Bernards Township

Introduction

Located in Somerset County in New Jersey, Bernards Township covers about 24.3 square miles. With a population of 27,830 (2020 United States Census), Bernards Township consists of 54.2% of urban land uses by area. Of that urban land use, approximately 32.0% is comprised of rural residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 42.1% of Bernards Township.

Bernards Township contains portions of ten subwatersheds (Table 1). There are approximately 85.9 miles of rivers and streams within the municipality; these include tributaries to Chambers Brook, Dead River and its tributaries, Dock Watch Hollow Brook, Harrisons Brook and its tributaries, Indian Grove Brook, North Branch Raritan River and its tributaries, Passaic River and its tributaries, Penns Brook and its tributaries, Spring Brook, tributaries to West Branch Middle Brook, and several uncoded tributaries. Bernards 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 Bernards Township

Subwatershed	HUC14
Passaic River Upper (above Osborn Mills)	02030103010010
Passaic River Upper (Dead River to Osborn Mills)	02030103010070
Dead River (above Harrisons Brook)	02030103010080
Harrisons Brook	02030103010090
Dead River (below Harrisons Brook)	02030103010100
Raritan River North Branch (including Mine Brook to Peapack Brook)	02030105060070
Raritan River North Branch (Lamington River to Mine Brook)	02030105060090
Raritan River North Branch (Route 28 to Lamington River)	02030105070010
Middle Brook East Branch	02030105120050
Middle Brook West Branch	02030105120060

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

Municipal Analysis Summary

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

The Q-Farms in Bernards 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. There are 433.3 acres of agricultural land use in Bernards Township, of which, 23.3 acres lie within the study area for this Watershed Restoration and Protection Plan. However, there are no Q-Farms in Bernards Township within the study area.

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 (02030105060070, 02030105060090). Within these two HUC14s, there are 41.9 acres of buildings and 43.5 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 Bernards Township, approximately 2.6 acres of rooftop runoff would be managed with 0.52 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Bernards Township, approximately 4.4 acres of roadway would be managed, or 1.2 miles of roadway.
Finally, the parcel data was used to identify parcels that are classified as Property Class 15. Property Class 15 parcels are tax-exempt, and include six subcategories:

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

The Property Class 15 parcels for Bernards Township are shown in Figure 7 and presented in Table 6. 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 8). Available information for each parcel in the study area is presented in Table 7. 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 7 and represents a watershed improvement project that can be included in the municipality's Watershed Improvement Plan. Figure 9 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 Bernards Township. Figure 10 depicts the water quality classifications of surface waters throughout Bernards Township and Table 8 summarizes the total miles and percentage of each surface water quality classification in the municipality.

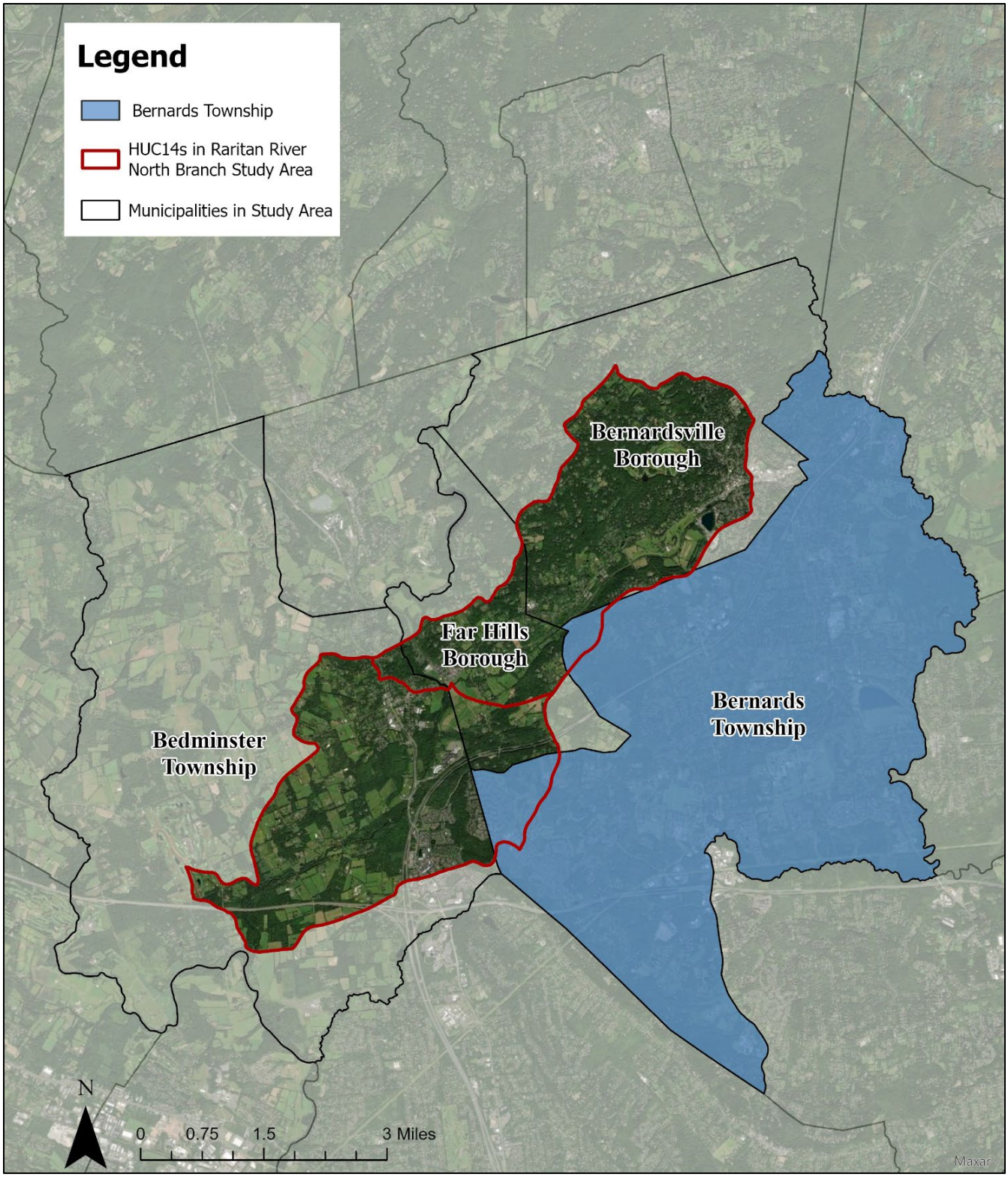


Figure 1: Municipalities in the Study Area

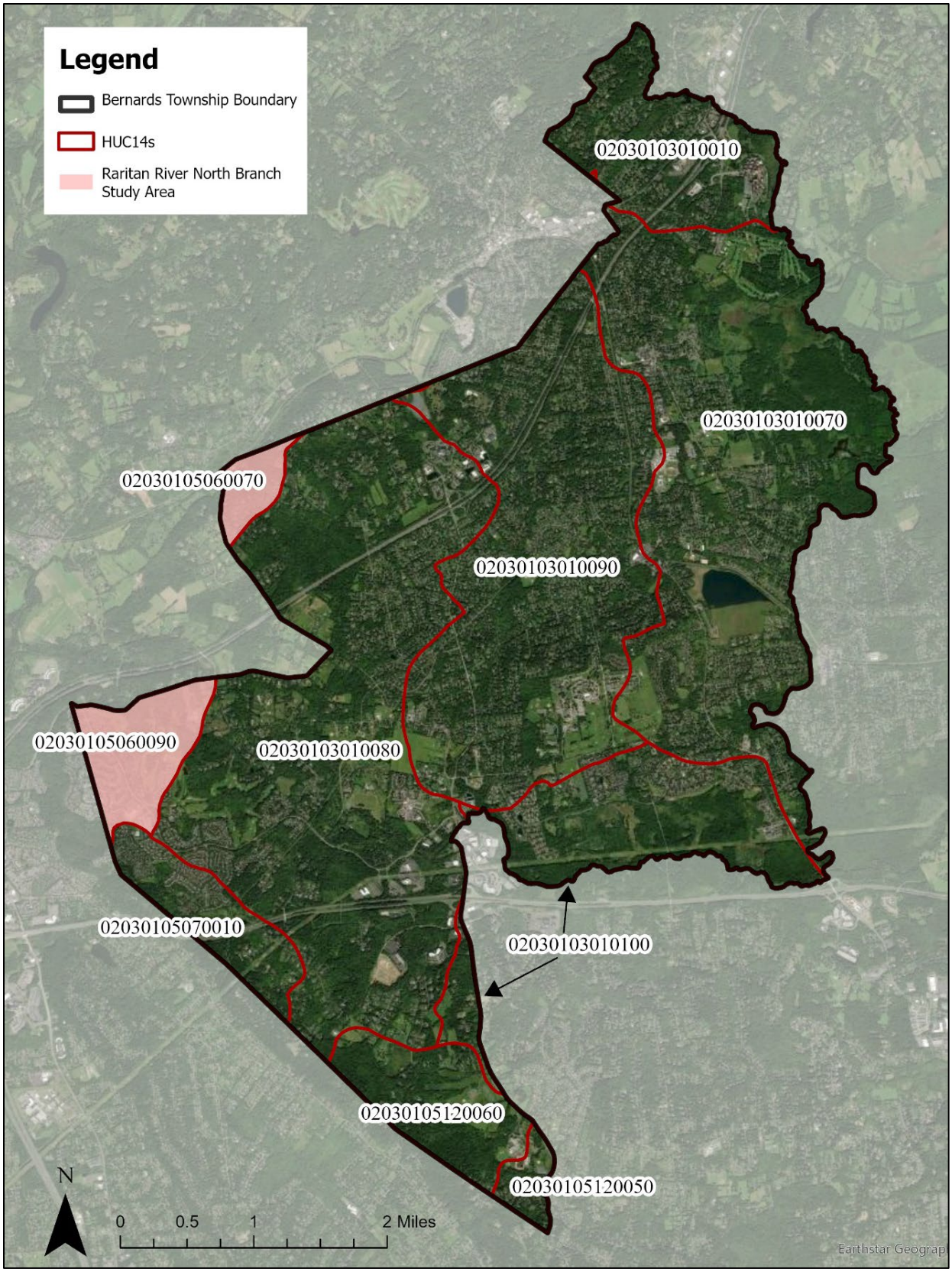


Figure 2: Portions of ten HUC14s are in Bernards Township

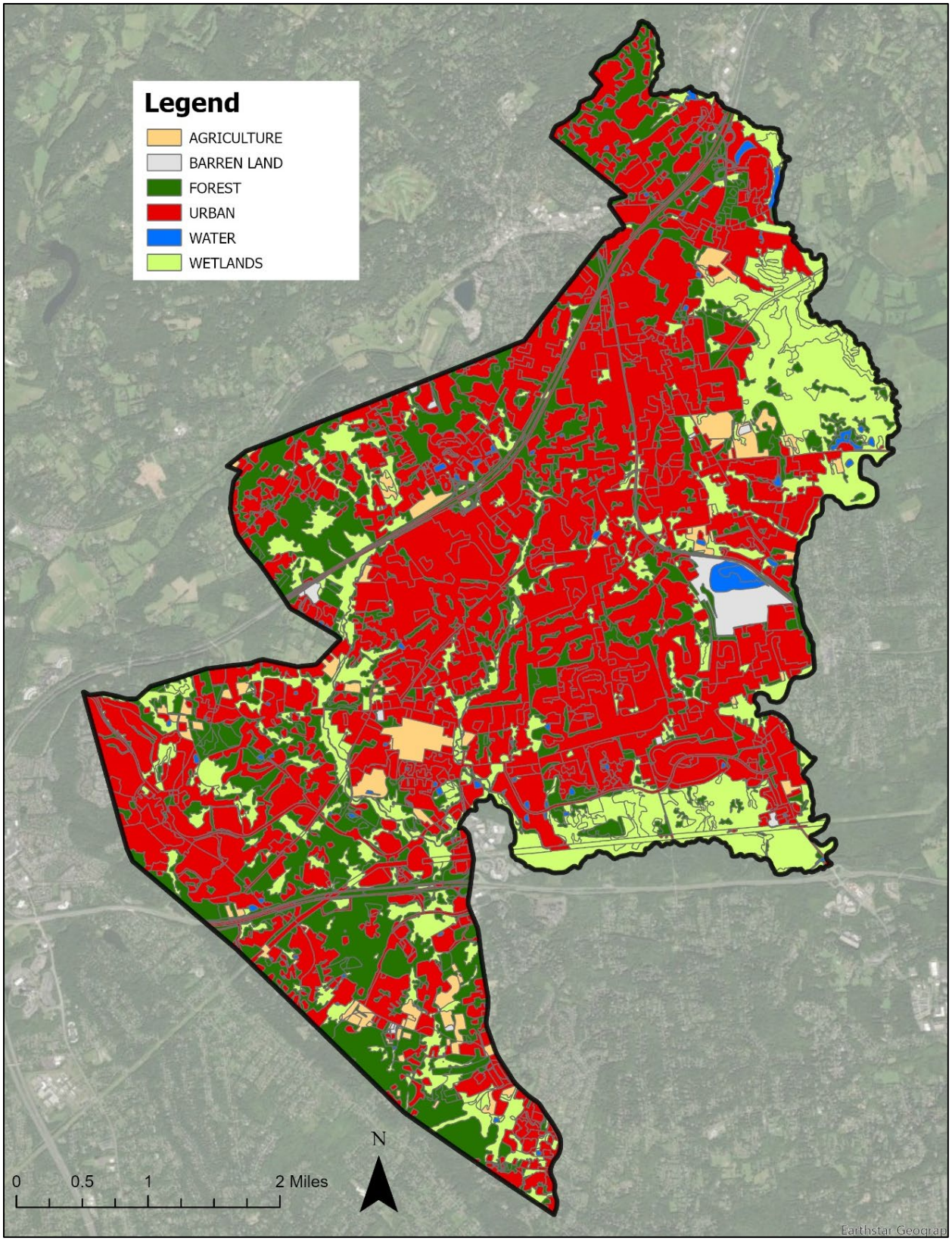


Figure 3: Land Use in Bernards Township

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103010010				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	314.9	31.5	944.6	12,594.3
Urban	540.4	756.6	8,106.1	75,657.0
Water	27.4	2.7	82.1	1,094.5
Wetlands	72.6	7.3	217.7	2,902.8
TOTAL =	**955.2**	**798.1**	**9,350.5**	**92,248.6**
02030103010070				
Agriculture	136.5	177.4	1,364.7	40,942.2
Barren Land	121.6	60.8	607.9	7,294.7
Forest	479.8	48.0	1,439.4	19,192.0
Urban	1,917.2	2,684.1	28,757.8	268,406.0
Water	93.1	9.3	279.4	3,725.0
Wetlands	1,059.7	106.0	3,179.2	42,389.1
TOTAL =	**3,807.9**	**3,085.5**	**35,628.4**	**381,948.9**
02030103010080				
Agriculture	163.6	212.7	1,636.4	49,093.2
Barren Land	11.7	5.9	58.7	704.0
Forest	1,385.6	138.6	4,156.8	55,424.5
Urban	2,211.3	3,095.9	33,169.9	309,586.0
Water	30.7	3.1	92.0	1,226.5
Wetlands	680.4	68.0	2,041.3	27,216.8
TOTAL =	**4,483.4**	**3,524.1**	**41,155.1**	**443,251.0**
02030103010090				
Agriculture	38.8	50.4	388.0	11,640.0
Barren Land	4.7	2.3	23.4	280.6
Forest	571.5	57.2	1,714.4	22,859.2
Urban	2,439.3	3,415.0	36,589.2	341,499.6
Water	15.7	1.6	47.1	627.3
Wetlands	198.4	19.8	595.3	7,937.5
TOTAL =	**3,268.4**	**3,546.3**	**39,357.4**	**384,844.2**
02030103010100				
Agriculture	22.0	28.6	219.7	6,592.0
Barren Land	6.7	3.4	33.7	404.5
Forest	171.2	17.1	513.6	6,847.9
Urban	441.9	618.6	6,628.1	61,862.0
Water	15.8	1.6	47.4	632.0
Wetlands	570.3	57.0	1,710.8	22,810.4

TOTAL =	**1,227.8**	**726.3**	**9,153.3**	**99,148.8**
02030105060070				
Agriculture	4.5	5.9	45.3	1,358.2
Barren Land	0.5	0.3	2.6	31.4
Forest	75.5	7.6	226.6	3,021.7
Urban	74.2	103.8	1,112.3	10,381.1
Water	0.0	0.0	0.0	0.0
Wetlands	0.5	0.1	1.4	18.5
TOTAL =	**155.2**	**117.6**	**1,388.2**	**14,810.9**
02030105060090				
Agriculture	18.8	24.4	187.7	5,629.8
Barren Land	0.0	0.0	0.0	0.0
Forest	78.7	7.9	236.1	3,147.9
Urban	294.3	412.0	4,414.1	41,197.8
Water	0.7	0.1	2.2	28.9
Wetlands	63.3	6.3	190.0	2,533.3
TOTAL =	**455.8**	**450.7**	**5,030.0**	**52,537.6**
02030105070010				
Agriculture	9.3	12.1	93.3	2,799.1
Barren Land	0.0	0.0	0.0	0.0
Forest	150.8	15.1	452.3	6,031.0
Urban	283.3	396.6	4,249.6	39,663.3
Water	3.3	0.3	9.9	132.2
Wetlands	19.9	2.0	59.8	796.6
TOTAL =	**466.6**	**426.2**	**4,864.9**	**49,422.2**
02030105120050				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	16.7	1.7	49.9	665.9
Urban	81.2	113.6	1,217.6	11,364.2
Water	0.8	0.1	2.5	33.3
Wetlands	30.3	3.0	90.8	1,210.4
TOTAL =	**128.9**	**118.4**	**1,360.8**	**13,273.8**
02030105120060				
Agriculture	39.8	51.7	397.7	11,930.5
Barren Land	3.4	1.7	17.0	204.1
Forest	303.0	30.3	909.0	12,120.1
Urban	149.5	209.4	2,243.2	20,936.2
Water	1.4	0.1	4.2	55.6
Wetlands	121.0	12.1	363.0	4,840.2
TOTAL =	**618.1**	**305.3**	**3,934.1**	**50,086.6**
All HUCs				
Agriculture	433.3	563.3	4,332.8	129,984.9

Barren Land	148.7	74.3	743.3	8,919.3
Forest	3,547.6	354.8	10,642.8	141,904.5
Urban	8,432.5	11,805.5	126,487.8	1,180,553.0
Water	188.9	18.9	566.6	7,555.2
Wetlands	2,816.4	281.6	8,449.2	112,655.8
TOTAL =	**15,567.3**	**13,098.4**	**151,222.6**	**1,581,572.6**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Bernards 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 Bernards Township. Based upon the NJDEP impervious surface data, Bernards Township has impervious cover totaling 16.9%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Bernards 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, Bernards 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.

