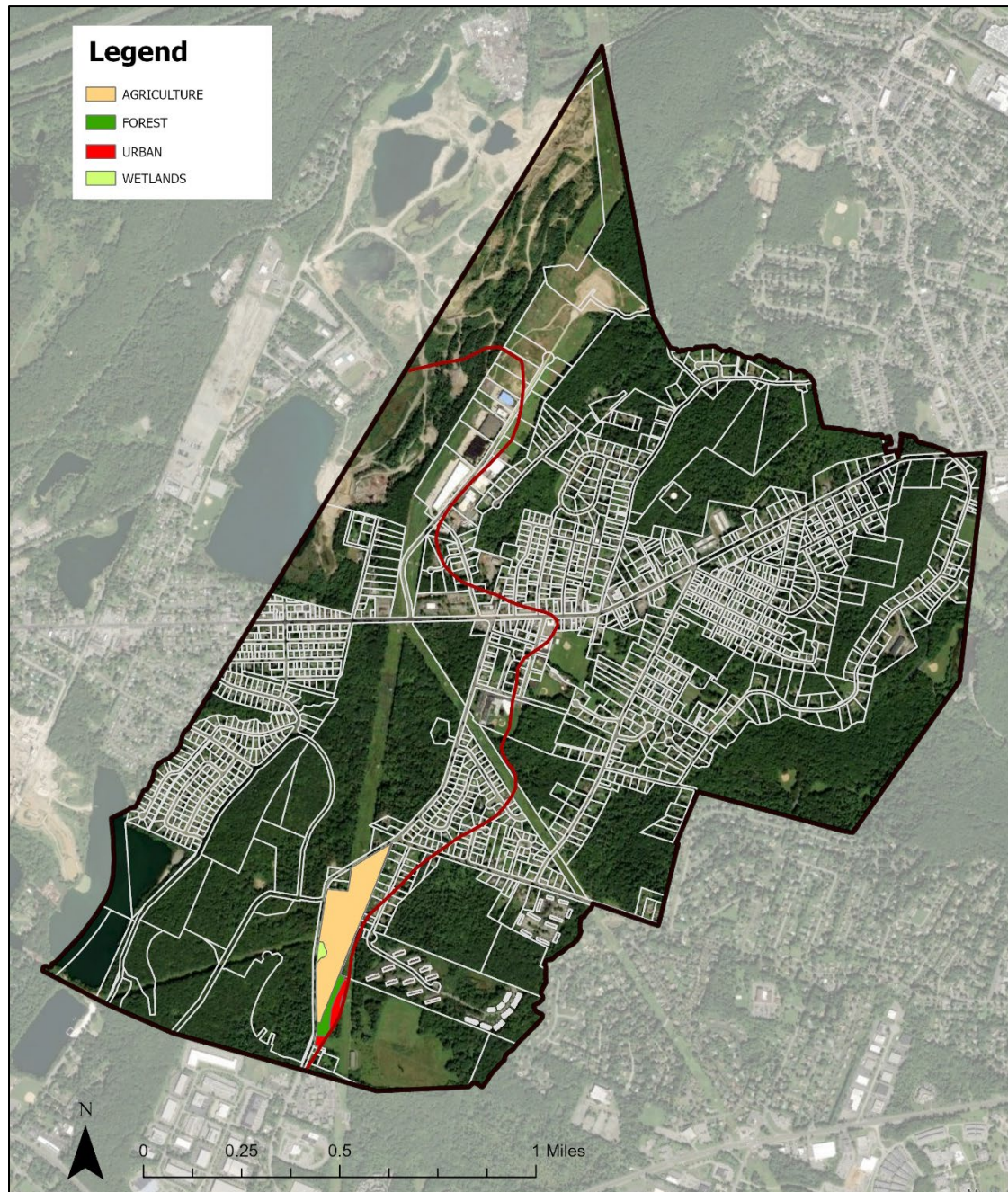


Figure 7: Land Use on Q-Farm Parcels in the Study Area of Mine Hill Township

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

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

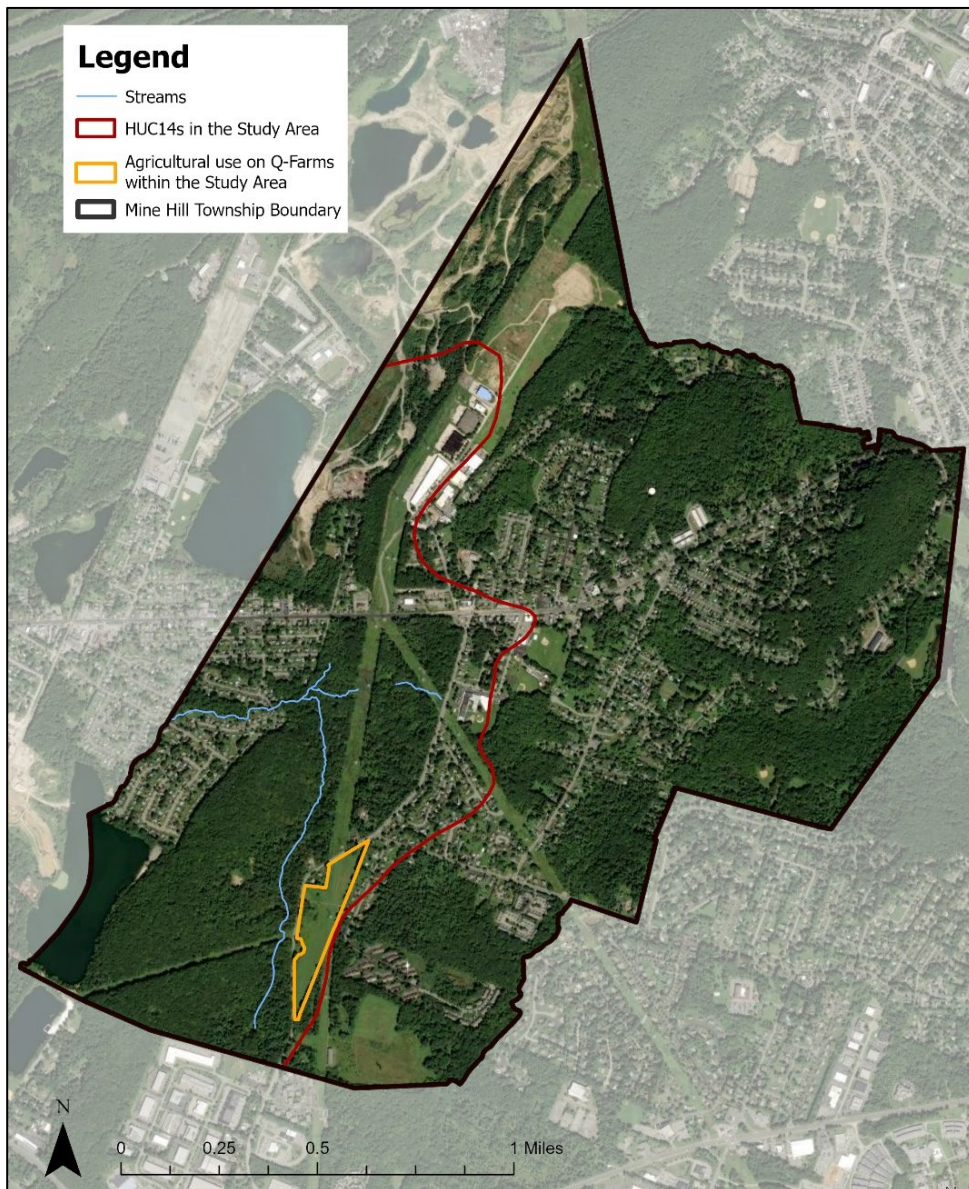


Figure 8: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Mine Hill Township

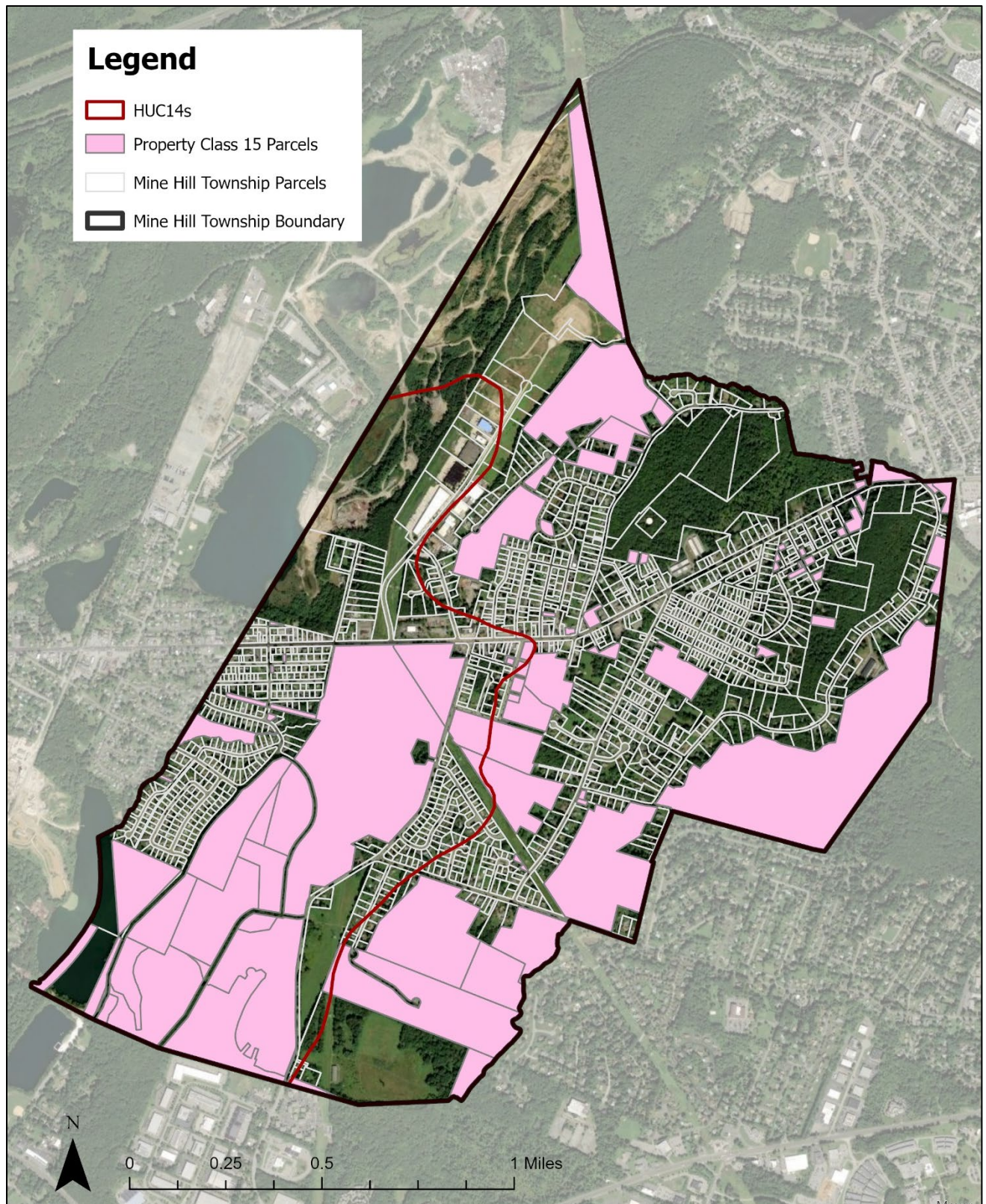


Figure 9: Property Class 15 Parcels in Mine Hill Township

Table 7: Property Class 15 Parcels in Mine Hill Township

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

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

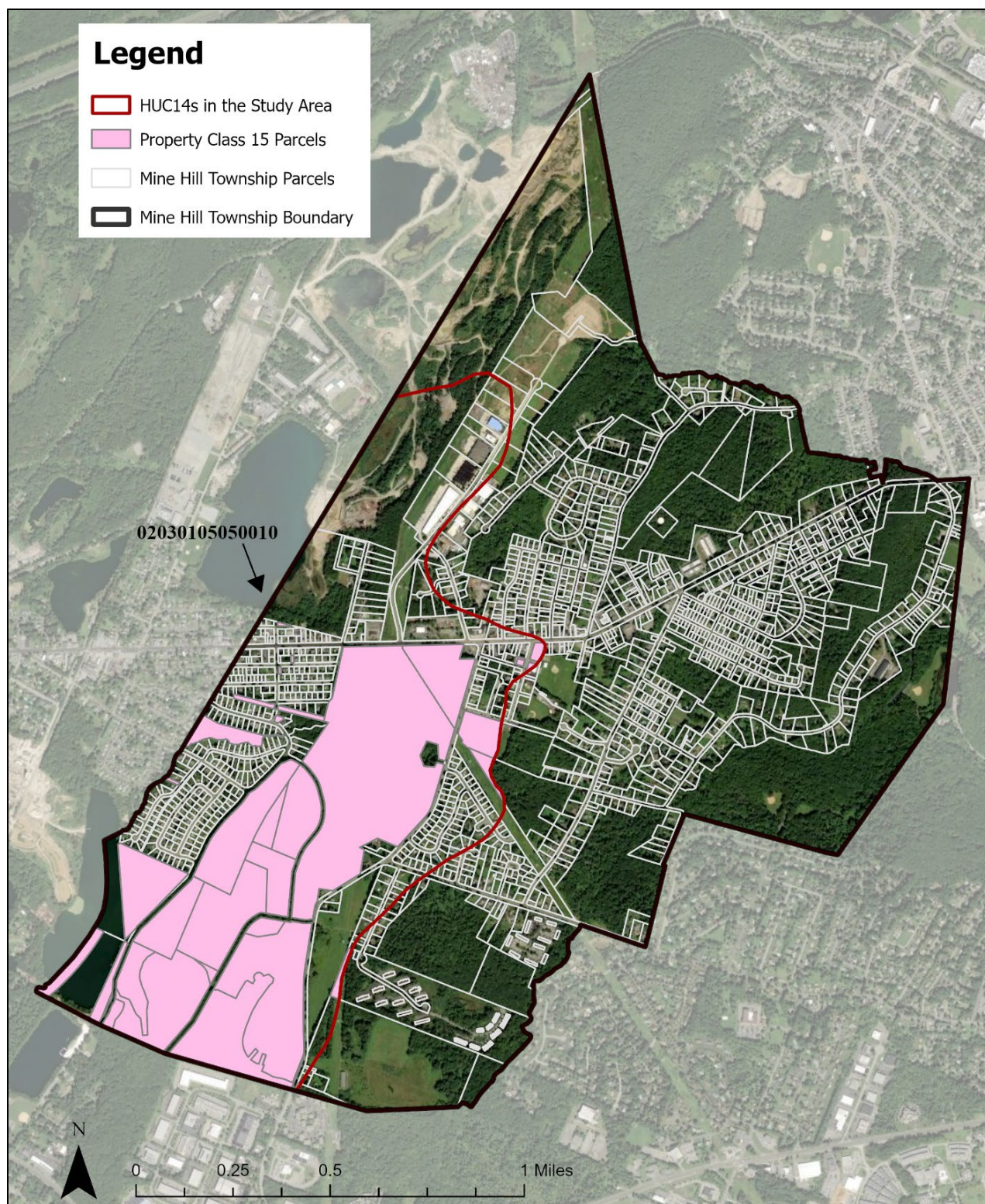


Figure 10: Property Class 15 parcels in the Study Area of Mine Hill Township

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

Block	Lot	Prop Class	Location	Facility Type
*1401¹	1	15A	42 Canfield Ave	Schools
303	2	15C	N First Ave	Vacant Land
403	3	15C	S First Ave	Vacant Land
405	17	15C	First Ave	Vacant Land
408	13	15C	South Third Ave	Vacant Land
409	6	15C	South Third Ave	Vacant Land
411	1.01	15C	Canfield Ave	Vacant Land
501	33	15C	19 Frank St	Vacant Land
506	7	15C	7 Zucker Ln	Land
508	1	15C	Green Rd	Water Shed
601	1	15C	Green Rd	Vacant Land
603	1	15C	Green Rd	Vacant Land