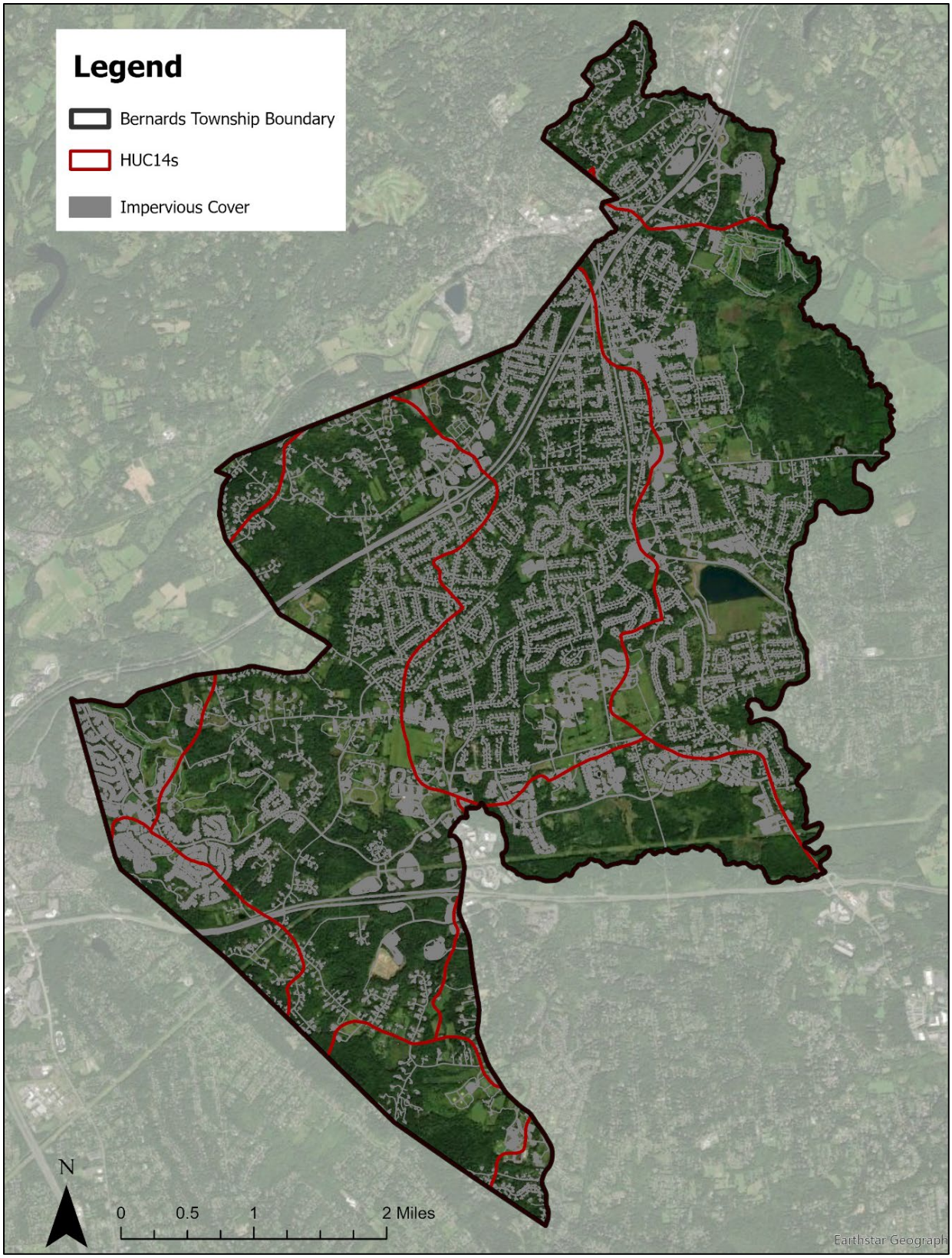


Figure 4: Impervious Cover in Bernards Township

Table 3: Impervious Cover Analysis by HUC14 for Bernards Township

Class	Area (acres)	HUC Impervious Cover (%)
02030103010010		
Building	39.74	
Other	78.97	
Road	78.44	
TOTAL =	**197.2**	**20.6%**
02030103010070		
Building	129.46	
Other	259.42	
Road	168.25	
TOTAL =	**557.1**	**14.6%**
02030103010080		
Building	142.02	
Other	290.08	
Road	252.23	
TOTAL =	**684.3**	**15.3%**
02030103010090		
Building	160.77	
Other	319.77	
Road	230.26	
TOTAL =	**710.8**	**21.7%**
02030103010100		
Building	53.55	
Other	62.01	
Road	60.69	
TOTAL =	**176.3**	**14.4%**
02030105060070		
Building	4.29	
Other	9.97	
Road	4.48	
TOTAL =	**18.7**	**12.1%**
02030105060090		
Building	37.59	
Other	38.60	
Road	38.97	
TOTAL =	**115.2**	**25.3%**
02030105070010		
Building	35.29	
Other	29.60	
Road	43.88	
TOTAL =	**108.8**	**23.3%**
02030105120050		
Building	3.14	
Other	11.59	
Road	7.10	
TOTAL =	**21.8**	**16.9%**

02030105120060		
Building	7.15	
Other	23.52	
Road	8.55	
TOTAL =	**39.2**	**6.3%**
All HUCs		
Building	613.00	
Other	1123.53	
Road	892.85	
TOTAL =	**2,629.4**	**16.9%**

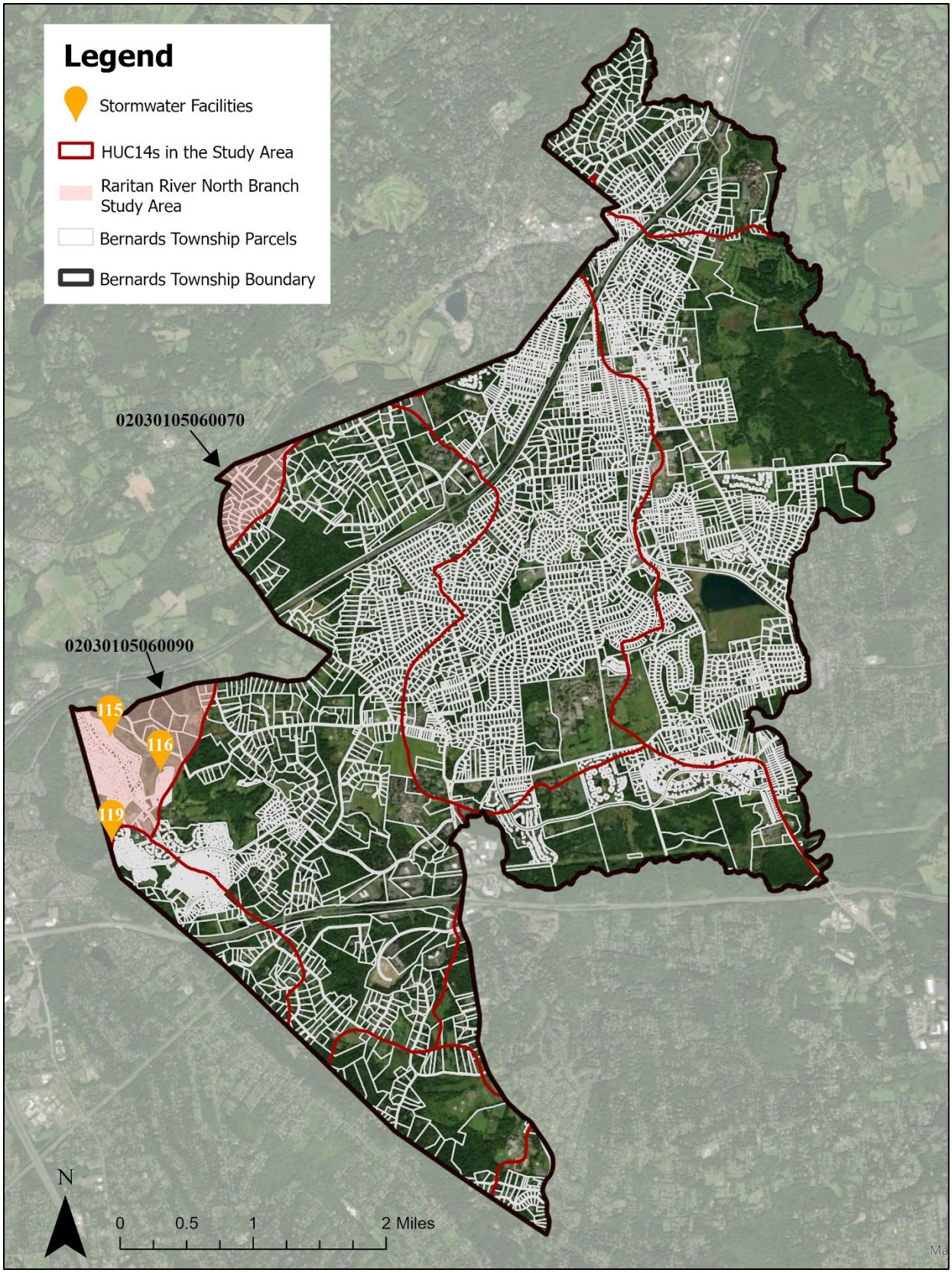


Figure 5: Stormwater Facilities in the Study Area of Bernards Township

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

Raritan River North Branch Study Area		
ID	**Address**	**Type**
115	Douglas Rd	D
116	52 Layton Rd	N
119	Hansom Rd	D

"D" = Detention, "N" = Naturalized

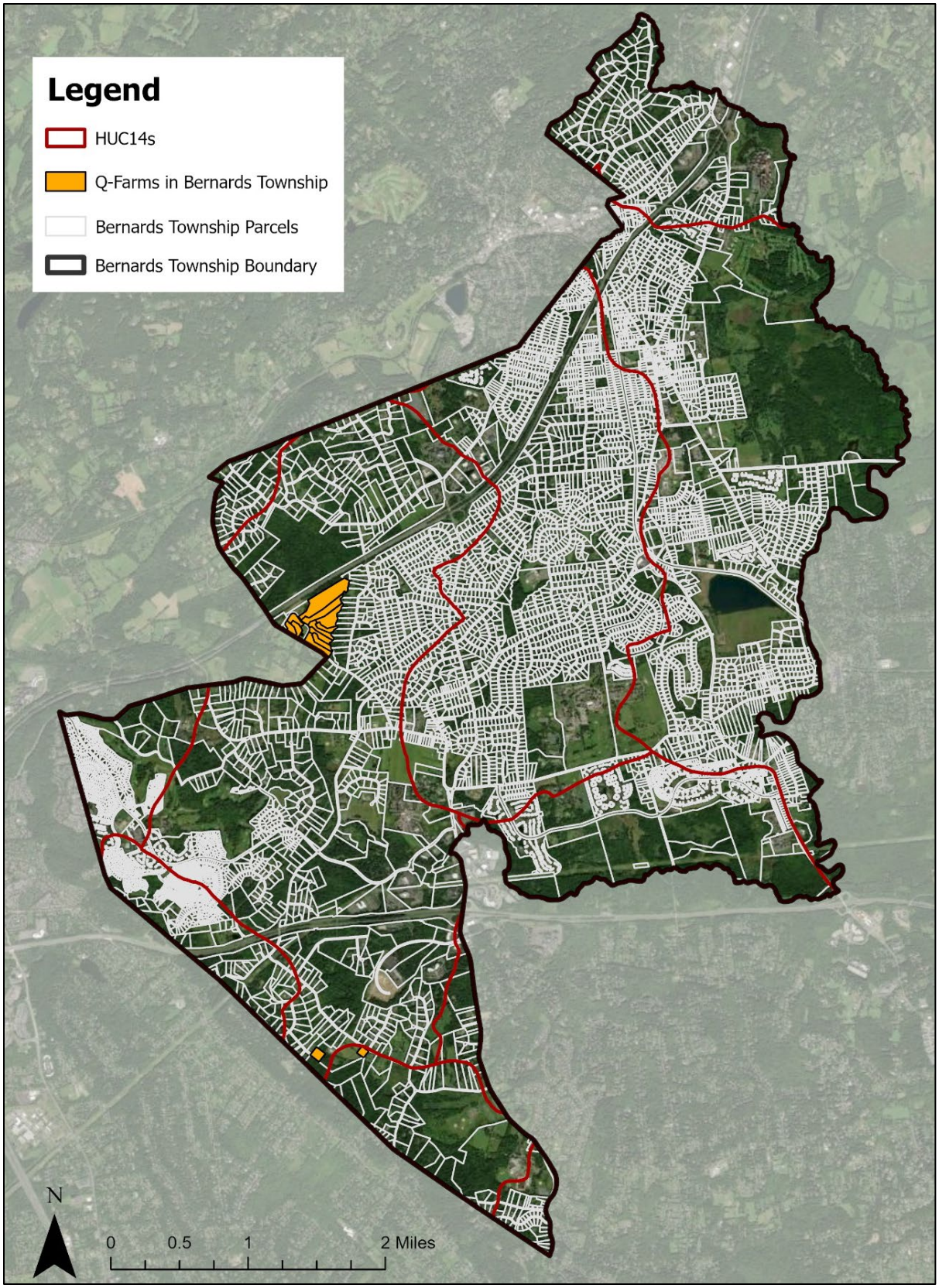


Figure 6: Q-Farm Parcels in Bernards Township

Table 5: Q-Farm Parcels in Bernards Township

Block	Lot	Q-Code	Prop Class	Location
4701	2.01	Q0025		River Farm Ln
4701	2.02	Q0025		River Farm Ln
4701	2.03	Q0025		River Farm Ln
4701	2.04	Q0025		River Farm Ln
4701	2.05	Q0025		River Farm Ln
4701	2.06	Q0025		Mine Brook Rd
4701	2.07	Q0025		Mine Brook Rd & River Farm Ln
4701	2.08	Q0025		River Farm Ln
4701	2.09	Q0025		River Farm Ln
4701	2.1	Q0025		27 River Farm Ln
4701	2.11	Q0025		River Farm Ln
4701	2.12	Q0025		Annin Rd & N Stone Hedge Rd
11501	3.02	Q0027		Mountain Rd
11501	3.03	Q0027		Kings Ridge Rd

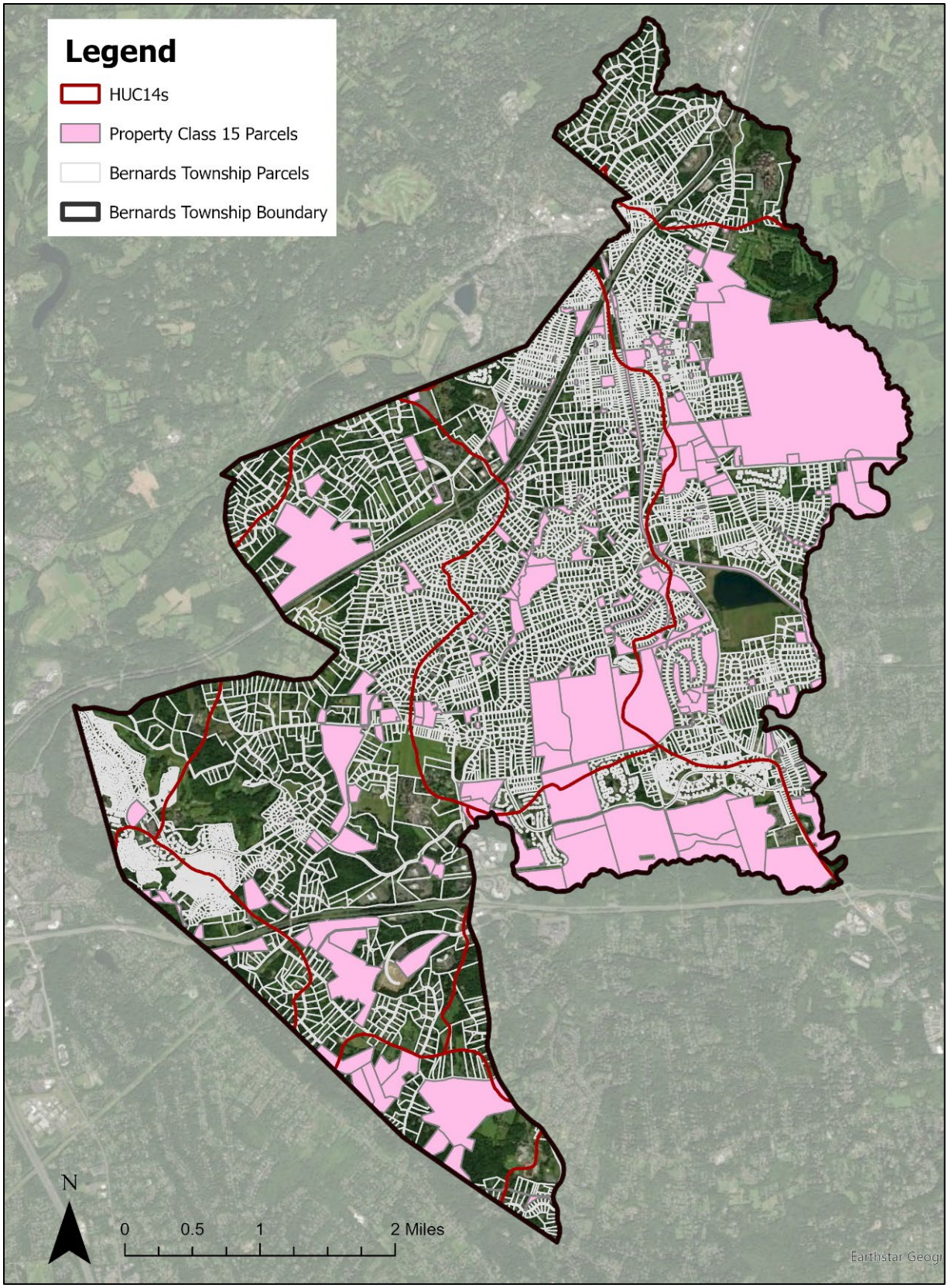


Figure 7: Property Class 15 Parcels in Bernards Township

Table 6: Property Class 15 Parcels in Bernards Township

Block	Lot	Prop Class	Location	Facility Type
1805	41	15A	70 W Oak St	School
2801	3	15A	S Maple Ave (rear)	School Campus
2801	6	15A	285 S Maple Ave	Vacant Land
2801	33	15A	268 S Finley Ave	Ridge & Cedar Hill
5401	1	15A	70 Quincy Rd	School
7002	22	15A	319 Lyons Rd	Vacant Land
7501	3	15A	61 Church St (rear)	Vacant Land
7501	19	15A	61 Church St	School
10001	1	15A	111 Hansom Rd	School
1701	8	15B	173 Madisonville Rd	School
9401	14	15B	361 Somerville Rd	School
*24.01	17	15C	9 Crosswood Way	Vacant Land
*131	11.01	15C	108 Mount Airy Rd.	Vacant Land
*135	6	15C	Pennington Ave.	Vacant Land
200	1	15C	Railroad R O W	Railroad
200	2	15C	Railroad R O W	Railroad
200	3	15C	Railroad R O W	Railroad
200	4	15C	Railroad R O W	Railroad
200	5	15C	Railroad R O W	Railroad
200	6	15C	100 Lyons Pl	Parking Area
200	7	15C	Railroad R O W	Railroad
200	8	15C	Railroad R O W	Railroad
200	9	15C	Railroad R O W	Railroad
200	9.01	15C	Railroad R O W	Railroad
*901	1	15C	Washington Valley Rd	Recreation Center
*901	11.01	15C	Washington Valley Rd.	Vacant Land
*901	13	15C	Route 78	Vacant Land
*902	39.01	15C	Hunter Road	Dedicated Open Space
*903	3	15C	1430 Hunter Road	Vacant Land
*904	44	15C	Washington Valley Rd	Vacant Land
*916	1	15C	Bermuda Avenue	Vacant Land
*918	3	15C	Penn Street	Vacant Land
1004	1	15C	Birch Dr-Island	Island-Traffic
1005	8	15C	40 Walnut Cir	Vacant Land
1005	19	15C	132 N Maple Ave	Park
1302	13	15C	174 W Oak St	Vacant Land
1403	1.01	15C	40 Washington Ave	Vacant Land
1403	2	15C	30 Washington Ave	Fire House
1406	1	15C	69 N Brook Ave	Vacant Land
1406	34.01	15C	70 Conkling St	Vacant Land
1409	1	15C	46 Conkling St	Park
1506	1	15C	10 N Finley Ave	Park
1506	10	15C	15 W Oak St	Former Town Hall
1511	7	15C	24 Depot Pl	Parking Areas
1512	2	15C	18 Conkling St	Vacant Land
1601	1	15C	Collyer Ln & S Finley	Island-Traffic

1603	13	15C	Maple Ave	Parking Lot
1603	21.02	15C	Lewis St	Parking Lot
1603	22	15C	S Maple Ave	Parking Lot
1603	23	15C	S Finley Ave	Parking Lot
1604	6	15C	S Maple Ave	Parking Lot
1605	1	15C	S Finley Ave	Island-Traffic
1606	1	15C	E Oak & S Maple	Island-Traffic
1609	21	15C	67 N Maple Ave	Park
1609	24	15C	E Oak St (rear)	Pumping Station
1610	1	15C	32 S Maple Ave	Library
1610	15	15C	10 Lindbergh Ln	Parking Lot
1611	39	15C	Manchester Dr	Park
1701	11	15C	135 N Maple Ave	Park
1701	13	15C	Lord Stirling Rd	Park
1701	14	15C	190 Lord Stirling Rd	Environ.Educat.Bldg
1701	15	15C	96 Lord Stirling Rd	Park
1701	18	15C	12 Lord Stirling Rd	Vacant Land
1701	23	15C	270 S Maple Ave	Farm/Vacant Land
1701	24	15C	256 S Maple Ave	Park
1805	43	15C	25 Brownlee Pl	Post Office
1901	33	15C	20 E Ash St	Open Space/House
1902	26	15C	28 Voorhees Dr	Park
2001	2	15C	Culberson Rd (rear)	Vacant Land
2101	10	15C	Mt Airy Rd	Vacant Land
2101	45	15C	Chimney Ash Farm Rd-rear	Vacant Land
2301	10	15C	Pill Hill Rd	Land Fill
2301	37	15C	Whitenack Rd-rear	Passive Recreation
2301	41	15C	Whitenack Rd-rear	Passive Recreation
2401	9	15C	Mt Airy Rd (rear)	Vacant Land
2501	23	15C	Kinnan Way-rear	Vacant Land
2601	4	15C	Culberson Rd (rear)	Vacant
2801	1	15C	1 Collyer Ln	Municipal Bldg.
2801	2	15C	255 S Maple Ave	Farm
2801	4	15C	277 S Maple Ave	Maintenance Garage
2801	5	15C	279 S Maple Ave	Recreation Center
2801	9	15C	315 S Maple Ave	Park
2801	10	15C	325 S Maple Ave	Memorial Field
2801	35	15C	262 S Finley Ave	Municipal Offices
2904	35	15C	Woodstone Rd	Drainage Easement
2905	6	15C	32 Grove Rd	Park
3101	18	15C	146 Riverside Dr	Park
3201	5	15C	183 Lord Stirling Rd	Park
3201	7	15C	Lord Stirling Rd	Park
3201	8	15C	Lord Stirling Rd	Open Space
3201	18	15C	145 Riverside Dr	Park
3301	1	15C	530 S Maple Ave	Pumping Station
3302	6	15C	Castle Way	Park
3303	12	15C	Castle Way	Park
3303	17	15C	Riverside Dr	Park

3402	14	15C	40 Hill Top Rd	Park
3604	5	15C	31 Stonehouse Rd	Maintenance Bldg.
3605	1	15C	S Finley&Stonehouse Rd	Island-Traffic
3705	2	15C	Cross Rd	Parking Areas
3802	22	15C	52 Woods End	Detention Basin
3901	61	15C	95 Spring House Ln	Open Space
3901	62	15C	Tamarisk Ct	Open Space
4005	1	15C	74 Autumn Dr	Open Space
4005	5	15C	Sleepy Hollow Rd	Vacant Land
4201	2	15C	Whitenack Rd	Vacant Land
4301	51	15C	264 Whitenack Rd	Recreation
4601	5.01	15C	225 Whitenack Rd	Vacant Land
4701	22	15C	Annin Rd (rear)	Vacant Land
4902	21	15C	Victoria Dr	Rebel Hill Park
5303	19	15C	136 Galloping Hill Rd	Park
5303	28	15C	90 Galloping Hill Rd	Vacant Land
5503	13	15C	Woods End-rear	Open Space
5601	10	15C	Jeffrey Ct	Open Space
5602	5	15C	24 Gerard Ave	Vacant Land
5602	35	15C	Rear Land	Open Space
5802	1	15C	477 S Finley Ave	Vacant Land
5901	1	15C	450 S Finley Ave	Park
5901	2	15C	470 S Finley Ave	Park
5901	29	15C	80 Stonehouse Rd	Vacant Land
6001	11	15C	100 Pond Hill Rd	Park
6102	1	15C	131 Pond Hill Rd	Park
6103	1	15C	85 Pond Hill Rd	Park
6208	10	15C	Overlook Ave	Vacant Land
6303	12	15C	Pheasant Run Dr	Open Space
6401	1	15C	100 Stonehouse Rd	Vacant Land
6401	5	15C	Blackburn Rd	Open Space
6404	9	15C	Governor Dr	Open Space
6404	27	15C	Governor Dr	Detention Basin
6501	1	15C	100 Summit Dr	Open Space
6503	1	15C	43 Blackburn Rd	Open Space
6702	16	15C	81 Manor Dr	Water Tower
6703	7	15C	39 Penwood Rd	Park
6801	27	15C	50 Knollcroft Rd	Open Space
6801	44	15C	6 Knollcroft Rd	Open Space
6802	4	15C	132 Lyons Rd	Park
7001	15	15C	Grist Mill Dr-rear	Park
7002	33	15C	3 Lincroft Dr	Parkland
7101	9	15C	Stockmar Dr	Vacant Land
7101	25	15C	Carriage Way	Vacant Land
7101	29	15C	Canterbury Way	Vacant Land
7201	28	15C	87 Mine Brook Rd	Vacant Land
7301	27	15C	86 Mine Brook Rd	Vacant Land
7301	35	15C	216 Liberty Corner Rd	Vacant Land
7302	1	15C	54 Mine Brook Rd	Vacant Land

7302	5	15C	95 Church St	Fire House
7302	6	15C	91 Church St	Tennis Courts
7302	11	15C	Somerville Rd	Land
7402	12	15C	Canterbury Way	Vacant Land
7502	1	15C	Church St	Island Traffic
7601	15	15C	180 Goltra Dr	Park
7804	8	15C	Lurline Dr-rear	Park
7901	10	15C	Archgate Rd	Park
7903	6	15C	340 Lyons Rd	Vacant Land
8001	1	15C	81 Archgate Rd	Park
8001	2	15C	3410 Valley Rd	Recreation Cntr
8001	3	15C	Valley Rd	Hospital
8001	4	15C	Valley Rd	Hospital
8101	3	15C	Stonehouse Rd	Open Space
8101	23	15C	Bernard Dr	Drainage
8101	47	15C	Blackburn Rd	Detention Basin
8102	18	15C	Bernard Dr	Open Space
8201	10	15C	3144 Valley Rd	Park
8201	33	15C	3010 Valley Rd	Pumping Station
8301	1	15C	155 Haas Rd	Park
8301	6	15C	117 Haas Rd	Park
8301	11.02	15C	93 Haas Rd	Park
8401	16	15C	72 Crest Dr	Vacant Land
8401	23	15C	450 King George Rd	Park
8501	1	15C	90 Acken Rd	Open Space
8501	5.01	15C	Open space	Open space
8501	8	15C	1 Monarch Cir	Pumping Station
*8501	41	15C	355 King George Rd	Park
8501	46	15C	100 Acken Rd	Open Space
8501	47	15C	110 Acken Rd	Open Space
8501	48	15C	King George Rd (rear)	Vacant Land
8502	2	15C	440 King George Rd	Park
8602	108	15C	King George Rd	Vacant Land
8602	109	15C	King George/Spring Valley	Vacant Land
9101	2	15C	Spring Valley Blvd-rear	Open Space
9101	3	15C	101 Acken Rd	Deeded Open Space
9204	2	15C	726 Martinsville Rd	Sewerage Disposal
9204	4	15C	3545 Valley Rd	Park
9204	6	15C	Spring Valley Blvd-rear	Vacant Land
9204	8	15C	Valley Rd	Open Space
9205	1	15C	Mt Airy Rd	Island
9401	11	15C	233 Allen Rd	Park
9501	3	15C	241 Liberty Corner Rd	Recreation Center
10301	26	15C	277 Somerville Rd	Open Space
10301	27	15C	262 Somerville Rd	Open Space
10401	38	15C	77 Milito Way	Nature Trail
10704	39	15C	25 Old Stagecoach Rd	Open Space
10801	96	15C	101 Old Stagecoach Rd	Open Space
*11001	14	15C	Somerville Rd	Vacant Land

11001	15	15C	66 Somerville Rd	Open Space
11101	2	15C	Somerville Rd	County Park
11101	6	15C	Rear Of 11101 2	Open Space
11102	5	15C	Mountain	County Park
11102	6	15C	333 Mountain Rd	Park
11102	41	15C	Pacer Ct	Open Space
11201	6	15C	Allen Rd	Vacant Land
11201	11	15C	Allen Rd	Vacant Land
11501	5.02	15C	Mountain Rd (rear)	Open Space
11501	6	15C	160 Mountain Rd	Park
11501	18	15C	Mountain Rd (rear)	Open Space
11501	19	15C	Mountain Rd (rear)	Open Space
*11501	23	15C	Mountain Rd	Open Space
11601	1	15C	255 Martinsville Rd	Pavilion
11601	23	15C	115 Sunset Ln	Vacant Land
11601	25	15C	Sunset Ln (rear)	Vacant Land
11701	10	15C	Darren Dr	Dedicated Open Space
11701	19	15C	Darren Dr	Detention Basin
11701	20	15C	Sunset Ln	Vacant Land
11701	21	15C	Sunset Ln	Roadway
11701	22	15C	Sunset Ln	Vacant Land
*11702	11	15C	Darren Dr	Dedicated Open Space
*24.01	3	15D	42 Liberty Corner Road	Church
1404	13	15D	16 Evergreen Pl	Residence
1405	4	15D	127 W Oak St	Chapel
1602	1	15D	S Finley Ave	Church/School
1602	6	15D	140 S Finley Ave	Church & Manse
1602	15.01	15D	175 S Maple Ave	Residence
1604	4	15D	22 S Finley Ave	Church
1604	5	15D	1 E Oak St	Office Rec Bldg
1607	1	15D	2 E Oak St	Church
1608	1	15D	12 E Allen St	Paige Whitney
1609	1	15D	5 N Maple Ave	Family Center
1609	7	15D	33 N Maple Ave	Residence
2001	10	15D	22 Ash St	Parsonage
2101	56	15D	130 Mt Airy Rd	Residence
2401	6	15D	142 Mt Airy Rd	Office Space
2401	7.01	15D	140 Mt Airy Rd	Recreation Cntr
2501	29	15D	17 Vail Ter	Residence
2502	13	15D	10 Flintlock Ct	Residence
2702	1	15D	128 Spencer Rd	Parsonage
4002	2	15D	350 Lake Rd	Church
7002	48	15D	510 Mt Airy Rd	Church
7501	4	15D	45 Church St	Church
7703	5	15D	11 Lafayette Ln	Group Residence
8201	25	15D	3048 Valley Rd	Church/School
8201	26	15D	3038 Valley Rd	Parsonage
8402	3	15D	3031 Valley Rd	Parsonage
8402	7	15D	498 King George Rd	Parsonage

8903	36	15D	3265 Valley Rd	House of Worship
9002	1	15D	3415 Valley Rd	Schools
9101	1	15D	500 Spring Valley Blvd	Farm
9204	3	15D	740 Martinsville Rd	Rescue Squad
9301	2	15D	124 Church St	House of Worship
103	1	15F	180 Hardscrabble Rd	Wildlife Sanctuary
1609	22.02	15F	150 Manchester Dr	Long Term Tax Exempt
1609	22.03	15F	150 Manchester Dr	Long Term Tax Exempt
1611	32	15F	35 Lindbergh Ln	Long Term Tax Exempt
1611	40	15F	95 Manchester Dr	Long Term Tax Exempt
1611	45	15F	22 Prospect Ave	Disabled Veteran
2502	4	15F	32 Kinnan Way	Ss Disabled Veteran
2701	35	15F	135 Spencer Rd	Disabled Veteran
2905	1	15F	24 Woodstone Rd	Disabled Veteran
3502	71	15F	1 Bradford Ln	Disabled Veteran Ss
3705	1	15F	415 S Finley Ave	Railroad Station
5203	10	15F	355 Grist Mill Dr	Disabled Veteran
7002	2	15F	15 Wexford Way	Disabled Veteran
8101	2	15F	240 Stonehouse Rd	Disabled Veteran
8604	5	15F	159 Jamestown Rd	Disabled Veteran
8604	29	15F	183 Jamestown Rd	Disabled Veteran
8701	47	15F	130 Potomac Dr	Disabled Veteran
8701	327	15F	97 Potomac Dr	Disabled Veteran
9001	5.05	15F	70 Sycamore Ct	Disabled Veteran
9001	9.12	15F	141 Bayberry Row	Disabled Veteran
9001	24.03	15F	2405 Privet Way	Disabled Veteran
9001	33.01	15F	3312 Balsam Way	Disabled Veteran
9202	30.18	15F	201 English Pl	Disabled Veteran
9903	18	15F	38 Dickinson Rd	Disabled Veteran
10002	5.03	15F	22 Battalion Dr	Disabled Veteran Ss
10201	32	15F	90 Independence Dr	Disabled Vet Spouse
10401	35	15F	15 Milito Way	Disabled Veteran
10706	26.03	15F	21 Dorchester Dr	Disabled Veteran
11301	8	15F	136 Mountainview Blvd	Hospital

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

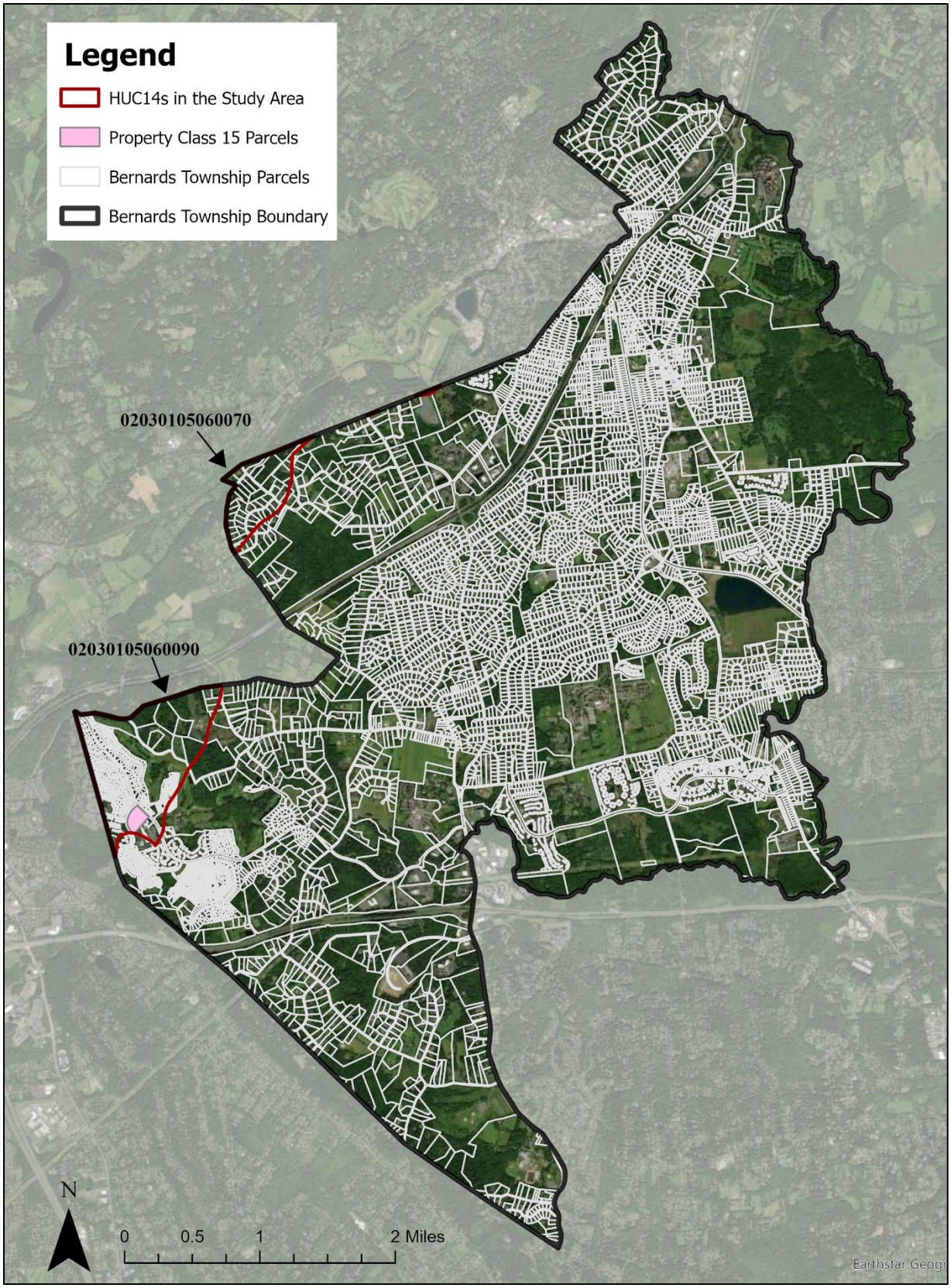


Figure 8: Property Class 15 Parcels in the Study Area of Bernards Township

Table 7: Property Class 15 Parcels in the Study Area of Bernards Township

Block	Lot	Prop Class
***10001[1]**	**1**	**15A**
200	9	15C
200	9.01	15C
2301[1]	10	15C
9903[1]	18	15F

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

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

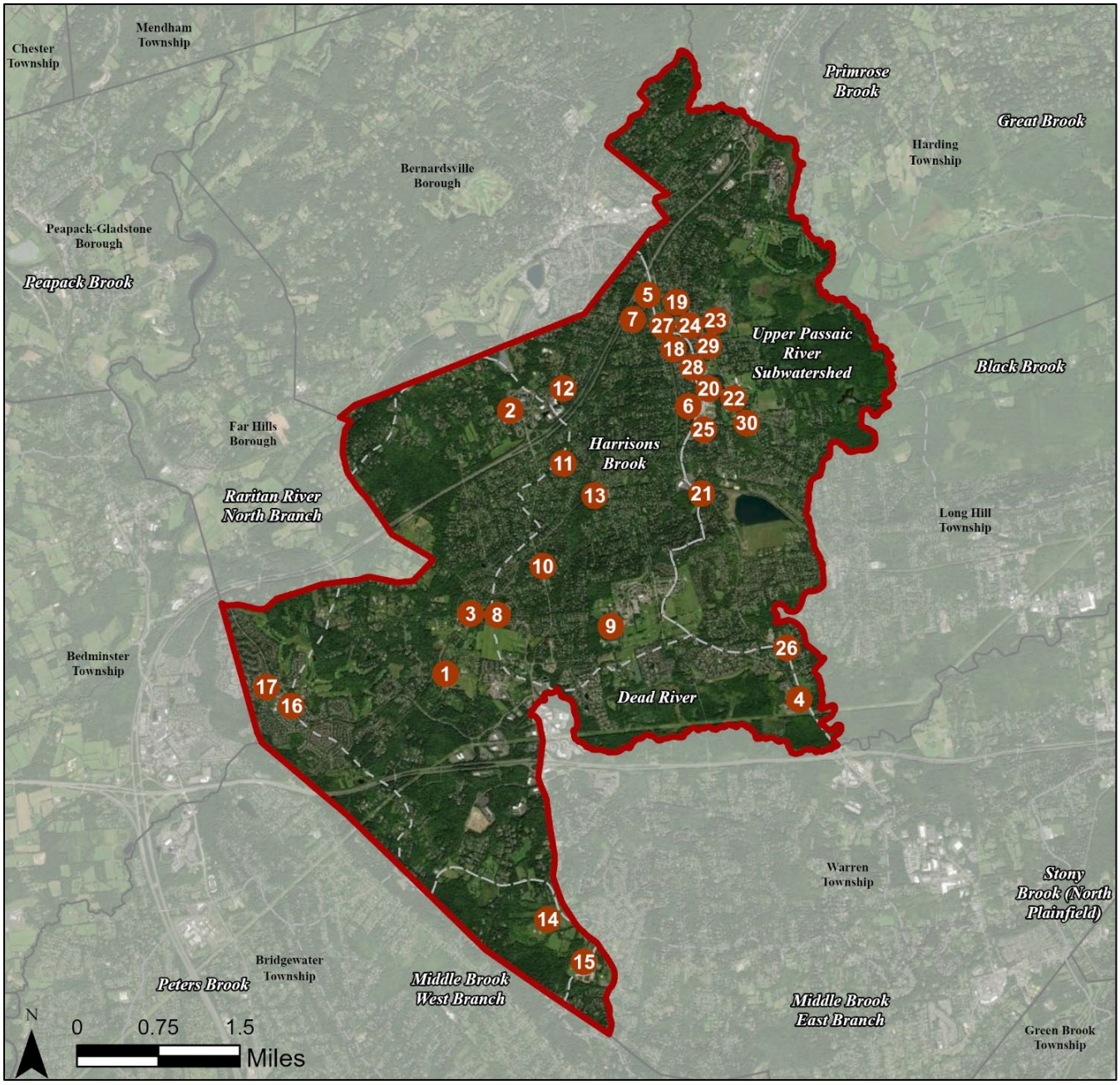


Figure 9: Sites with Green Infrastructure Opportunities in Bernards Township

ALBROOK SCHOOL

RAP ID: 1

Subwatershed: Dead River

HUC14 ID 02030103010080

Site Area: 274,845 sq. ft.

Address: 361 Somerville Road
Basking Ridge, NJ 07920

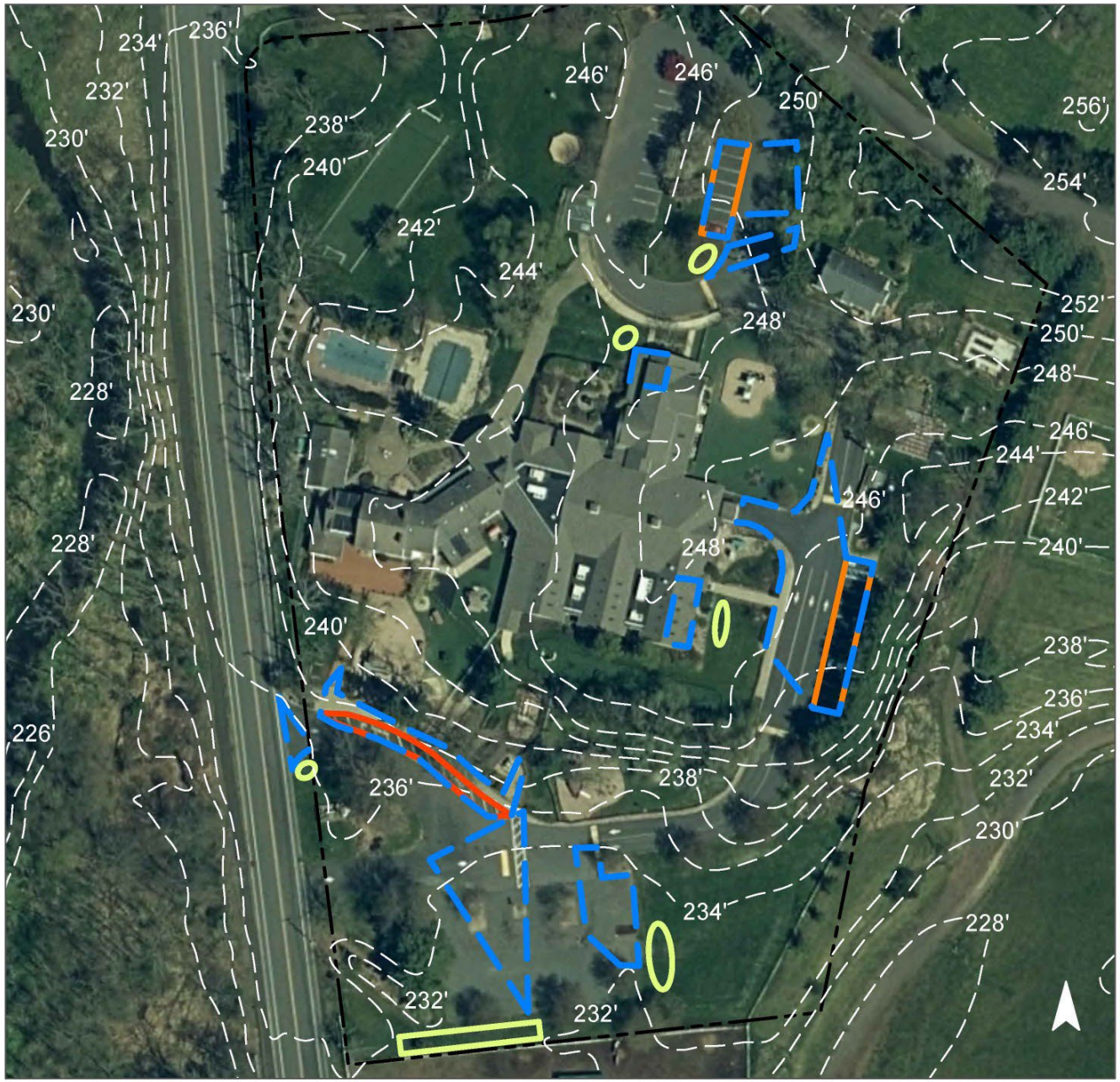
Block and Lot: Block 9401, Lot 14

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from rooftops, driveways, and parking lots. This may require curb cuts and redirection of downspouts underneath sidewalks. The proposed rain garden on the south of the property can be constructed around an existing catch basin. Existing parking spaces in the northern and eastern lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A stormwater planter can be installed in the no-parking zone on the southwest driveway to capture, treat, and infiltrate the stormwater runoff from the roadway. 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"
49	133,909	6.5	67.6	614.8	0.104	4.09

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	8,390	0.243	36	16,250	0.61	2,100	$21,000
Pervious pavement	10,115	0.293	44	19,590	0.74	2,925	$73,125
Stormwater planter	2,660	0.077	11	5,150	0.19	1,135	$425,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



Albrook School

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

0 50' 100'

KING OF KINGS WORSHIP CENTER

RAP ID: 2

Subwatershed: Dead River

Site Area: 418,078 sq. ft.

Address: 219 Mt. Airy Road
Bernards Township, NJ
07920

Block and Lot: Block 2301, Lot 31

Stormwater runoff from the parking lot north of the building can be captured by a rain garden installed in the turfgrass area of the parking lot island to capture, treat, and infiltrate stormwater runoff. A rain garden would not only capture stormwater but it would provide wildlife habitat as well as provide aesthetic value. A section of parking spaces can also 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 44"
27	112,372	5.4	56.8	515.9	0.088	3.08

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
Bioretention system	0.221	37	16,250	0.61	2,125	$10,625
Pervious pavement	0.246	41	18,060	0.68	2,080	$52,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

King of Kings Worship Center

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

0 20' 40'

LIBERTY CORNER FIRE COMPANY

RAP ID: 3

Subwatershed: Dead River

HUC14 ID 02030103010080

Site Area: 356,323 sq. ft.