603	2	15C	Dickerson Mine Rd	Vacant Land
604	1	15C	Green Rd	Vacant Land
605	2	15C	Green Rd	Vacant Land
605	3	15C	Green Rd	Vacant Land
606	1.01	15C	Dickerson Mine Rd	Vacant Land
606	1.02	15C	Dickerson Mine Rd	Vacant Land
606	1.03	15C	Green Rd	Vacant Land
606	1.04	15C	Green Rd	Vacant Land
902	1	15C	Rt 46& Canfld Ave	Vacant Land
903	9	15C	Baker St	Recreation Center
903	10	15C	Gillen St	Tax Lien Foreclosure
1001	1	15C	Dickerson Mine Rd	Vacant Land
1001	2	15C	Dickerson Mine Rd	Vacant Land
1002	1	15C	Dickerson Mine Rd	Vacant Land
1005	1	15C	Dickerson Mine Rd	Vacant Land
1101	1.01	15C	Canfield Ave	Vacant Land
1101	1.02	15C	Canfield Ave	Vacant Land
*1304¹	16	15C	10 Baker St	Town Hall
*1304¹	17	15C	Rt 46	Fire House
1401 ¹	8	15C	Randolph Ave	Vacant Land
2619	8	15C	40 N First Ave	Vacant Land
412	7	15F	18 First St	Residence
1502 ¹	1.01	15F	Canfield Ave	Common Element
1503 ¹	1	15F	Thomastown Rd	Common Element

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

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



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

CANFIELD AVENUE ELEMENTARY SCHOOL



RAP ID: 1

Subwatershed: Lamington River

Site Area: 633,014 sq. ft.

Address: 42 Canfield Avenue
Mine Hill, NJ 07803

Block and Lot: Block 1401, Lot 1



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

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

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



**Canfield Avenue
Elementary School**

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



COCO'S CHATEAU



RAP ID: 2

Subwatershed: Lamington River

Site Area: 35,723 sq. ft.

Address: 247 US-46
Mine Hill, NJ 07803

Block and Lot: Block 805, Lot 1

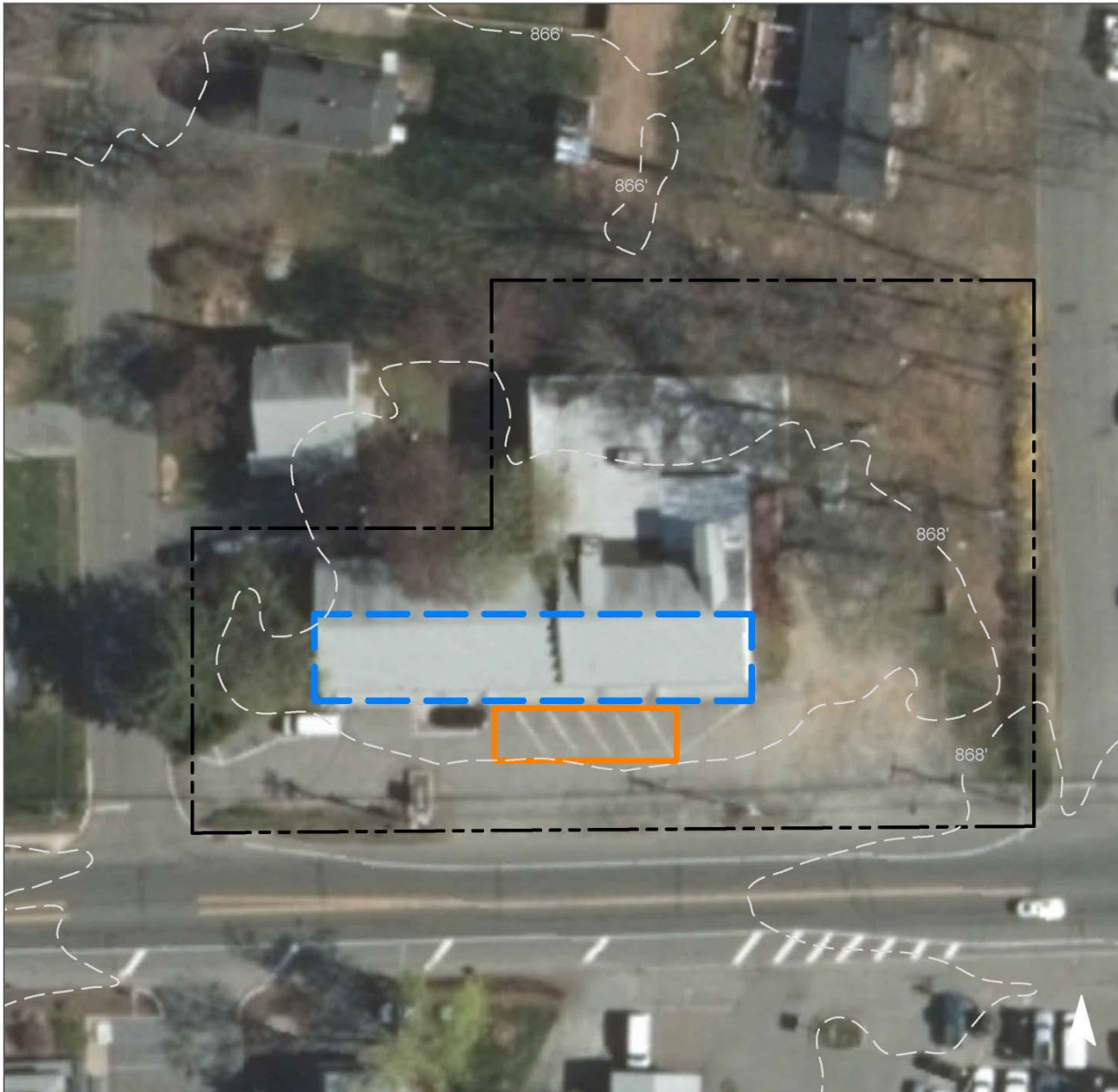


Pervious pavement can be installed on a parking strip south of the building to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



Coco's Chateau

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



COUNTRY LAKES ANIMAL CLINIC



RAP ID: 3

Subwatershed: Lamington River

Site Area: 33,664 sq. ft.

Address: 378 US-46
Mine Hill, NJ 07803

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



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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.169	28	12,420	0.47	1,770	\$44,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Country Lakes Animal Clinic

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

0 25' 50'

HODES VETERINARY GROUP



RAP ID: 4

Subwatershed: Lamington River

Site Area: 23,156 sq. ft.