Address: 95 Church Street
Liberty Corner, NJ 07938

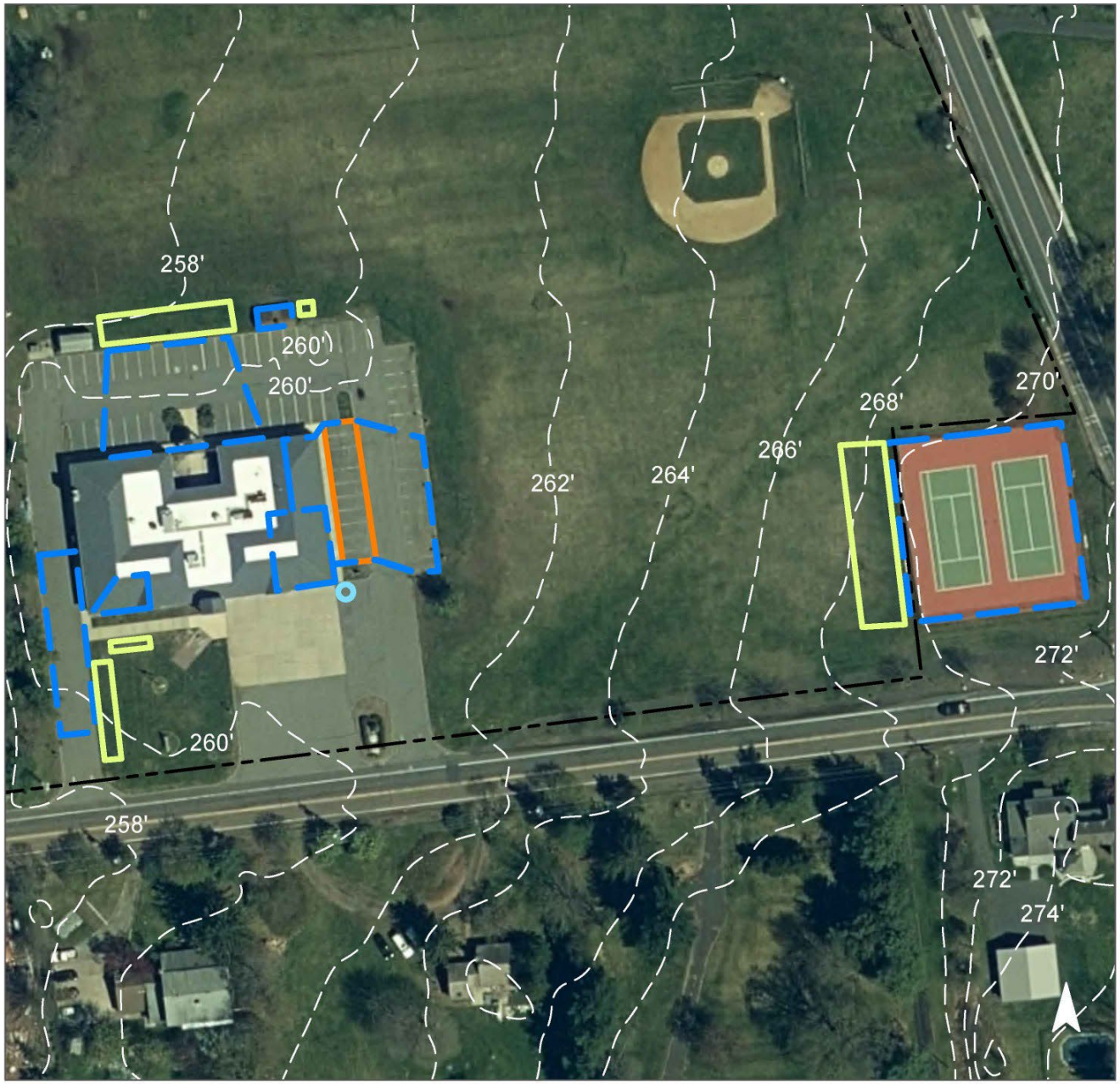
Block and Lot: Block 7302, Lot 5

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from rooftops, parking lot, driveway, and the tennis court on the far east corner of the property. This will require curb cuts, trench drains, and redirection of downspouts under the sidewalk. Existing parking spaces in the eastern 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 washing vehicles. 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"
19	68,378	3.3	34.5	313.9	0.053	2.09

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	23,715	0.688	103	45,930	1.73	5,935	$59,350
Pervious pavement	7,300	0.212	32	14,140	0.53	1,990	$49,750
Rainwater harvesting	1,885	0.055	8	1,500	N/A	1,500 (gal)	$4,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Liberty Corner Fire Company

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

0 50' 100'

DUNKIN'

RAP ID: 4

Subwatershed: Dead River

Site Area: 748,635 sq. ft.

Address: 415 King George Road
Bernards Township, NJ
07920

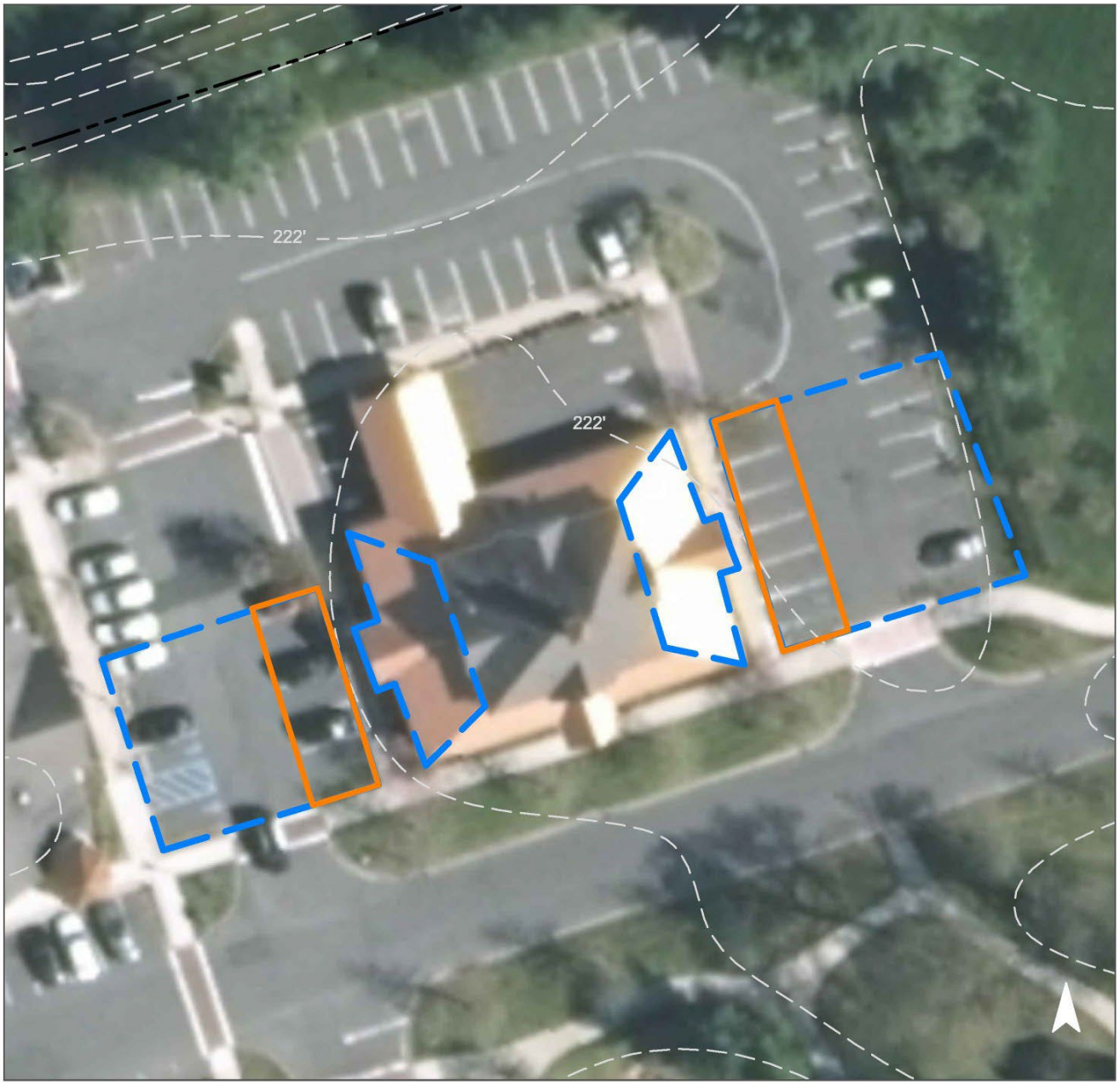
Block and Lot: Block 8501, Lot 39

Parking spaces in the parking lot to the east and west of the building can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. Porous pavement comes in different forms such as porous asphalt, pervious concrete, permeable pavers, and grass pavers. These are sturdy materials that allow for vehicles to pass over but still allow water to 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"
56	416,526	20.1	210.4	1,912.4	0.325	11.42

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	0.244	41	17,880	0.67	2,070	$51,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Dunkin'

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

0 20' 40'

BASKING RIDGE FIRE COMPANY

RAP ID: 5

Subwatershed: Harrisons Brook

HUC14 ID 02030103010090

Site Area: 176,014 sq. ft.

Address: 30 Washington Avenue
Basking Ridge, NJ 07920

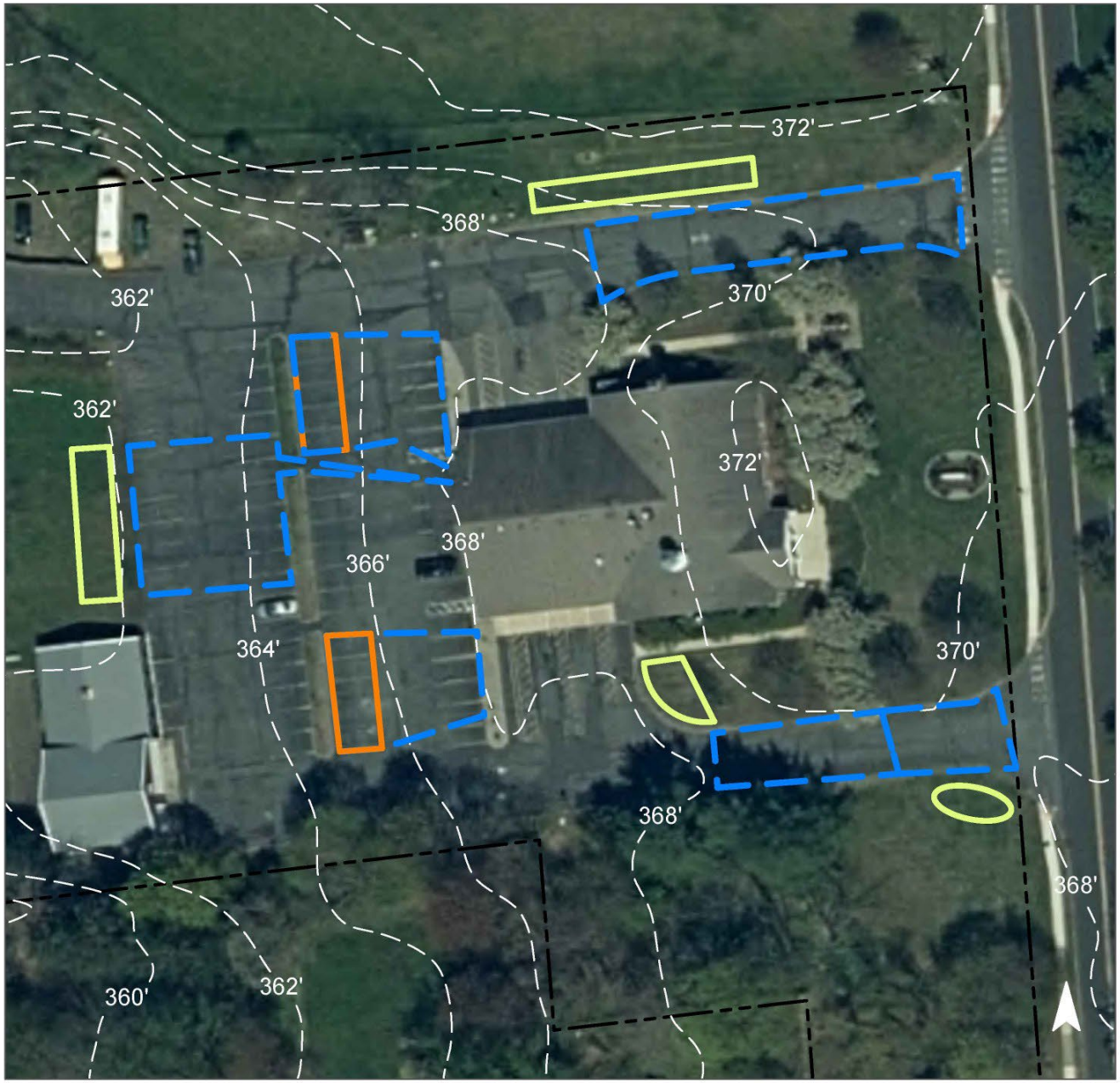
Block and Lot: Block 1403, Lot 2

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveways and parking lot. This will require curb cuts and trench drains. Existing parking spaces in the east of the 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 49"
41	72,153	3.5	36.4	331.3	0.056	2.20

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	10,115	0.293	44	19,590	0.74	2,535	$25,350
Pervious pavement	4,990	0.145	21	9,660	0.36	1,560	$39,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Basking Ridge Fire Company

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

0 30' 60'

BERNARDS TOWNSHIP HEALTH DEPARTMENT

RAP ID: 6

Subwatershed: Harrisons Brook

Site Area: 80,551 sq. ft.

Address: 262 South Finley Avenue
Bernards Township, NJ
07920

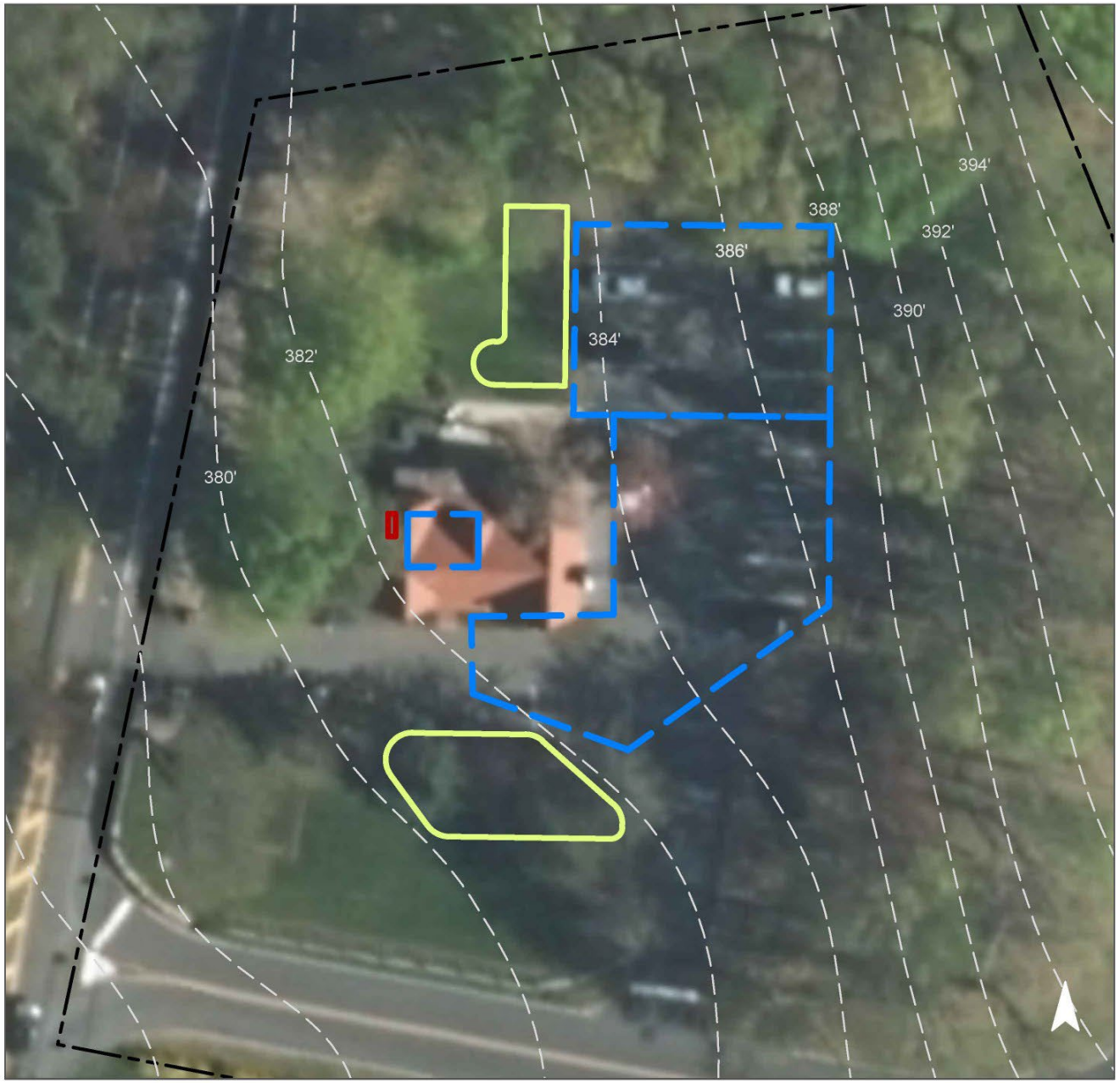
Block and Lot: Block 2801, Lot 31

Rain gardens can be installed in the turfgrass area near the entrance of the building and in the rear to capture, treat, and infiltrate stormwater runoff from the parking lot. Downspout planter boxes can be installed to capture and treat stormwater runoff form 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"
55	44,134	2.1	22.3	202.6	0.034	1.21

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	0.217	36	15,920	0.60	2,085	$10,425
Planter box	n/a	1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bernards Township Health Department

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

0 20' 40'

COVENANT CHAPEL REFORMED

RAP ID: 7

Subwatershed: Harrisons Brook

Site Area: 21,671 sq. ft.

Address: 127 West Oak Street
Bernards Township, NJ
07920

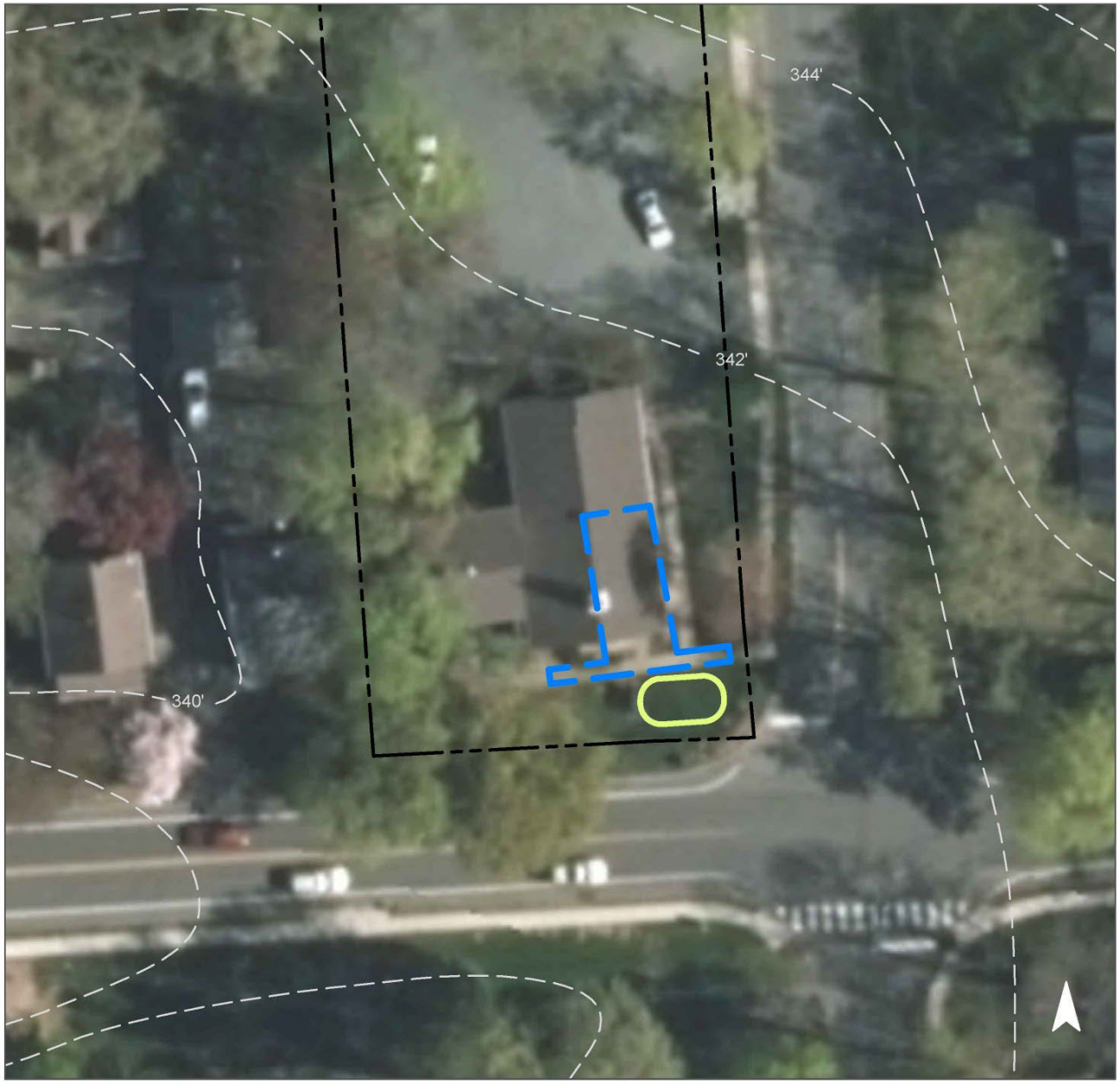
Block and Lot: Block 1405, Lot 4

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. This addition could keep rooftop runoff from the storm drain while also enhancing the environment using different colored native flowering plants. 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"
68	14,655	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	0.023	4	1,720	0.06	225	$1,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Covenant Chapel Reformed

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

0 20' 40'

LIBERTY CORNER ELEMENTARY SCHOOL

RAP ID: 8

Subwatershed: Harrisons Brook

HUC14 ID 02030103010090

Site Area: 323,097 sq. ft.