Address: 265 US-46
Mine Hill, NJ 07803

Block and Lot: Block 806, Lot 1

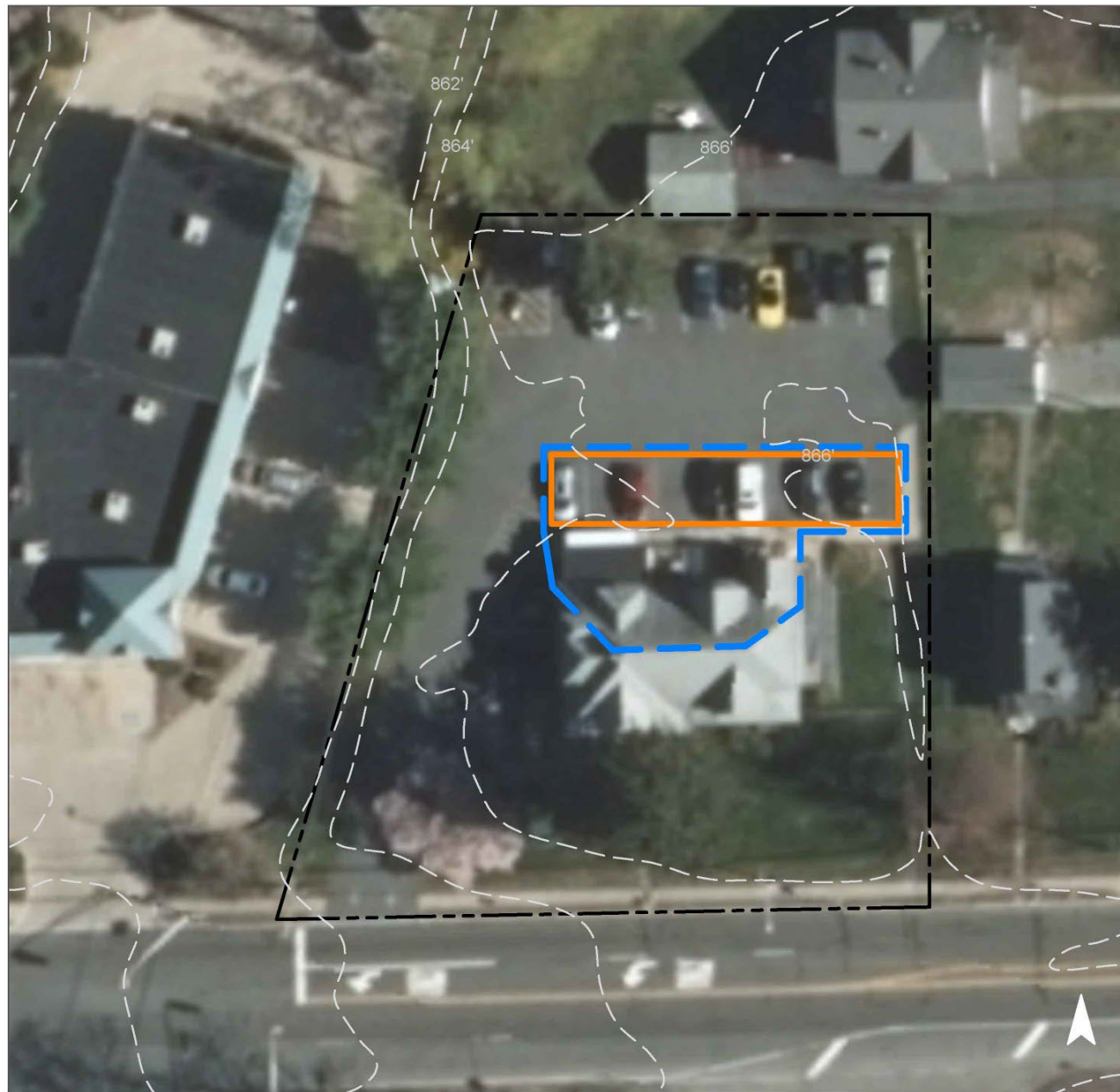


Pervious pavement can be installed on the north side of the building to capture and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.100	17	7,300	0.27	1,620	\$40,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hodes Veterinary Group

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

0 20' 40'

MINE HILL FIRE DEPARTMENT



RAP ID: 5

Subwatershed: Lamington River

Site Area: 410,173 sq. ft.

Address: 230 US-46
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 17

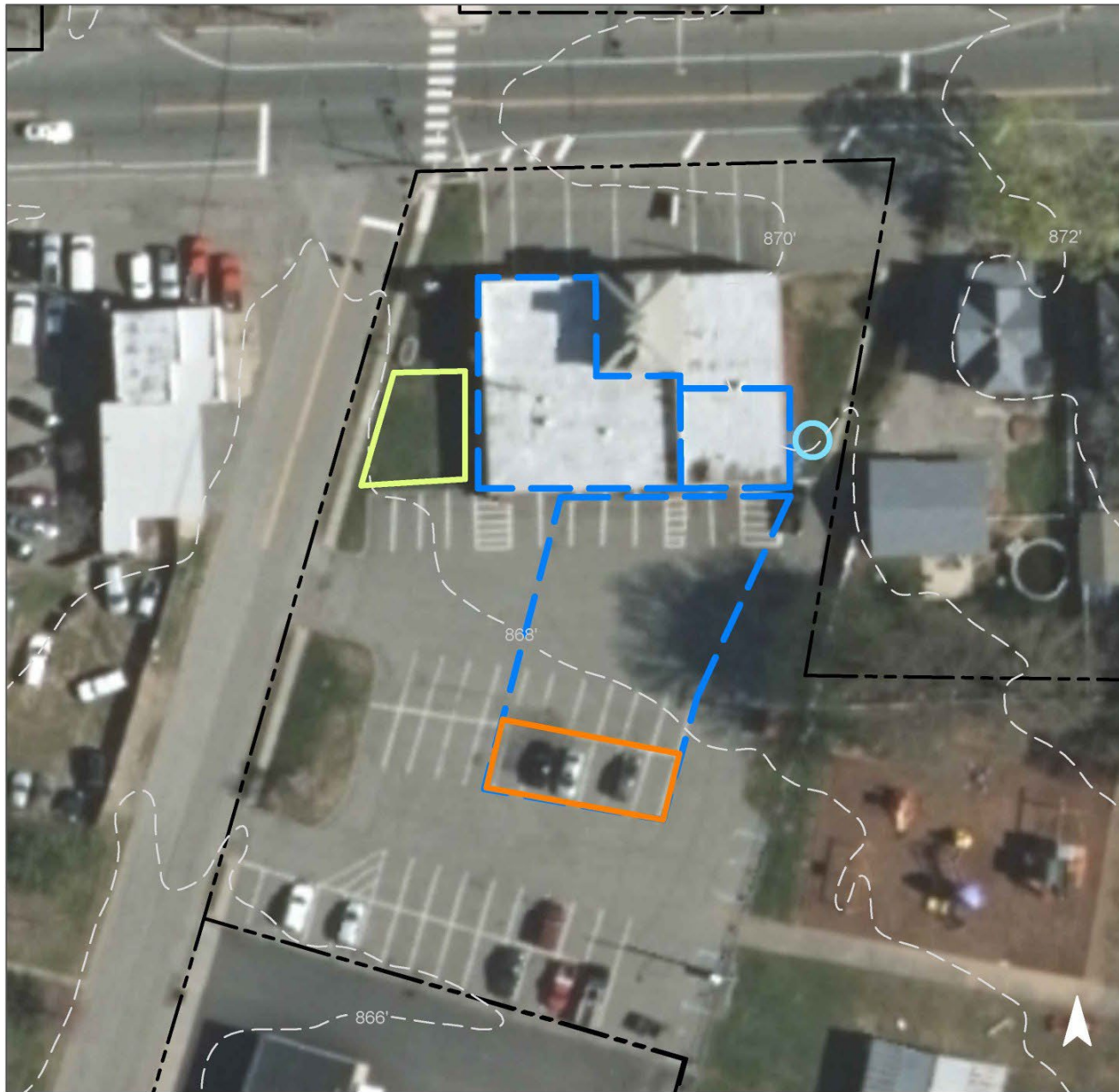


A rain garden can be installed on the west side of the building to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed on the south parking strip to store stormwater runoff and allow it to slowly infiltrate into the ground. A cistern can be installed on the east side of the building near a disconnected downspout so the water can be used for watering gardens, washing vehicles, or for other non-potable uses. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
13	52,163	2.5	26.3	239.5	0.041	1.43

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.094	16	6,880	0.26	900	\$4,500
Pervious pavement	0.190	32	13,920	0.52	1,300	\$32,500
Rainwater harvesting	0.030	5	900	0.03	900 (gal)	\$1,800

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mine Hill Fire Department

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

0 25' 50'

AMERICAN LEGION



RAP ID: 6

Subwatershed: Rockaway River

Site Area: 41,017 sq. ft.

Address: 391 Maple Avenue
Mine Hill, NJ 07803

Block and Lot: Block 802, Lot 1

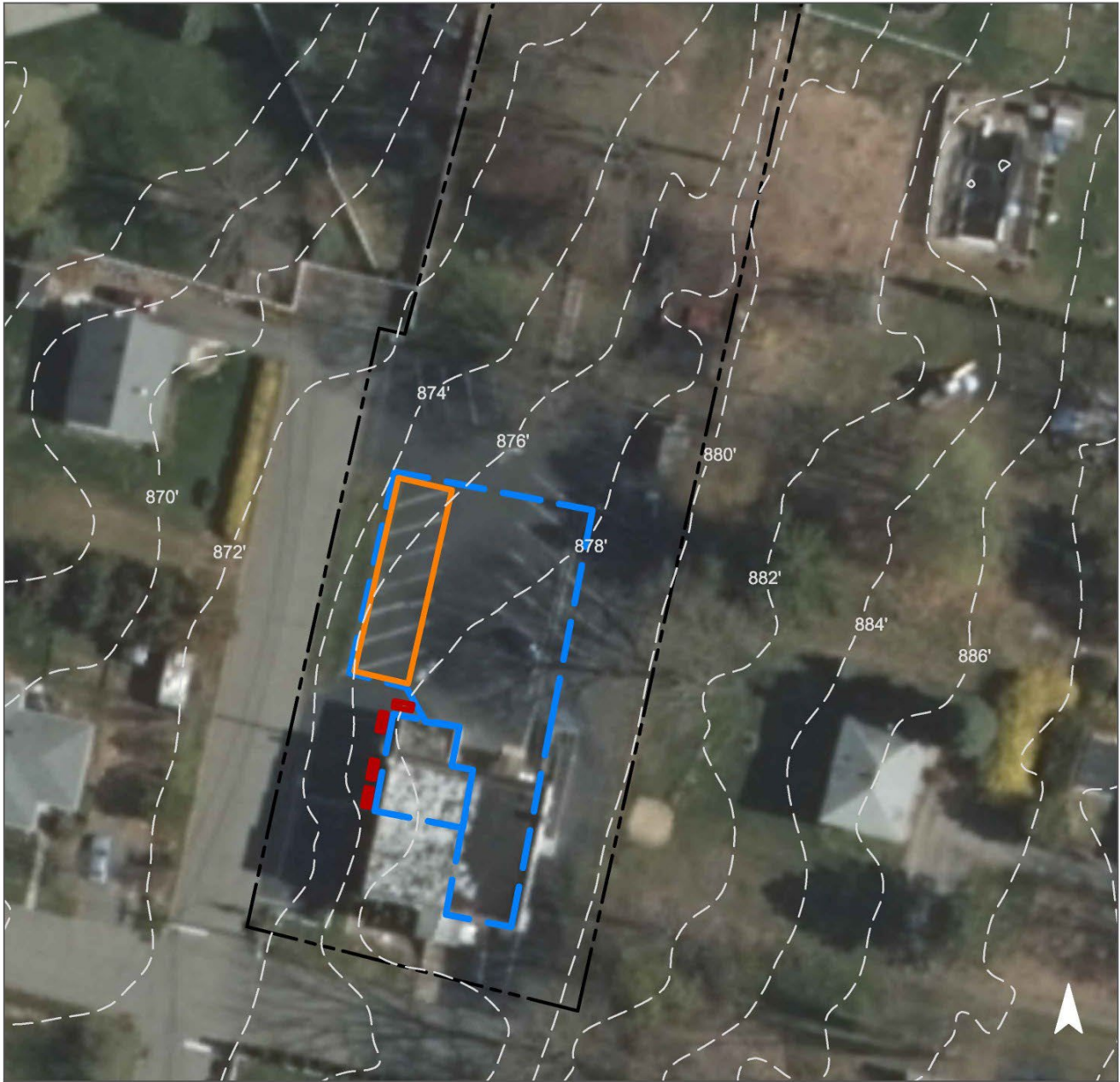


Half of the building's rooftop runoff and part of the parking lot runoff, can be treated with pervious pavement in the east strip of the parking lot. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
55	22,421	1.1	11.3	102.9	0.017	0.61

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Planter boxes	0.022	4	n/a	n/a	4 (boxes)	\$4,000
Pervious pavement	0.170	28	12,480	0.47	1,165	\$29,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



American Legion

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



ATRIUM PROFESSIONAL CENTER

RAP ID: 7

Subwatershed: Rockaway River

HUC14 ID: 02030103030070

Site Area: 45,985 sq. ft.