Address: 61 Church Street
Liberty Corner, NJ 07938

Block and Lot: Block 7501, Lot 3
Block 7501, Lot 19

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway, parking lot, and basketball court. This will require curb cuts and trench drains. 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 49"
41	132,211	6.4	66.8	607.0	0.103	4.04

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	9,695	0.281	42	18,770	0.71	2,425	$24,250
Pervious pavement	25,935	0.753	114	50,230	1.89	6,885	$172,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

Liberty Corner Elementary School

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

0 50' 100'

PLEASANT VALLEY PARK

RAP ID: 9

Subwatershed: Harrisons Brook

Site Area: 3,426,769 sq. ft.

Address: Valley Road
Bernards Township, NJ
07920

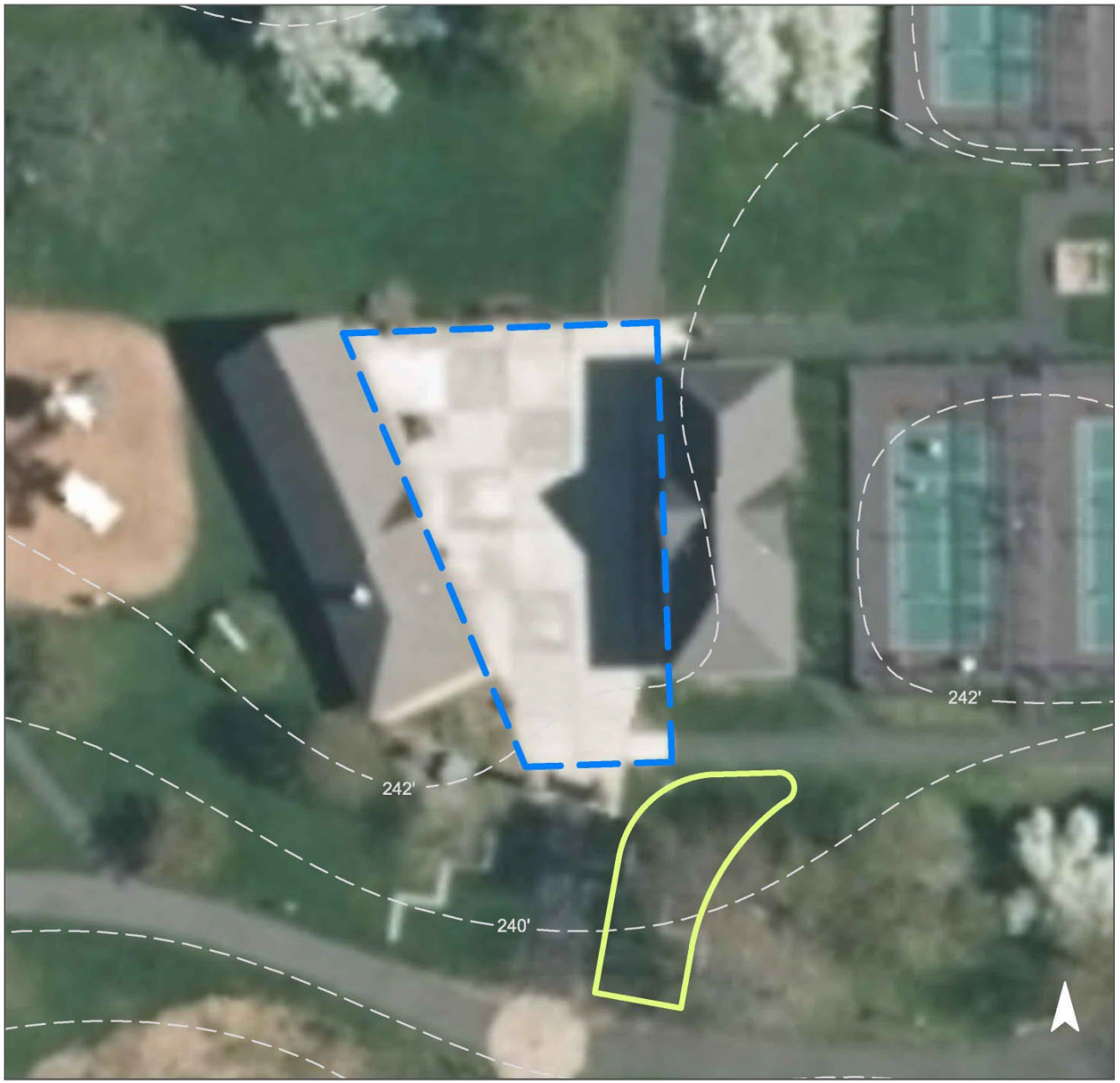
Block and Lot: Block 8001 , Lot 1

The stormwater runoff coming from the impervious cover in this park center can be captured by a rain garden. A rain garden in this location could provide an attraction that would improve the overall quality of the park's atmosphere. 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"
7	223,159	10.8	112.7	1,024.6	0.174	6.12

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 system	0.102	17	7,490	0.28	980	$4,900

GREEN INFRASTRUCTURE RECOMMENDATIONS



Pleasant Valley Park

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

0 15' 30'

SOMERSET HILLS BAPTIST CHURCH

RAP ID: 10

Subwatershed: Harrisons Brook

Site Area: 256,362 sq. ft.

Address: 510 Mt. Airy Road
Bernards Township, NJ
07920

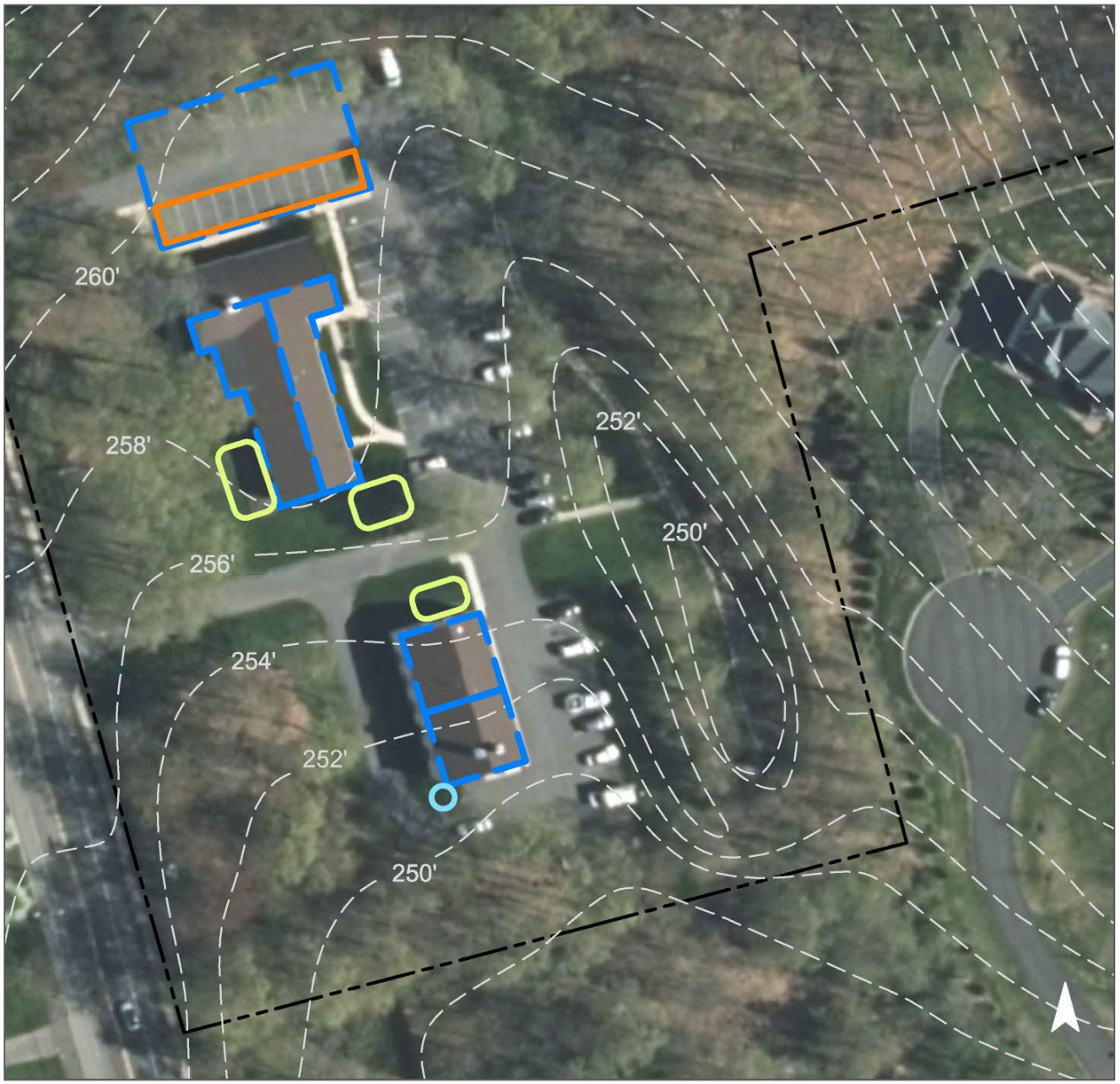
Block and Lot: Block 7002, Lot 48

Several rain gardens can be installed in the turfgrass to capture, treat, and infiltrate stormwater runoff from the roof. These rain gardens can provide wildlife habitat and beautify the area. A cistern can be installed to capture rooftop stormwater runoff. A section of parking spaces can be converted to porous pavement to capture and infiltrate parking lot 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"
24	61,133	2.9	30.9	280.7	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 systems	0.160	27	11,740	0.44	1,550	$7,750
Pervious pavement	0.167	28	12,270	0.46	1,780	$44,500
Rainwater harvesting	0.033	6	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerset Hills Baptist Church

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

0 20' 40'

SOMERSET HILLS LUTHERAN CHURCH

RAP ID: 11

Subwatershed: Harrisons Brook

Site Area: 241,691 sq. ft.

Address: 350 Lake Road
Bernards Township, NJ
07920

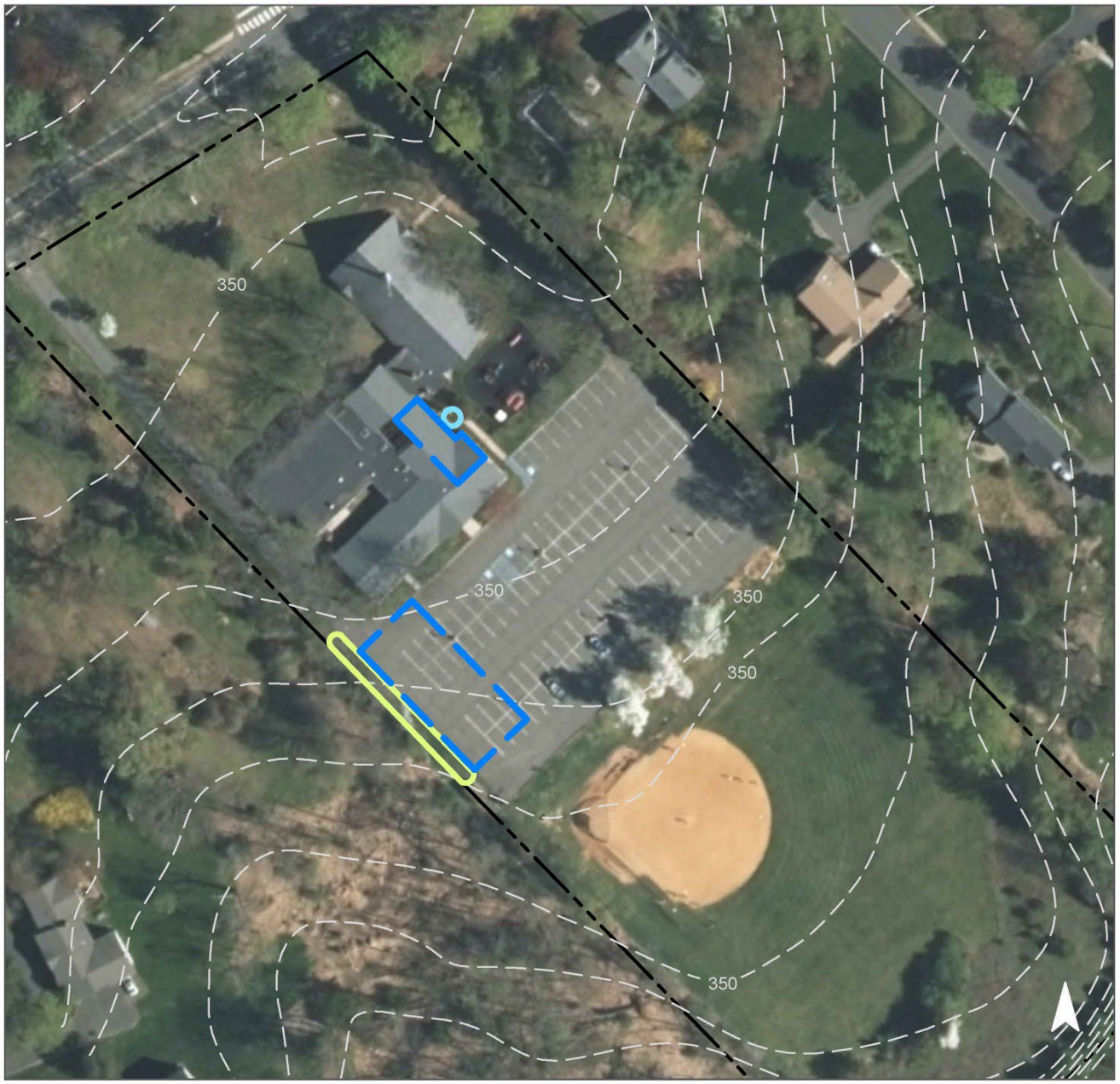
Block and Lot: Block 4002, Lot 2

A small strip of turfgrass can be converted to a rain garden to capture, treat, and infiltrate the runoff from the parking lot. A cistern can also be placed adjacent to the building to capture runoff and be used for non-potable purposes such as watering plants. 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"
33	80,309	3.9	40.6	368.7	0.063	2.20

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
Bioretention system	0.135	23	9,940	0.37	1,300	$6,500
Rainwater harvesting	0.033	6	2,000	0.07	2,000 (gal)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerset Hills Lutheran Church

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

0 20' 40'

SOMERSET HILLS YMCA

RAP ID: 12

Subwatershed: Harrisons Brook

HUC14 ID 02030103010090

Site Area: 698,346 sq. ft.

Address: 140 Mount Airy Road
Basking Ridge, NJ 07920

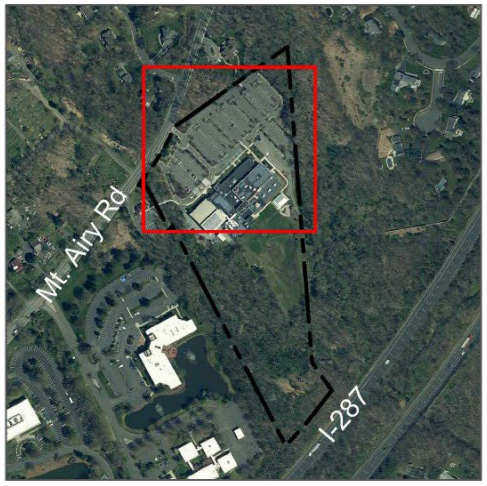
Block and Lot: Block 2401, Lot 7.01

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftops. Existing parking spaces in much 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 west of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing a vehicle or watering a garden. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 49"
39	275,844	13.3	139.3	1,266.5	0.215	8.43

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	2,905	0.084	13	5,620	0.21	725	$7,250
Pervious pavement	128,685	3.734	561	249,230	9.37	27,770	$694,250
Rainwater harvesting	1,680	0.049	8	1,350	N/A	1,350 (gal)	$4,050

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerset Hills YMCA

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

0 50' 100'

WILLIAM ANNIN MIDDLE SCHOOL

RAP ID: 13

Subwatershed: Harrisons Brook

HUC14 ID 02030103010090

Site Area: 1,506,001 sq. ft.

Address: 70 Quincy Road
Basking Ridge, NJ 07920

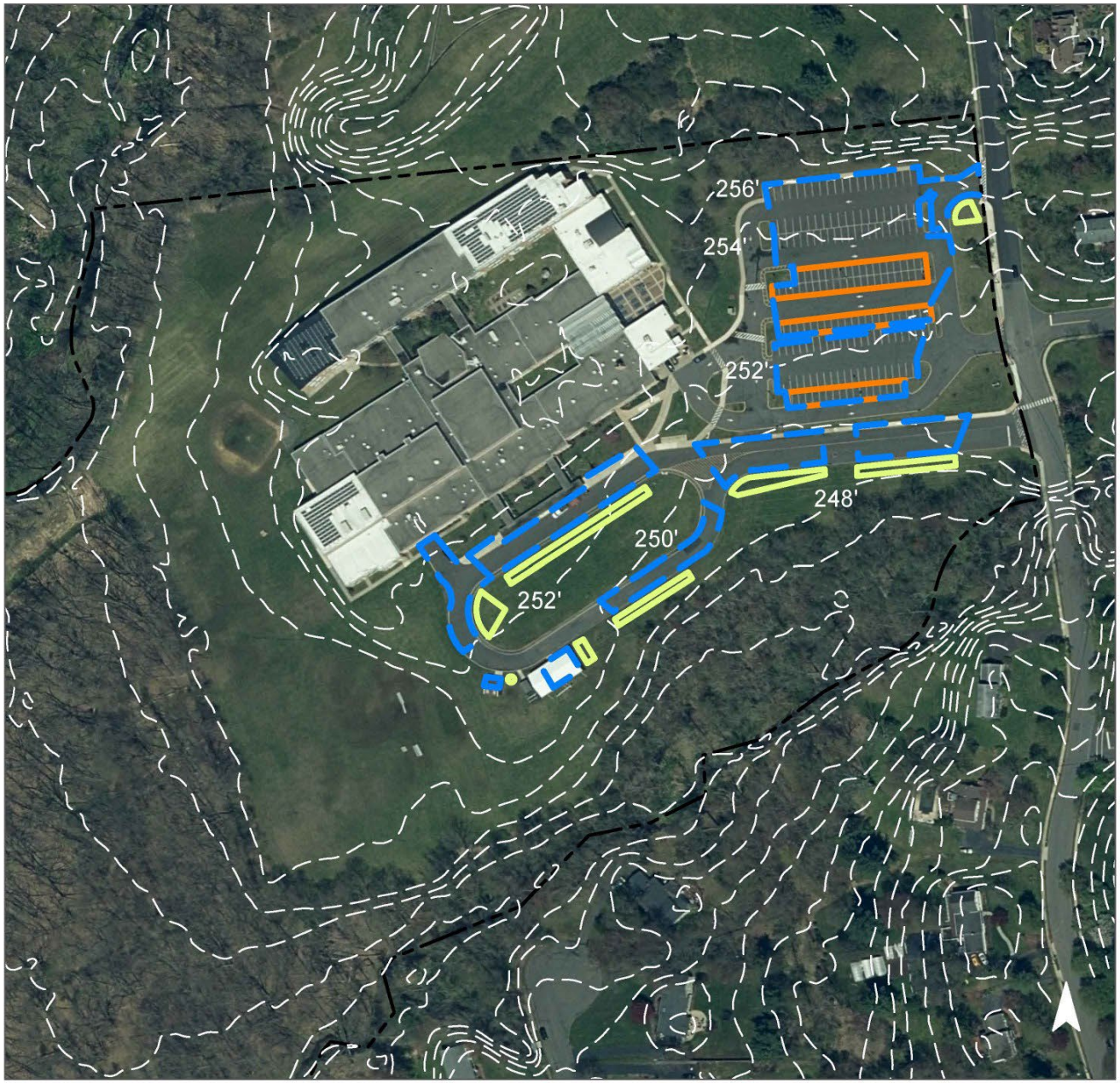
Block and Lot: Block 5410, Lot 1

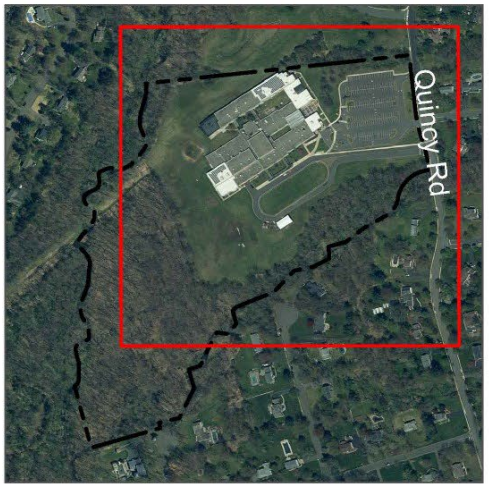
Rain gardens can be installed in various locations around the property to capture, treat, and infiltrate the stormwater runoff from the driveway, parking lot, and shed rooftops. This will require curb cuts, trench drains, and redirection of downspouts. Existing parking spaces in the northern parking 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 49"
22	336,285	16.2	169.8	1,544.0	0.262	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	35,905	1.042	156	69,530	2.61	8,975	$89,750
Pervious pavement	57,660	1.673	251	111,670	4.20	13,685	$342,125

GREEN INFRASTRUCTURE RECOMMENDATIONS





William Annin Middle School

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

0 100' 200'

MOUNTAIN PARK BASEBALL AND SOCCER FIELDS

RAP ID: 14

Subwatershed: Middle Brook West Branch

Site Area: 6,274,742 sq. ft.