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

Block and Lot: Block 1302, Lot 2

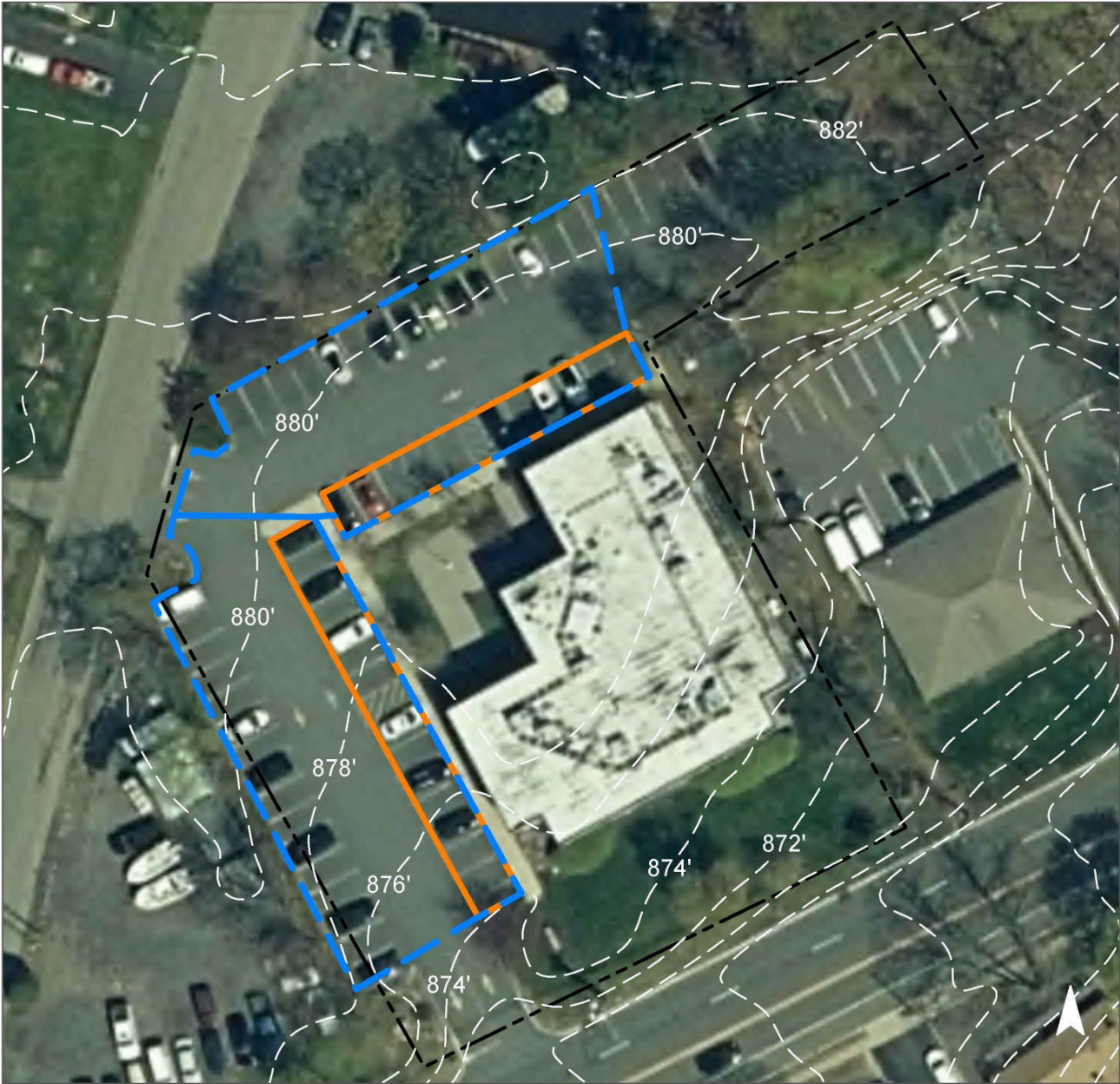


Existing parking spaces to the north and west of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the parking lot. A trench drain may be required. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 50"
85	38,950	1.9	19.7	178.8	0.030	1.21

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	17,575	0.520	76	36,660	1.38	4,030	\$100,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Atrium Professional Center

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



BENDER'S BAGELS ON THE HILL



RAP ID: 8

Subwatershed: Rockaway River

Site Area: 20,596 sq. ft.

Address: 231 US-46
Mine Hill, NJ 07803

Block and Lot: Block 804, Lot 23

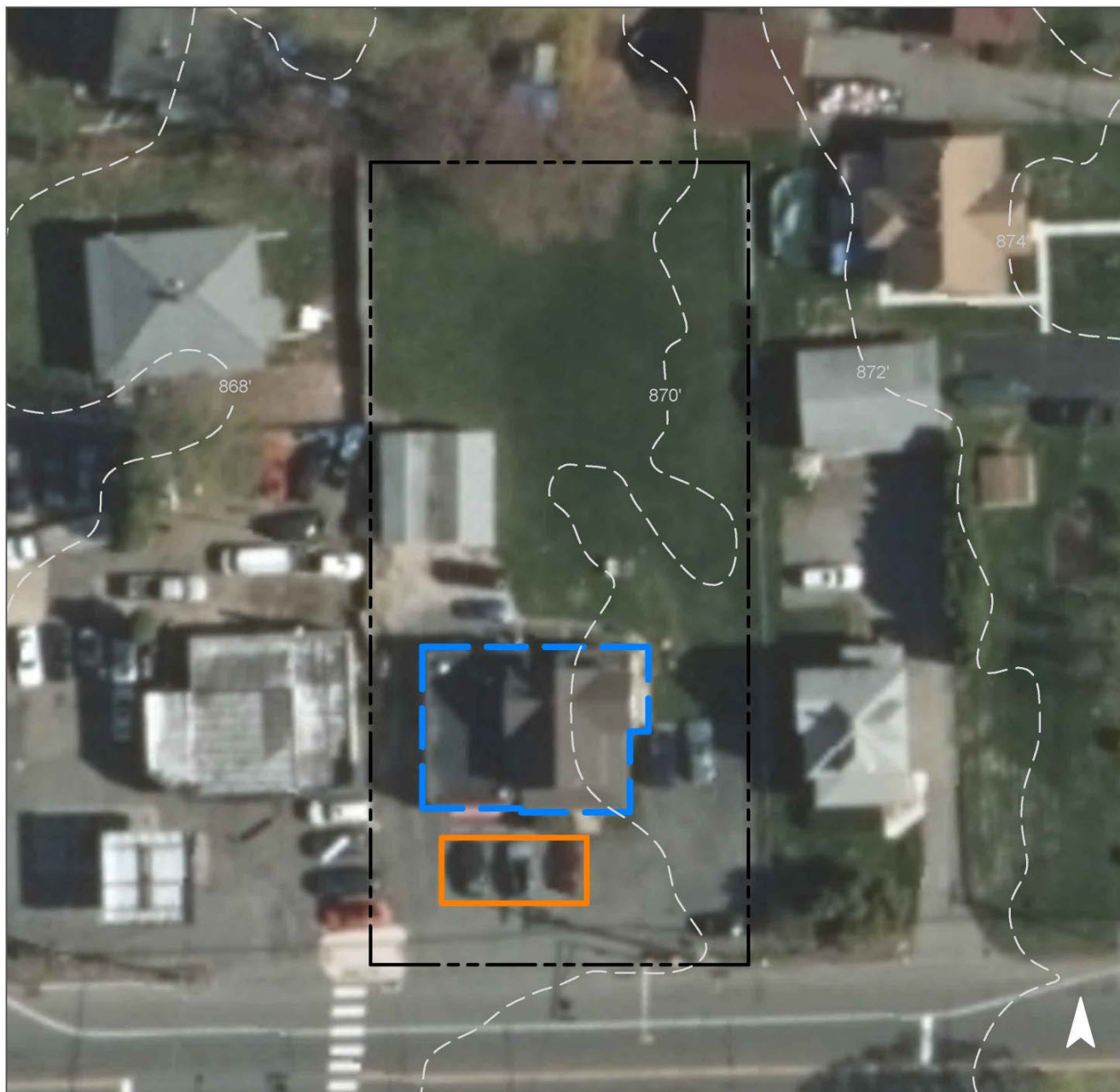


Pervious pavement can be installed south of the building to store stormwater runoff and allow it to slowly infiltrate into the ground. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
64	13,238	0.6	6.7	60.8	0.010	0.36

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



**Bender's Bagels On
The Hill**

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

0 20' 40'



HEDDEN PARK



RAP ID: 9

Subwatershed: Rockaway River

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

Address: 18 Ford Street
Mine Hill, NJ 07803

Block and Lot: Block 2101, Lot 1



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

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.057	10	4,200	0.16	550	\$2,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Hedden Park

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



MINE HILL PRESBYTERIAN CHURCH



RAP ID: 10

Subwatershed: Rockaway River

Site Area: 65,848 sq. ft.