Address: 114 Mountain Road
Bernards Township, NJ
07920

Block and Lot: Block 11601, Lot 1

A cistern can be placed adjacent to the building to capture stormwater runoff from the roof. The captured water can then be used for non-potable uses such as washing vehicles. A section of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A parking lot island can be converted to a rain garden to capture, treat, and infiltrate stormwater from another area 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"
7	409,064	19.7	206.6	1,878.2	0.319	11.22

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
Bioretention system	0.482	81	35,330	1.33	4,620	$23,100
Pervious pavement	0.348	58	25,540	0.96	4,560	$114,000
Rainwater harvesting	0.031	5	1,000	0.04	1,000 (gal)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mountain Park Baseball and Soccer Fields

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

0 30' 60'

THE PINGRY SCHOOL

RAP ID: 15

Subwatershed: MIDDLE BROOK WEST BRANCH

Site Area: 8,176,598 sq. ft.

Address: 42 Liberty Corner Road Bernards Township, NJ 07920

Block and Lot: Block 11601, Lot 3

Rain gardens can be installed in the turfgrass areas surrounding the northern part of the building and can be used to capture runoff from the building. They can beautify the front entrance while also infiltrating the captured stormwater. A bioswale can also be placed west of the school to transport water while reducing its flow and pollutant load. A cistern can capture stormwater from the roof which can then be used for 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"
11	901,661	43.5	455.4	4,139.9	0.703	24.73

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS 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	0.280	47	20,570	0.77	2,690	$13,450
Bioswale	0.117	28	8,420	10.00	2,250	$11,250
Rainwater harvesting	0.026	4	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

The Pingry School

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

0 100' 200'

FULTON BANK OF NEW JERSEY

RAP ID: 16

Subwatershed: Raritan River North Branch

Site Area: 53,698 sq. ft.

Address: 578 Allen Road
Bernards Township, NJ
07920

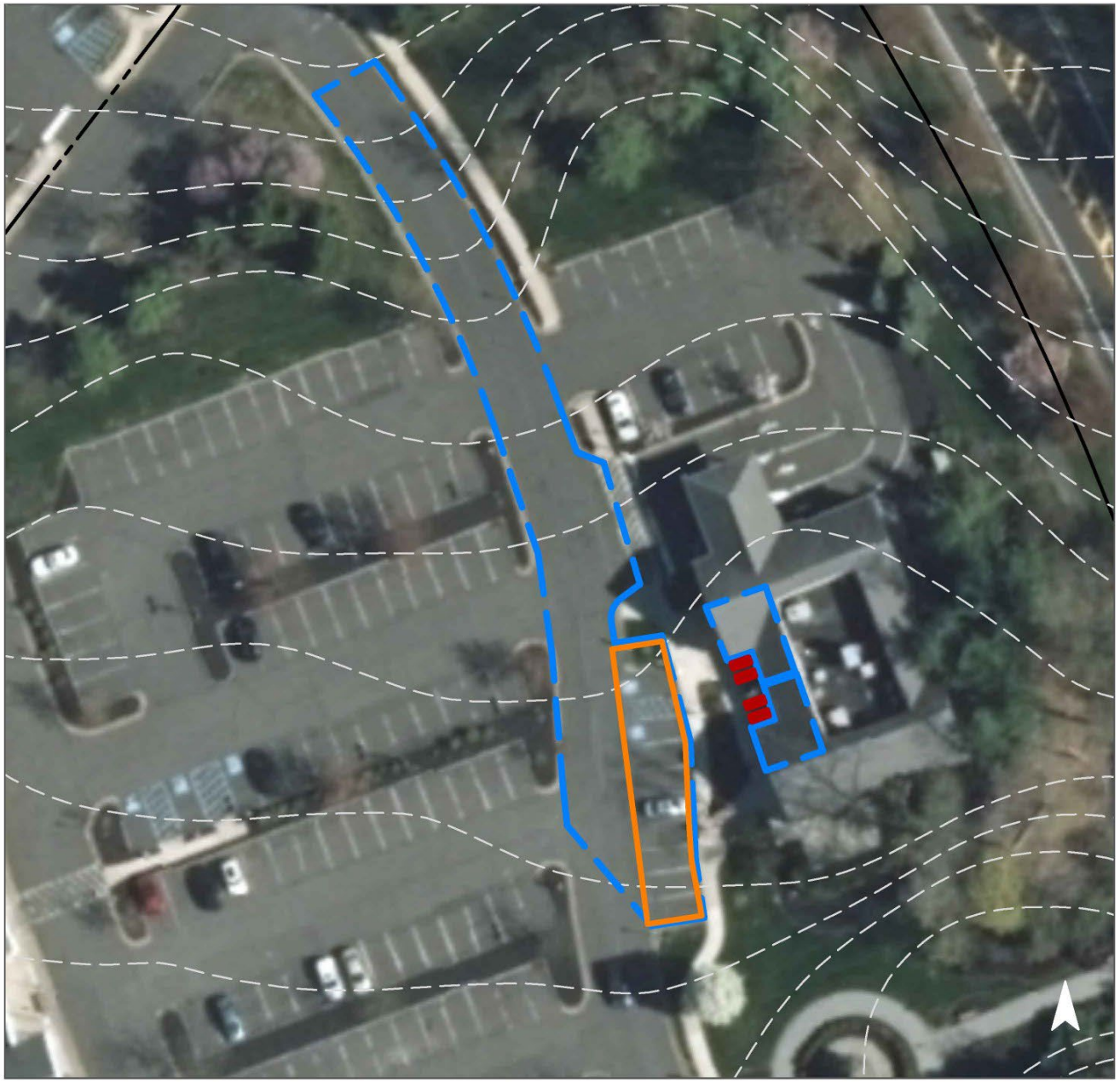
Block and Lot: Block 10001, Lot 4

Parking spaces in the parking lot can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. Downspout planter boxes can be installed at the entrance of the building to beautify the space and capture 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"
67	304,580	14.7	153.8	1,398.4	0.237	8.35

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
Pervious pavement	0.217	36	15,950	0.60	1,490	$37,250
Planter box	n/a	3	n/a	n/a	4 (boxes)	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Fulton Bank of New Jersey

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

0 25' 50'

MOUNT PROSPECT SCHOOL

RAP ID: 17

Subwatershed: Raritan River North Branch

HUC14 ID 02030105060090

Site Area: 524,252 sq. ft.

Address: 111 Hansom Road
Basking Ridge, NJ 07920

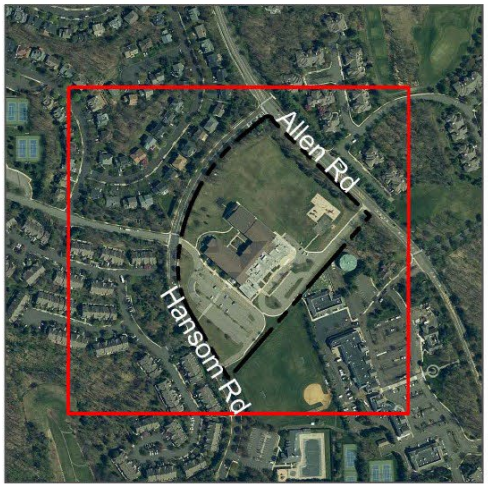
Block and Lot: Block 10001, Lot 1

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveways and building rooftop. This will require curb cuts, trench drains, and redirection of downspouts underneath the sidewalk. Existing parking spaces in the western 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 49"
44	231,469	11.2	116.9	1,062.8	0.180	7.07

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	11,905	0.345	51	23,050	0.87	2,975	$29,750
Pervious pavement	32,890	0.954	144	63,700	2.39	8,370	$209,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Prospect School

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

0 100' 200'

BANK OF AMERICA FINANCIAL CENTER

RAP ID: 18

Subwatershed: Upper Passaic River

Site Area: 33,652 sq. ft.

Address: 125 South Finley Avenue
Bernards Township, NJ
07920

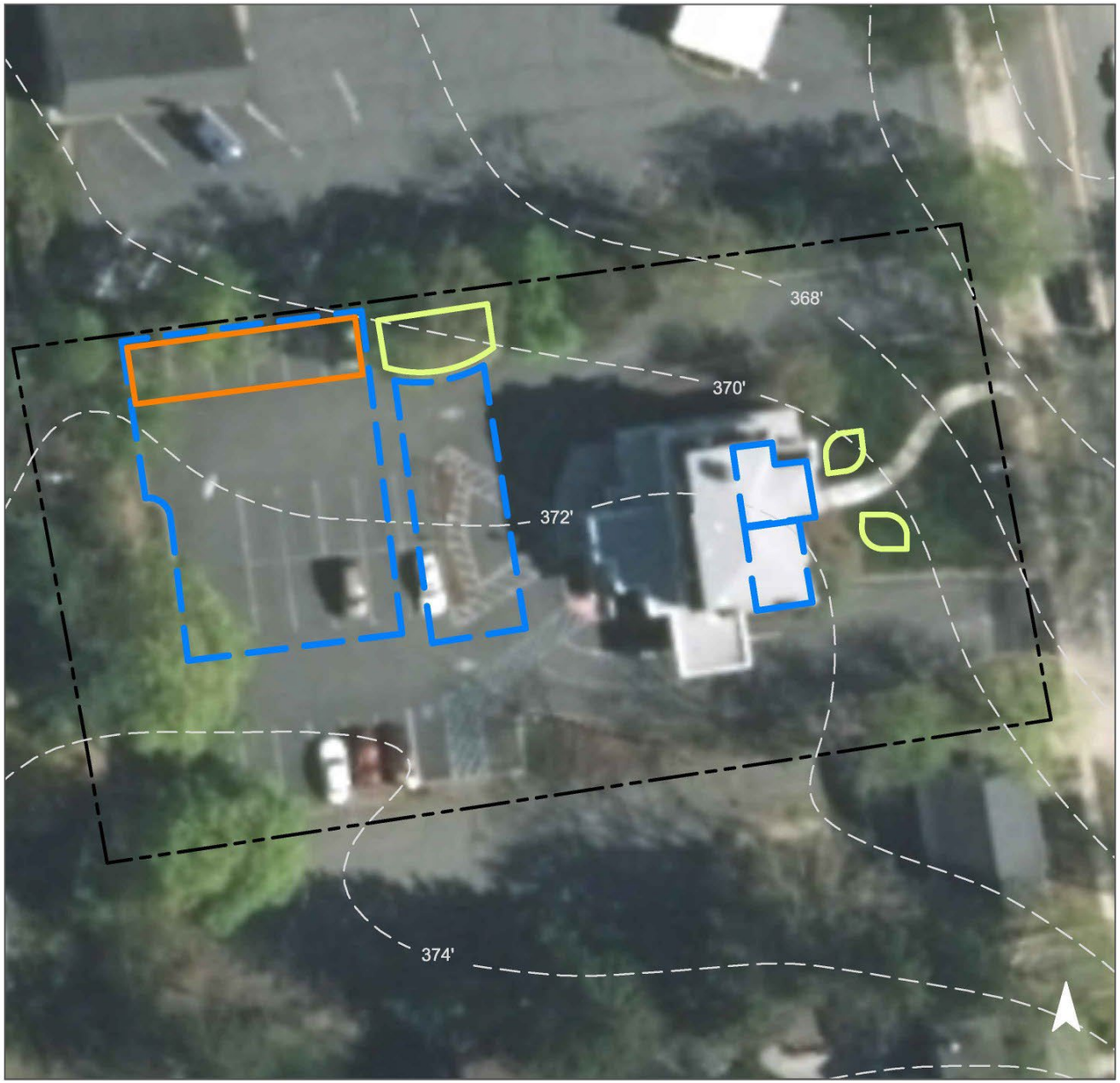
Block and Lot: Block 1802, Lot 25

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. Two rain gardens can be installed in the turfgrass area near the entrance of the building and a third in the rear of the building to capture more 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"
81	27,413	1.3	13.8	125.9	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 systems	0.060	10	4,410	0.17	580	$2,900
Pervious pavement	0.131	22	9,630	0.36	900	$22,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bank of America Financial Center

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

0 20' 40'

BASKING RIDGE POST OFFICE

RAP ID: 19

Subwatershed: Upper Passaic River

Site Area: 41,005 sq. ft.

Address: 21 Brownlee Place
Bernards Township, NJ
07920

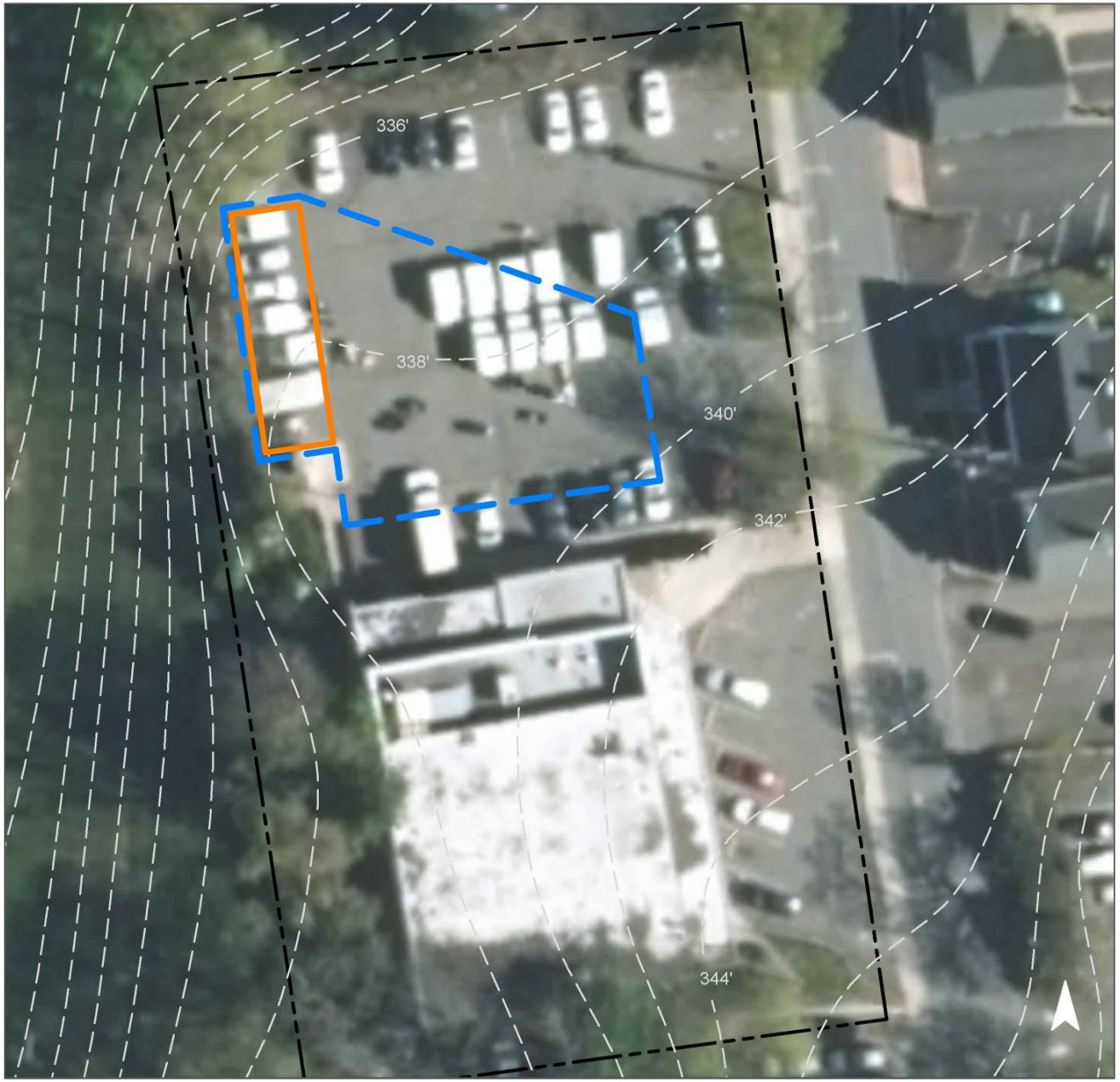
Block and Lot: Block 1805, Lot 43

Parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. Porous pavement captures stormwater by having small pores that allow stormwater to infiltrate with a bed of rocks underneath that allow it to slowly percolate into the ground. Porous pavement can serve as both a method of capturing stormwater while also maintaining its functionality as a 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"
81	33,119	1.6	16.7	152.1	0.026	0.91

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.165	28	12,100	0.45	1,130	$28,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Basking Ridge Post Office

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

0 20' 40'

BERNARDS TOWNSHIP MUNICIPAL COURT & POLICE DEPARTMENT

RAP ID: 20

Subwatershed: Upper Passaic River

HUC14 ID 02030103010070

Site Area: 1,167,145 sq. ft.

Address: 1 Collyer Lane
Basking Ridge, NJ 07920

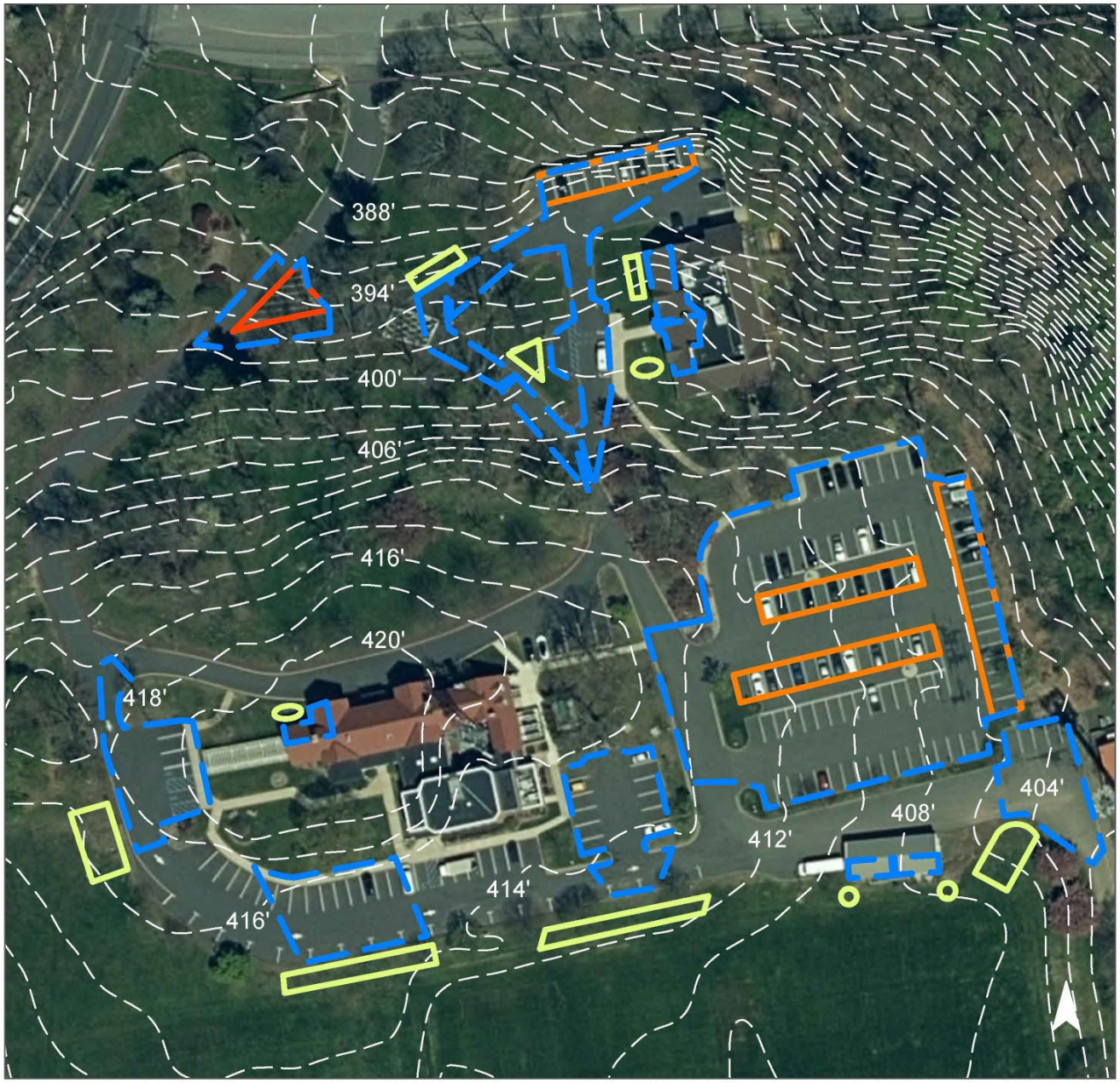
Block and Lot: Block 2801, Lot 1

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveway, parking lots, and building rooftops. This will require curb cuts, trench drains, and downspout disconnections. Existing parking spaces in the northern and eastern parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. A stormwater planter can be installed in the intersection on the northwest driveway to capture, treat, and infiltrate the stormwater runoff from the roadway. A preliminary soil assessment suggests that more soil testing would be required before determining the soils suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 49"
15	180,567	8.7	91.2	829.1	0.141	5.52

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	23,320	0.677	103	45,160	1.70	5,825	$58,250
Pervious pavement	48,415	1.405	211	93,760	3.52	9,510	$237,750
Stormwater planter	2,890	0.084	13	5,600	0.21	1,035	$388,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bernards Township Municipal Court & Police Department

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

0 50' 100'

BERNARDS TOWNSHIP COMMUNITY SERVICES

RAP ID: 21

Subwatershed: Upper Passaic River

Site Area: 61,473 sq. ft.

Address: 31 Stonehouse Road
Bernards Township, NJ
07920

Block and Lot: Block 3604, Lot 4

A rain garden can be installed in the front of the building to capture, treat, and infiltrate stormwater runoff from the roof. A cistern can be installed to the north of the building as a method of rainwater harvesting to capture runoff from the roof. This water can have many uses including watering plants, washing cars, or any other non-potable use. 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"
73	44,662	2.2	22.6	205.1	0.035	1.22

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
Bioretention system	0.010	2	760	0.03	100	$500
Rainwater harvesting	0.033	6	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bernards Township
Community Services

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

0 20' 40'

BERNARDS TOWNSHIP FIRE DEPARTMENT

RAP ID: 22

Subwatershed: Upper Passaic River

Site Area: 464,589 sq. ft.