Address: 213 Route 46
Mine Hill, NJ 07803

Block and Lot: Block 8002, Lot 17-18

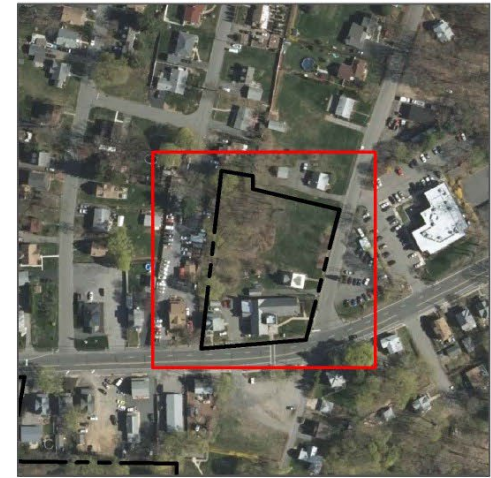
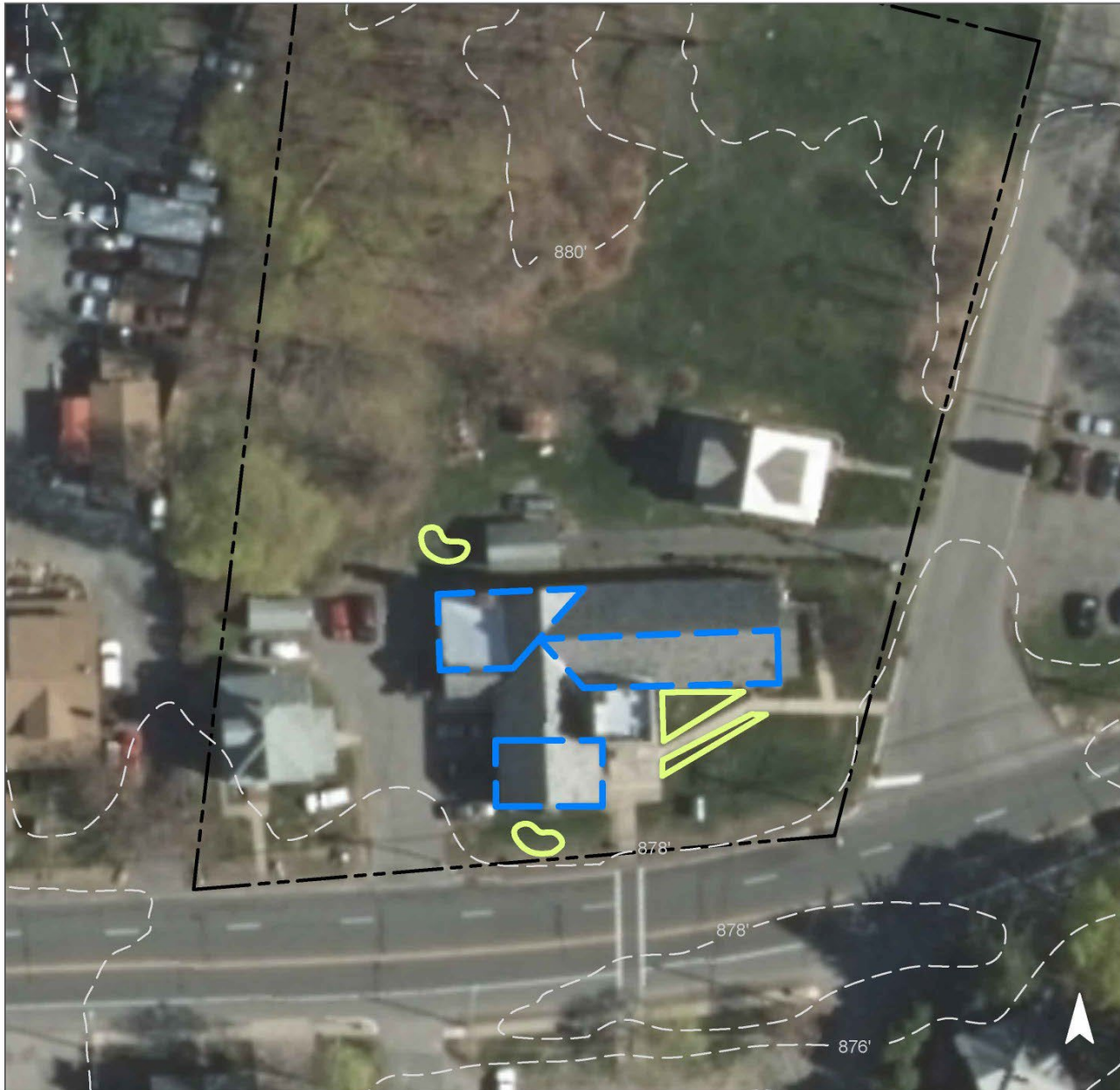


Rain gardens can be installed on the north, southeast, and south sides of the building near disconnected downspouts to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.073	12	5,330	0.20	700	\$3,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mine Hill Presbyterian Church

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

0 25' 50'

MINE HILL RECREATION CENTER



RAP ID: 11

Subwatershed: Rockaway River

Site Area: 285,271 sq. ft.

Address: 19 Baker Street
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 13-14



A rain garden can be installed south of the gazebo to capture, treat, and infiltrate rooftop runoff. Pervious pavement can be installed on the basketball court to store stormwater runoff and allow it to slowly infiltrate into the ground. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
28	79,516	3.8	40.2	365.1	0.062	2.18

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.013	2	970	0.04	125	\$625
Pervious pavement	0.358	60	26,280	0.99	13,750	\$343,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mine Hill Recreation Center

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



MINE HILL TOWN HALL



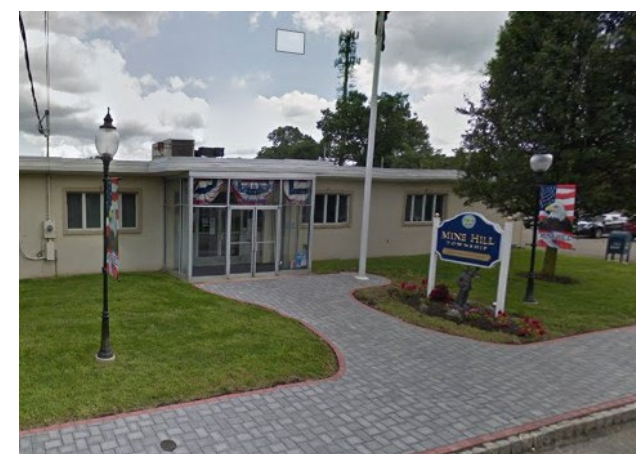
RAP ID: 12

Subwatershed: Rockaway River

Site Area: 29,100 sq. ft.

Address: 10 Baker Street
Mine Hill, NJ 07803

Block and Lot: Block 1304, Lot 16

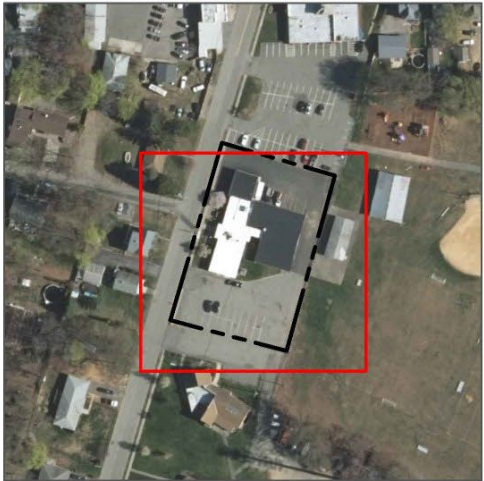


A rain garden can be installed in the turfgrass area near the building to capture, treat, and infiltrate rooftop runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