Address: 277 South Maple Avenue, Bernards Township, NJ 07920

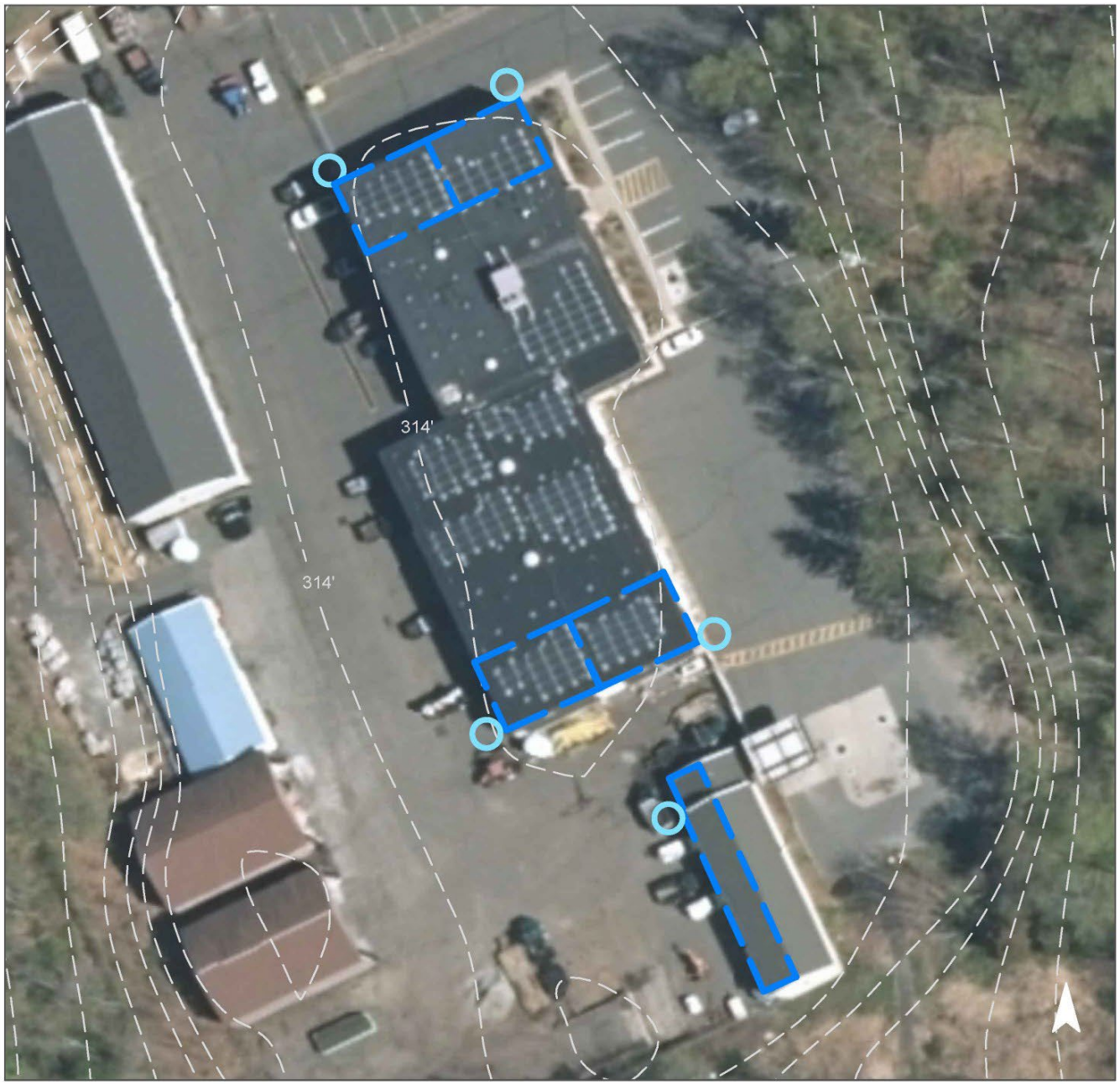
Block and Lot: Block 2801, Lot 4

Cisterns can be installed at multiple locations on the buildings to capture stormwater runoff from the roof. This water can be used to wash 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"
39	180,157	8.7	91.0	827.2	0.140	4.94

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
Rainwater harvesting	0.169	28	5,000	0.19	5,000 (gal)	$10,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bernards Township Fire Department

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

0 30' 60'

BERNARDS TOWNSHIP LIBRARY

RAP ID: 23

Subwatershed: Upper Passaic River

HUC14 ID 02030103010070

Site Area: 50,263 sq. ft.

Address: 32 South Maple Avenue
Basking Ridge, NJ 07920

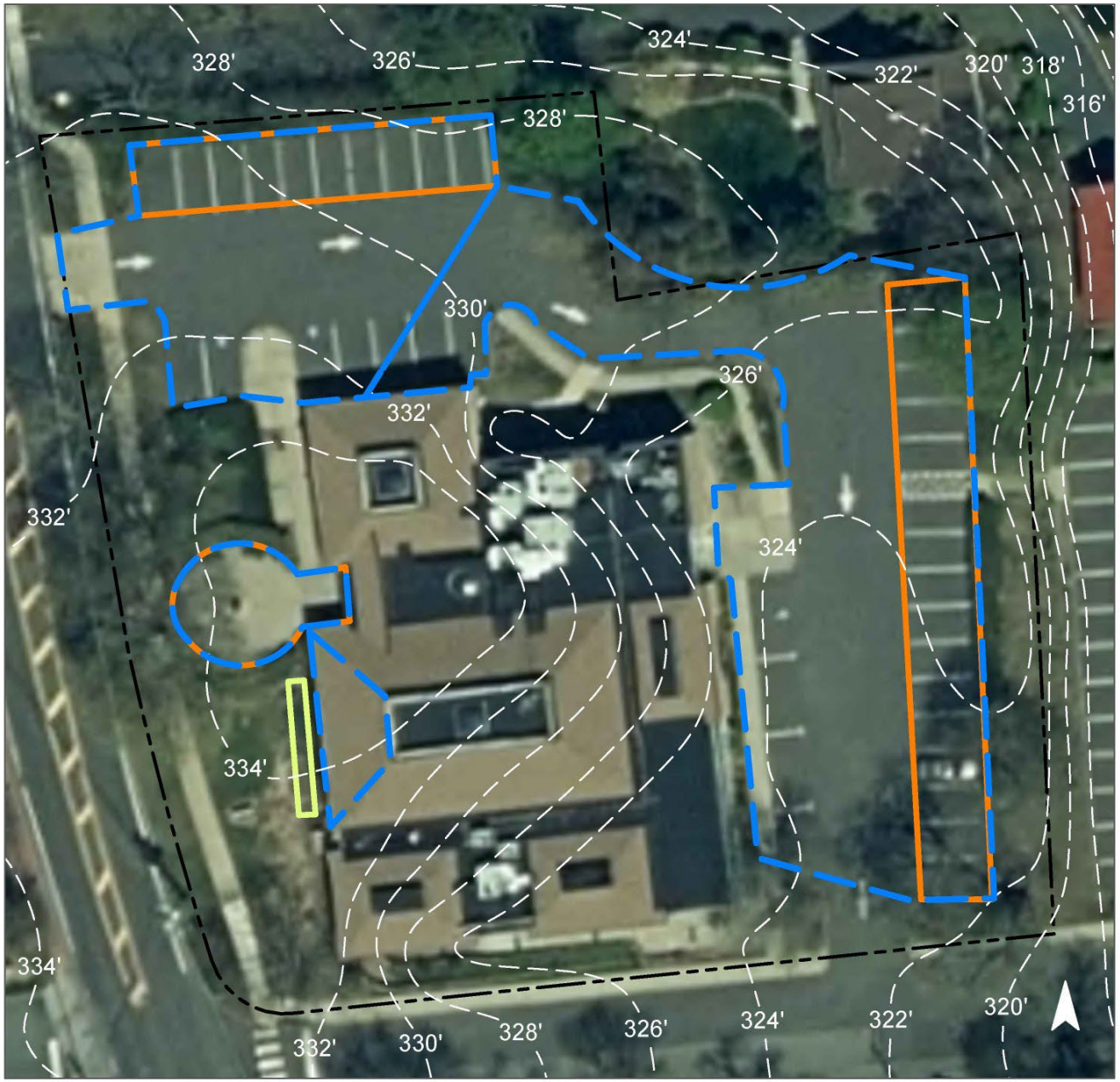
Block and Lot: Block 1610, Lot 1

A rain garden can be installed in front of the building to capture, treat, and infiltrate the stormwater runoff from the rooftop. This will require a downspout disconnection. Existing parking spaces in the northern and eastern parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The concrete walkway near the library entrance can be replaced with porous pavers to infiltrate runoff from the walkway. A preliminary soil assessment suggests that more soil testng 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"
80	40,288	1.9	20.3	185.0	0.031	1.23

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	610	0.018	2	1,180	0.04	150	$1,500
Pervious pavement	19,330	0.561	84	37,440	1.41	5,965	$149,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bernards Township Library

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

0 20' 40'

BISHOP JANES UNITED METHODIST CHURCH

RAP ID: 24

Subwatershed: Upper Passaic River

Site Area: 39,334 sq. ft.

Address: 22 South Finley Avenue
Bernards Township, NJ
07920

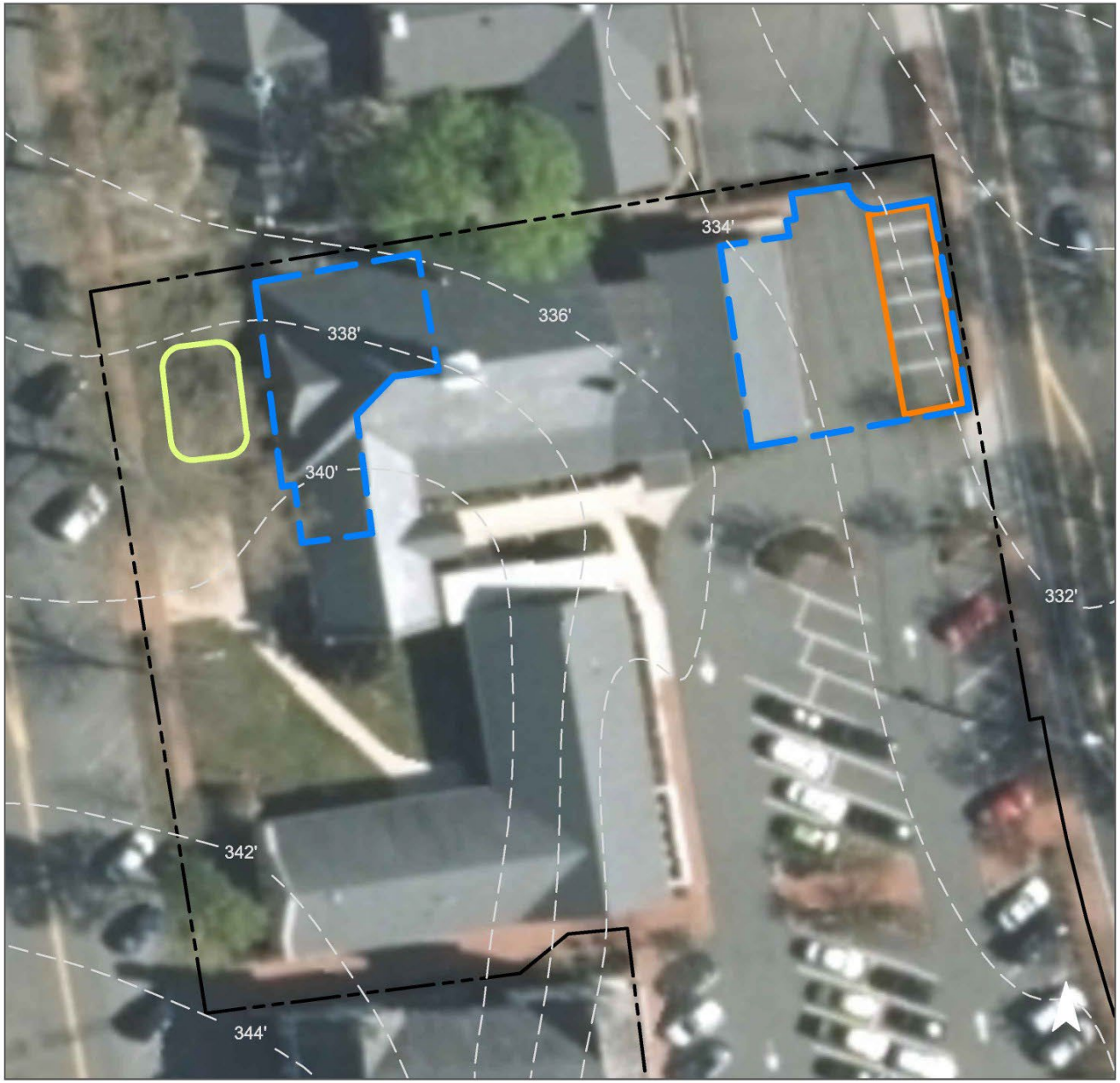
Block and Lot: Block 1805, Lot 43

A rain garden can be planted in the patch of turf grass in front of the west entrance to the building. A section of parking spaces 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 44"
81	32,042	1.5	16.2	147.1	0.025	0.88

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.057	10	4,200	0.16	550	$2,750
Pervious pavement	0.085	14	6,250	0.23	830	$20,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bishop Janes United Methodist Church

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

0 20' 40'

CEDAR HILL ELEMENTARY SCHOOL & RIDGE HIGH SCHOOL

RAP ID: 25

Subwatershed: Upper Passaic River

HUC14 ID 02030103010070

Site Area: 1,549,784 sq. ft.

Address: 100 Peachtree Road & 268 South Finley Avenue Basking Ridge, NJ 07920

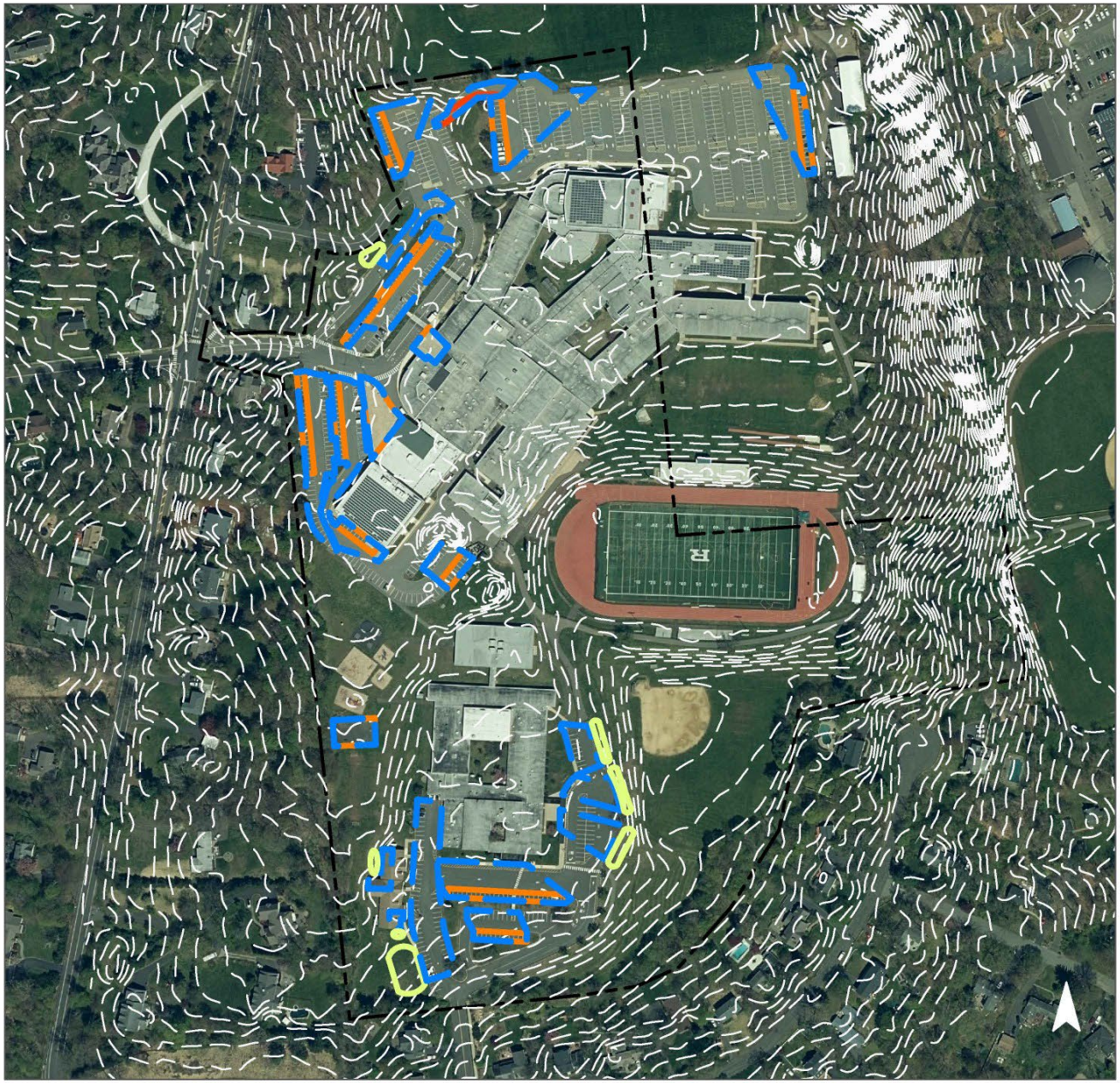
Block and Lot: Block 2801, Lot 33

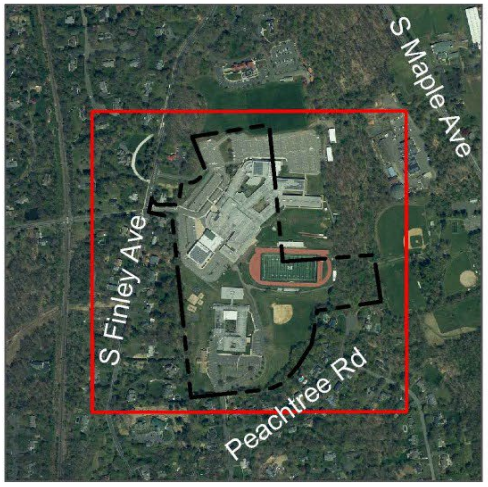
Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the driveways, parking lots, and building rooftops. This will require curb cuts, trench drains, and downspout disconnections. Existing parking spaces in multiple parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. Concrete walkways in front of the high school can be replaced with porous pavers to infiltrate runoff from the walkways. A stormwater planter can be installed in the no-parking zone on the northern high school driveway to capture, treat, and infiltrate the stormwater runoff from the roadway. 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"
54	842,038	40.6	425.3	3,866.1	0.656	25.72

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	40,995	1.190	179	79,390	2.98	10,250	$102,500
Pervious pavement	126,655	3.675	553	245,290	9.22	42,100	$1,052,500
Stormwater planter	3,800	0.110	17	7,360	0.28	1,465	$549,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



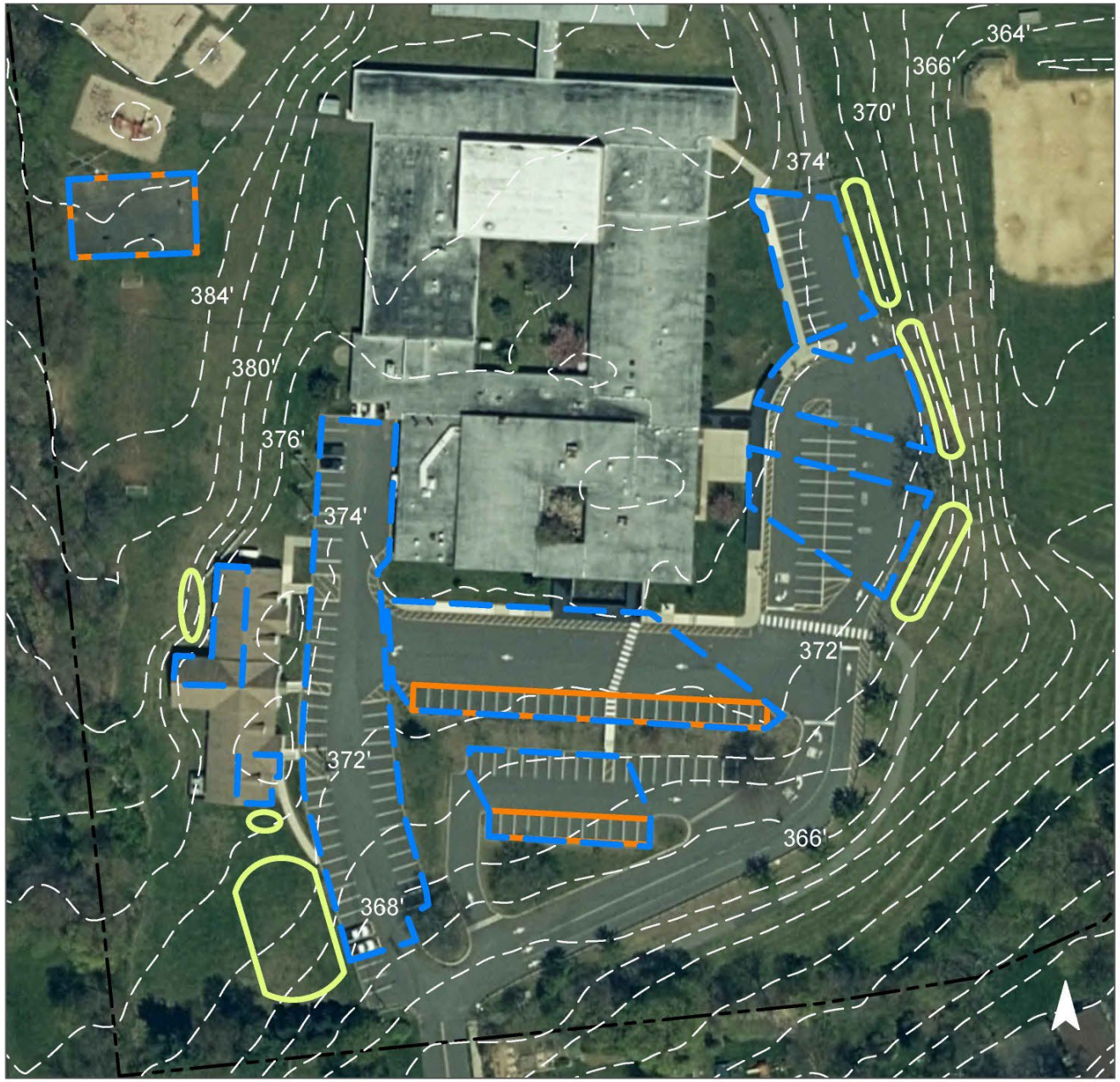


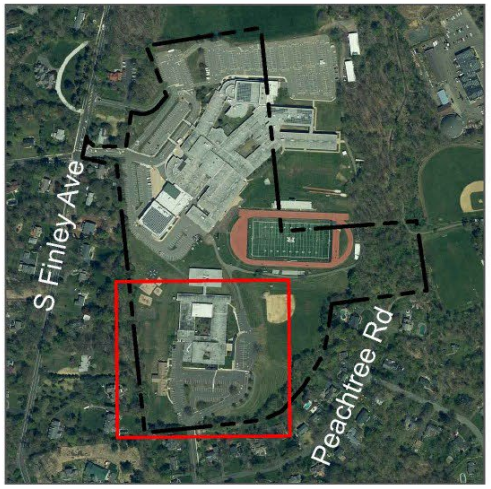
Cedar Hill Elementary School & Ridge High School Overall View