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

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

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mine Hill Town Hall

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



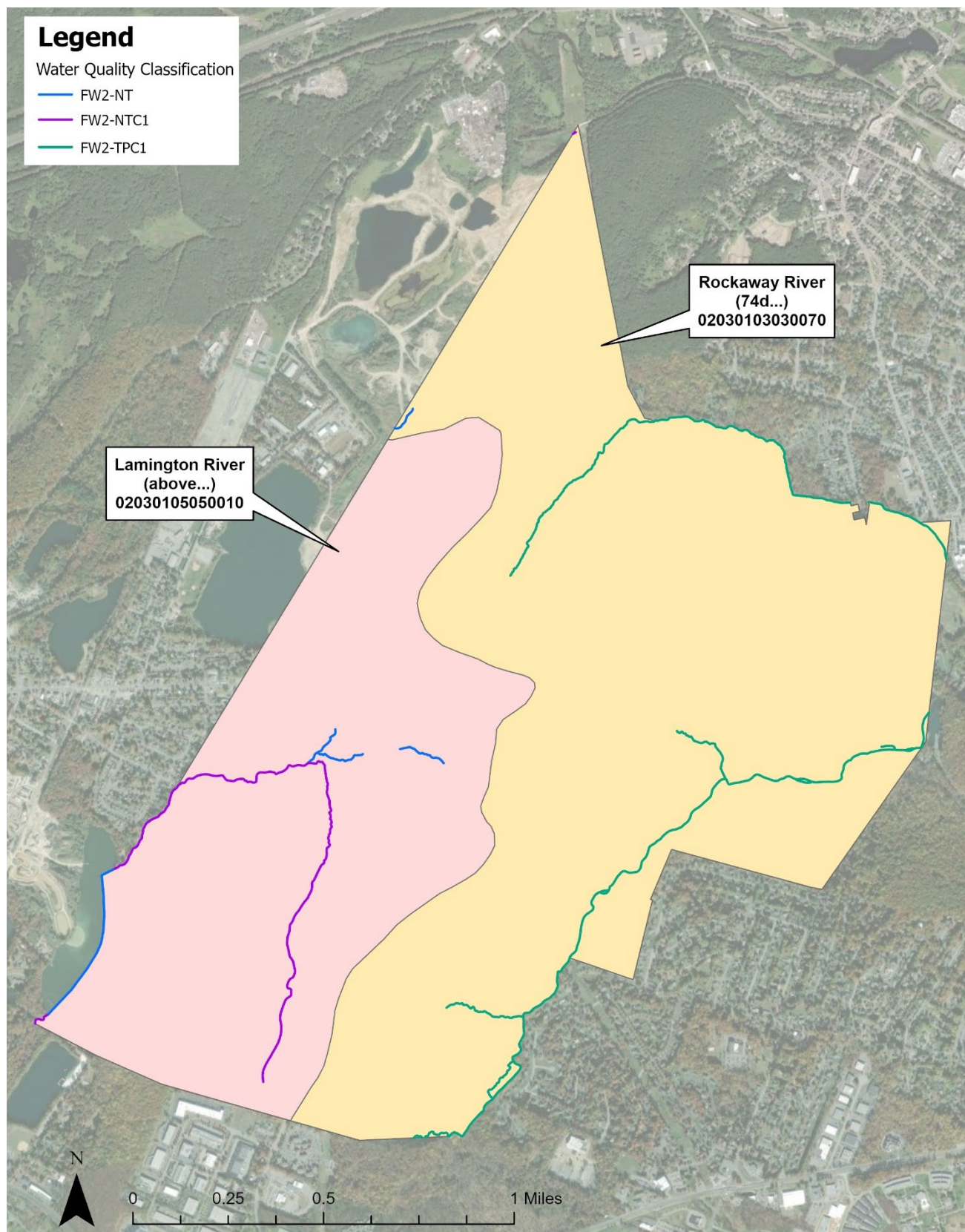


Figure 12. Water Quality Classification of Surface Waters in Mine Hill Township

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

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

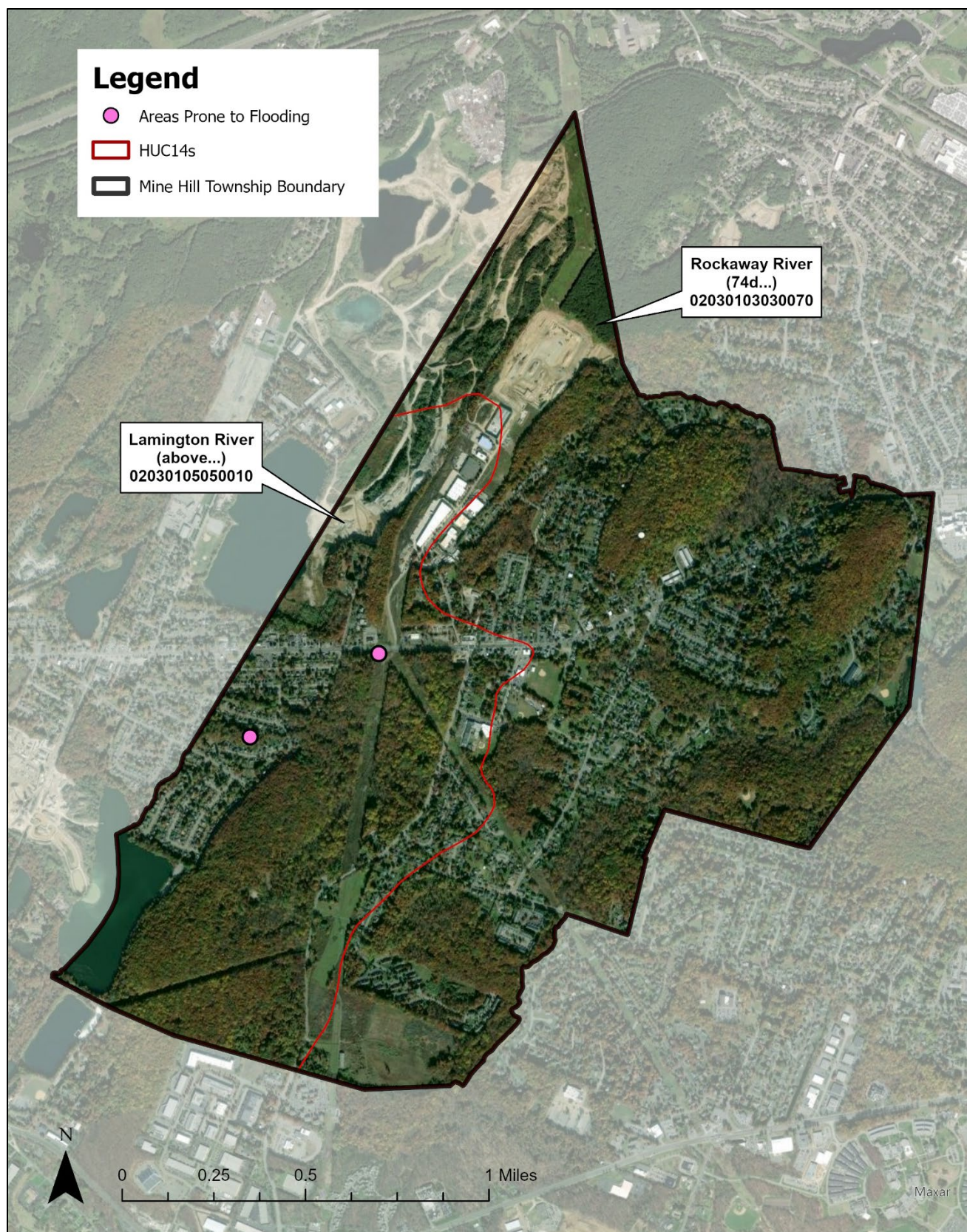


Figure 13. Areas Prone to Flooding in Mine Hill Township