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

0 150' 300'

GREEN INFRASTRUCTURE RECOMMENDATIONS



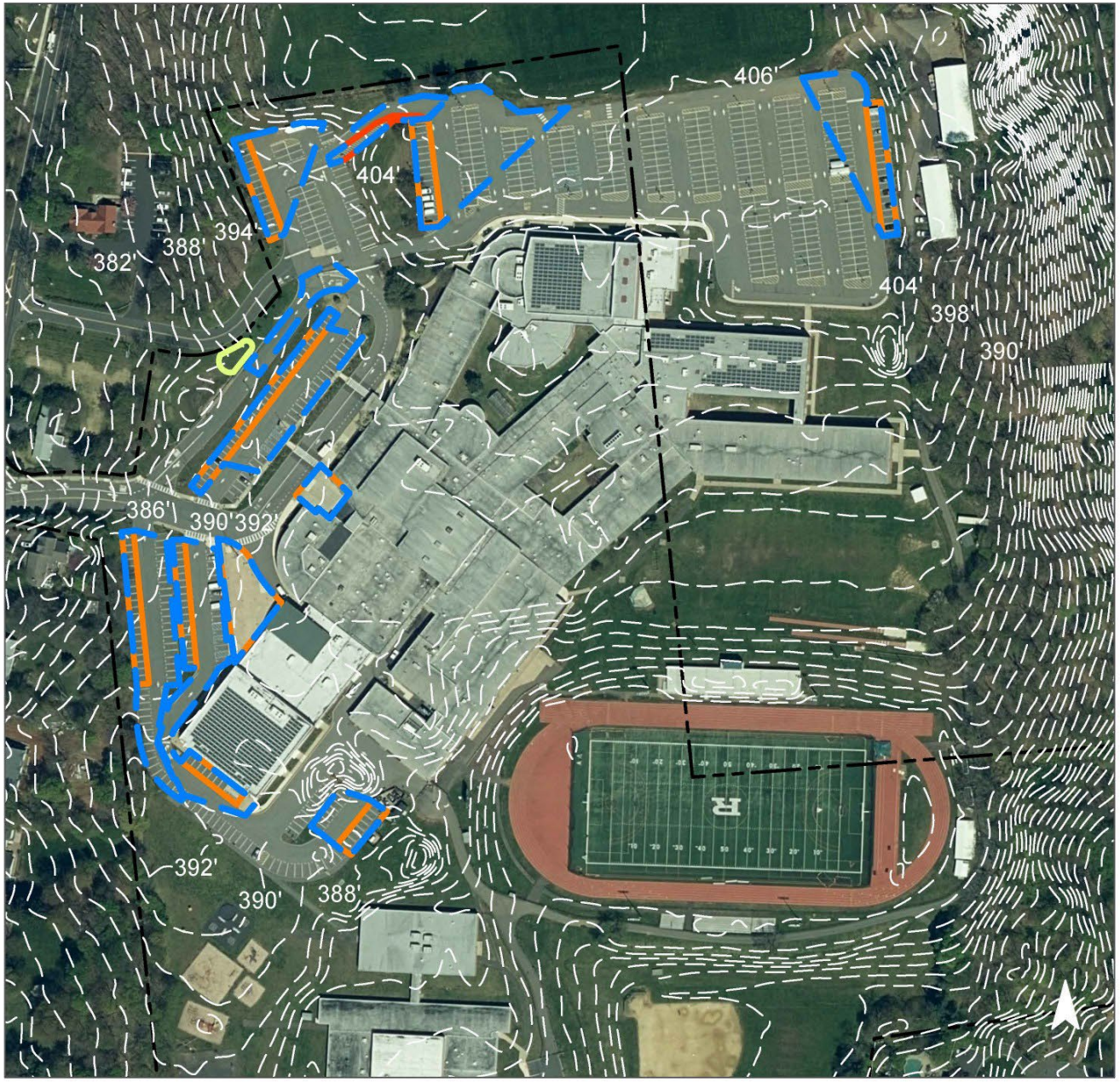


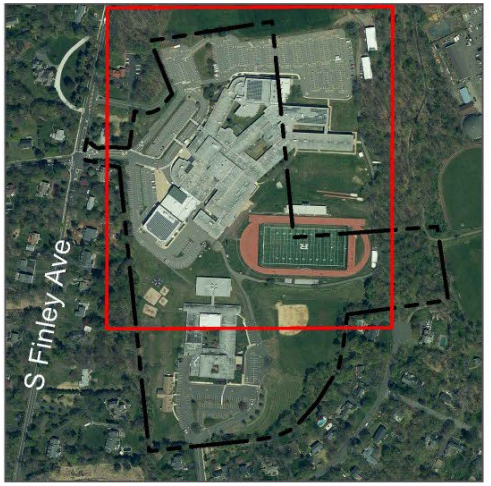
Cedar Hill Elementary School Page 1 of 2

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

0 50' 100'

GREEN INFRASTRUCTURE RECOMMENDATIONS





Ridge High School
Page 2 of 2

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

0 100' 200'

MILLINGTON BAPTIST CHURCH

RAP ID: 26

Subwatershed: Upper Passaic River

Site Area: 150,967 sq. ft.

Address: 520 King George Road
Bernards Township, NJ
07920

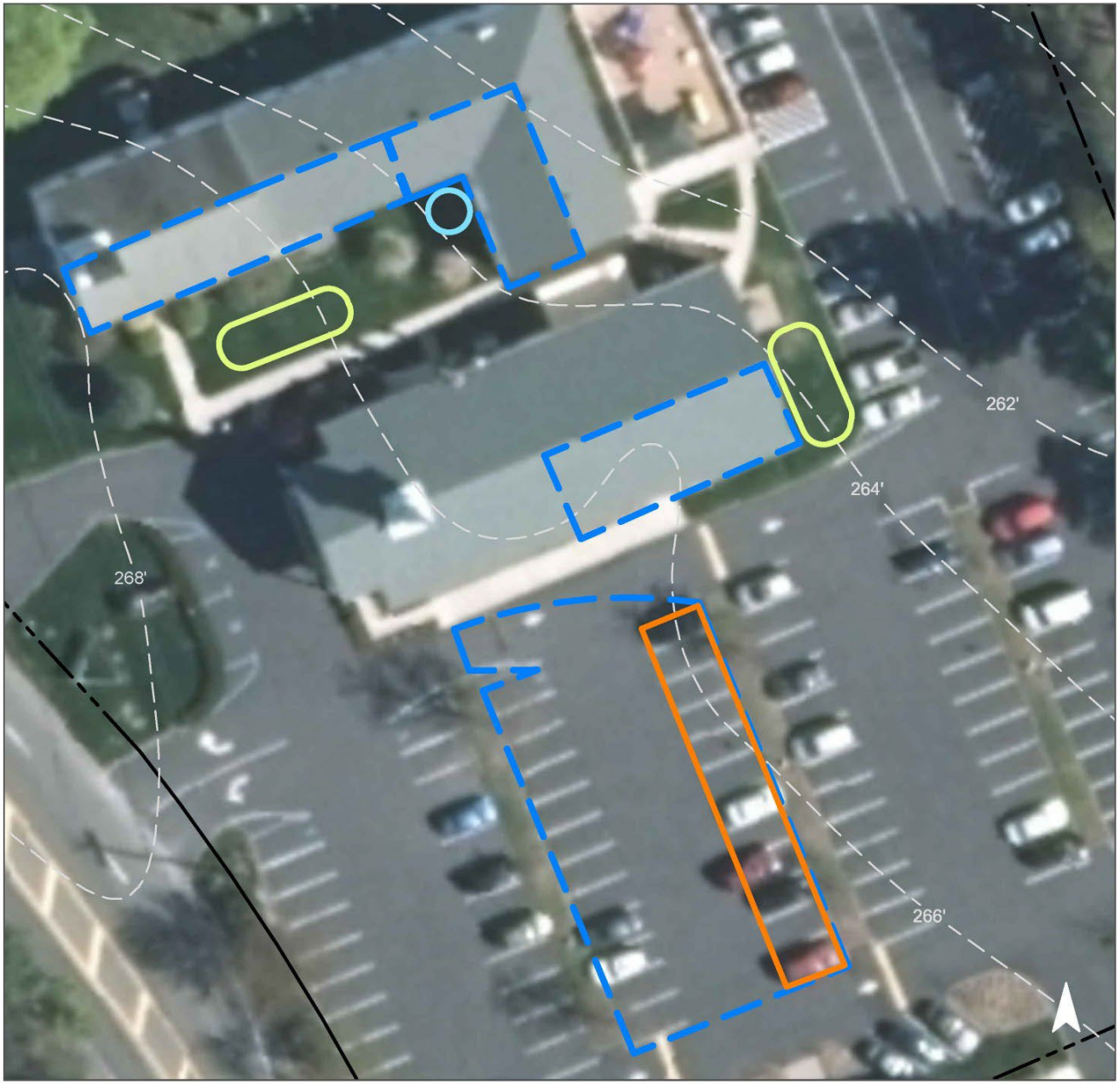
Block and Lot: Block 8402, Lot 4

Rain gardens can be installed to capture, treat, and infiltrate stormwater runoff from sections of the roof. A section of parking spaces can be converted to porous pavement to capture and infiltrate runoff from the parking lot. A cistern can be installed to capture rooftop runoff and provide water for watering gardens or 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"
47	70,857	3.4	35.8	325.3	0.055	1.94

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.082	14	6,010	0.23	790	$3,950
Pervious pavement	0.181	30	13,280	0.50	1,630	$40,750
Rainwater harvesting	0.033	6	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Millington Baptist Church

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

0 20' 40'

OAK STREET ELEMENTARY SCHOOL

RAP ID: 27

Subwatershed: Upper Passaic River

HUC14 ID 02030103010070

Site Area: 534,355 sq. ft.

Address: 70 West Oak Street
Basking Ridge, NJ 07920

Block and Lot: Block 1805, Lot 41

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the asphalt driveways and walkways. The tennis court, basketball court, and existing parking spaces in the southern parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt and courts. A cistern can be installed to the west of the building to divert and detain the stormwater runoff from the rooftop for later non-potable reuse such as washing a vehicle or watering a garden. A preliminary soil assessment suggests that more soil testing would be required before determining the sol'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"
35	184,476	8.9	93.2	847.0	0.144	5.63

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	8,095	0.235	36	15,680	0.59	2,035	$20,350
Pervious pavement	24,385	0.708	106	47,230	1.77	19,385	$484,625
Rainwater harvesting	885	0.026	4	700	N/A	700 (gal)	$2,100

GREEN INFRASTRUCTURE RECOMMENDATIONS

Oak Street Elementary School

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

0 100' 200'

ST. JAMES ROMAN CATHOLIC CHURCH AND SCHOOL

RAP ID: 28

Subwatershed: Upper Passaic River

HUC14 ID 02030103010070

Site Area: 804,603 sq. ft.

Address: 200 South Finley Avenue
Basking Ridge, NJ 07920

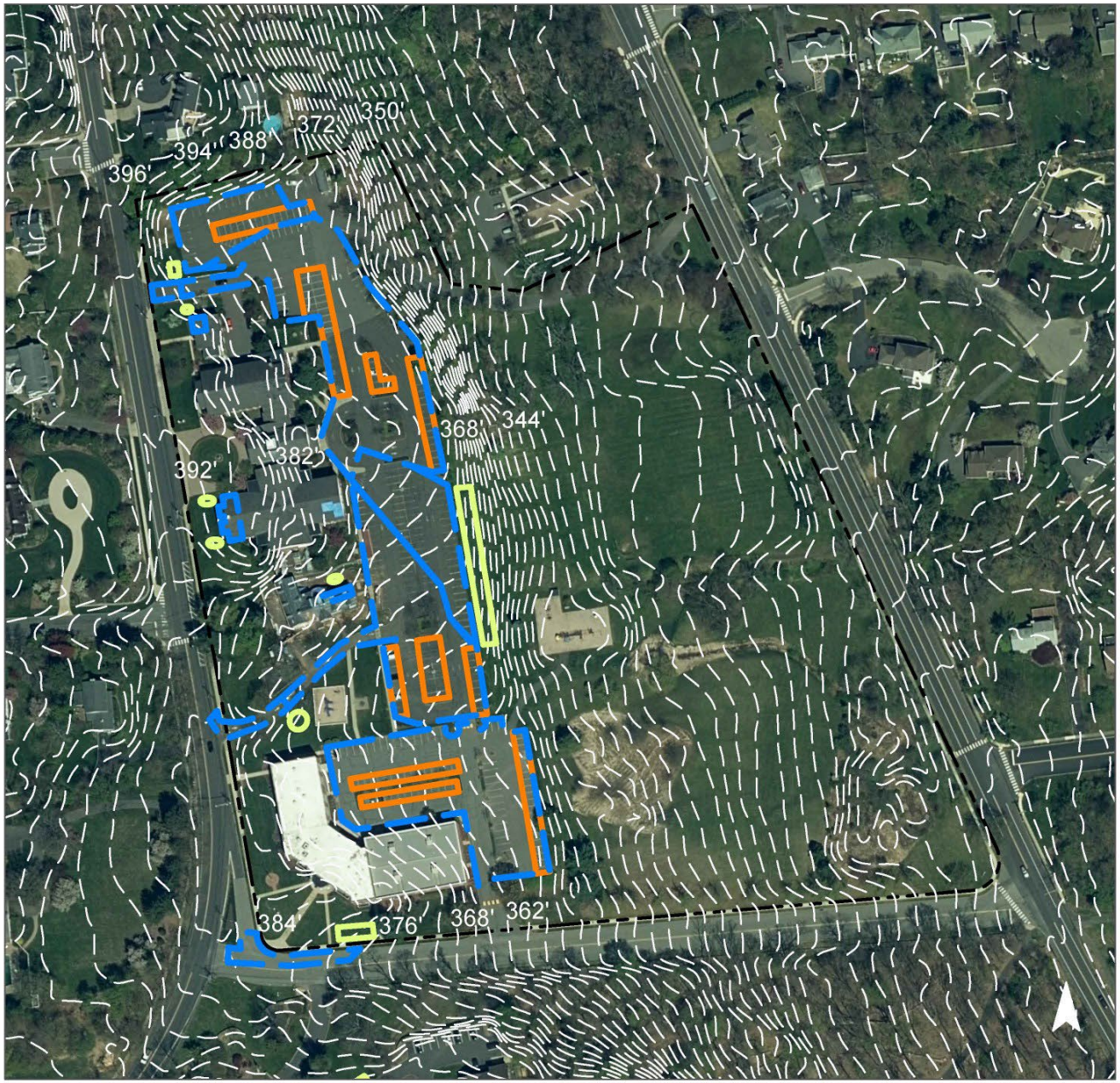
Block and Lot: Block 1602, Lot 1

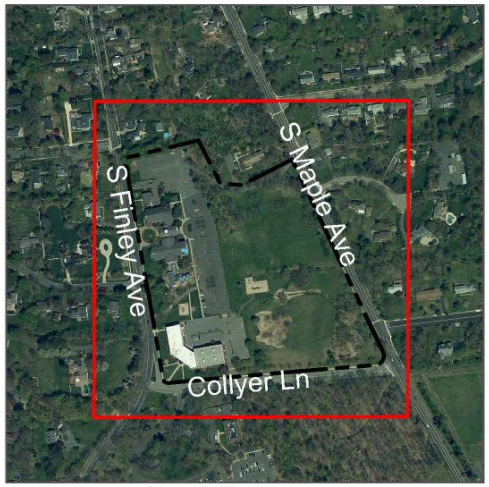
Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the road, driveway, parking lot, and building rooftops. This will require curb cuts, trench drains, and downspout redirection beneath sidewalks. Existing parking spaces in much of the 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 49"
35	280,406	13.5	141.6	1,287.4	0.218	8.56

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	22,635	0.657	99	43,840	1.65	5,655	$56,550
Pervious pavement	121,055	3.513	528	234,450	8.81	23,185	$579,625

GREEN INFRASTRUCTURE RECOMMENDATIONS





St. James Roman Catholic Church & School

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

0 100' 200'

SAINT MARK'S EPISCOPAL CHURCH

RAP ID: 29

Subwatershed: Upper Passaic River

Site Area: 48,559 sq. ft.

Address: 140 South Finley Avenue
Bernards Township, NJ
07920

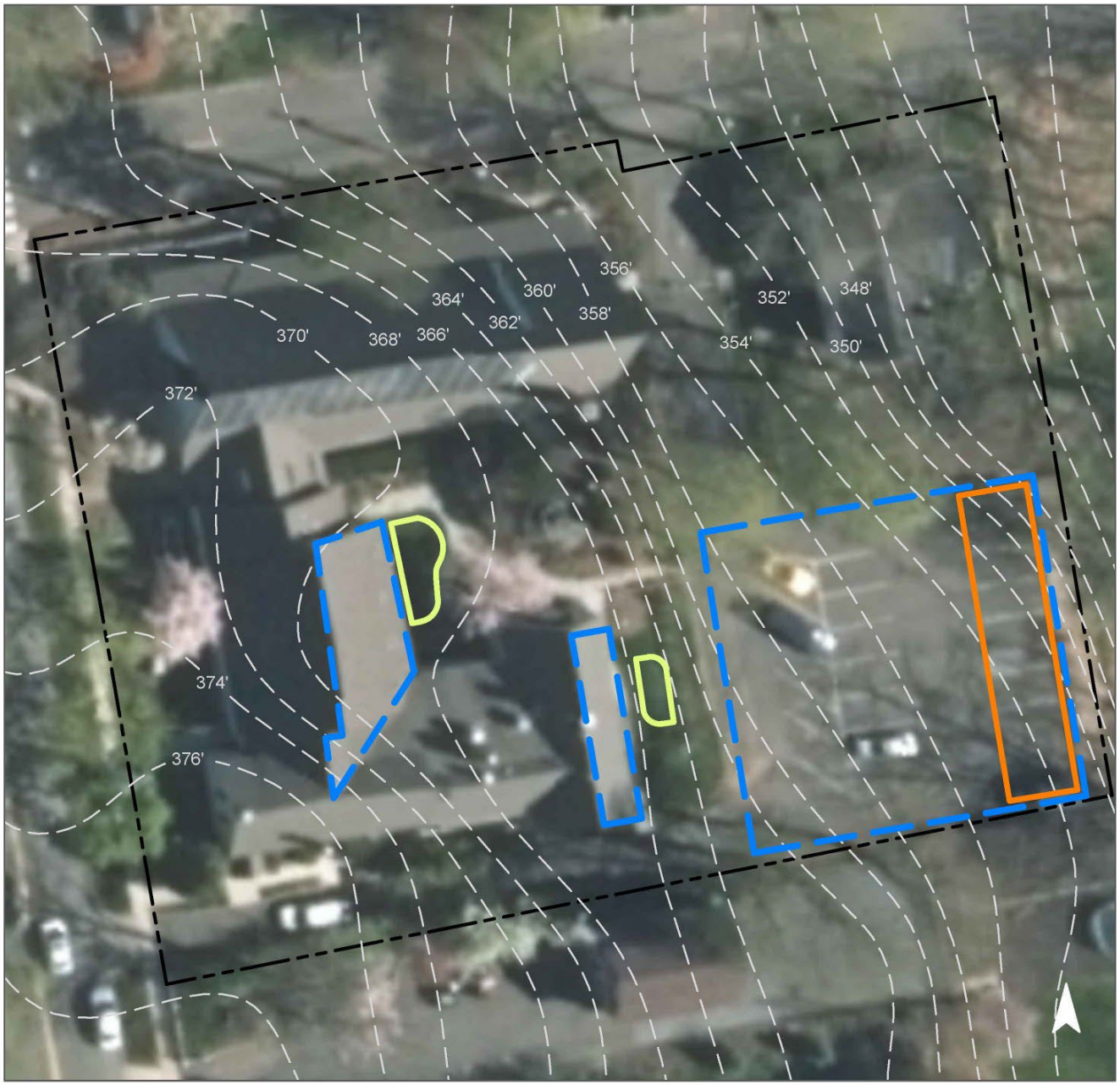
Block and Lot: Block 1602, Lot 6

A rain garden can be placed in the center courtyard, and another can be placed to the east of the building in the turfgrass. Both will capture and infiltrate stormwater runoff from the roof. 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"
75	36,237	1.7	18.3	166.4	0.028	0.99

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.039	7	2,860	0.11	375	$1,875
Pervious pavement	0.195	33	14,340	0.54	1,460	$36,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Saint Mark's Episcopal Church

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

0 20' 40'

WAR MEMORIAL FIELD

RAP ID: 30

Subwatershed: Upper Passaic River

Site Area: 490,758 sq. ft.

Address: 325 South Maple Avenue
Bernards Township, NJ
07920

Block and Lot: Block 2801, Lot 10

Two sections of parking spaces 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 44"
7	35,571	1.7	18.0	163.3	0.028	0.98

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	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	0.225	38	16,500	0.62	2,540	$63,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

War Memorial Field

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

0 30' 60'

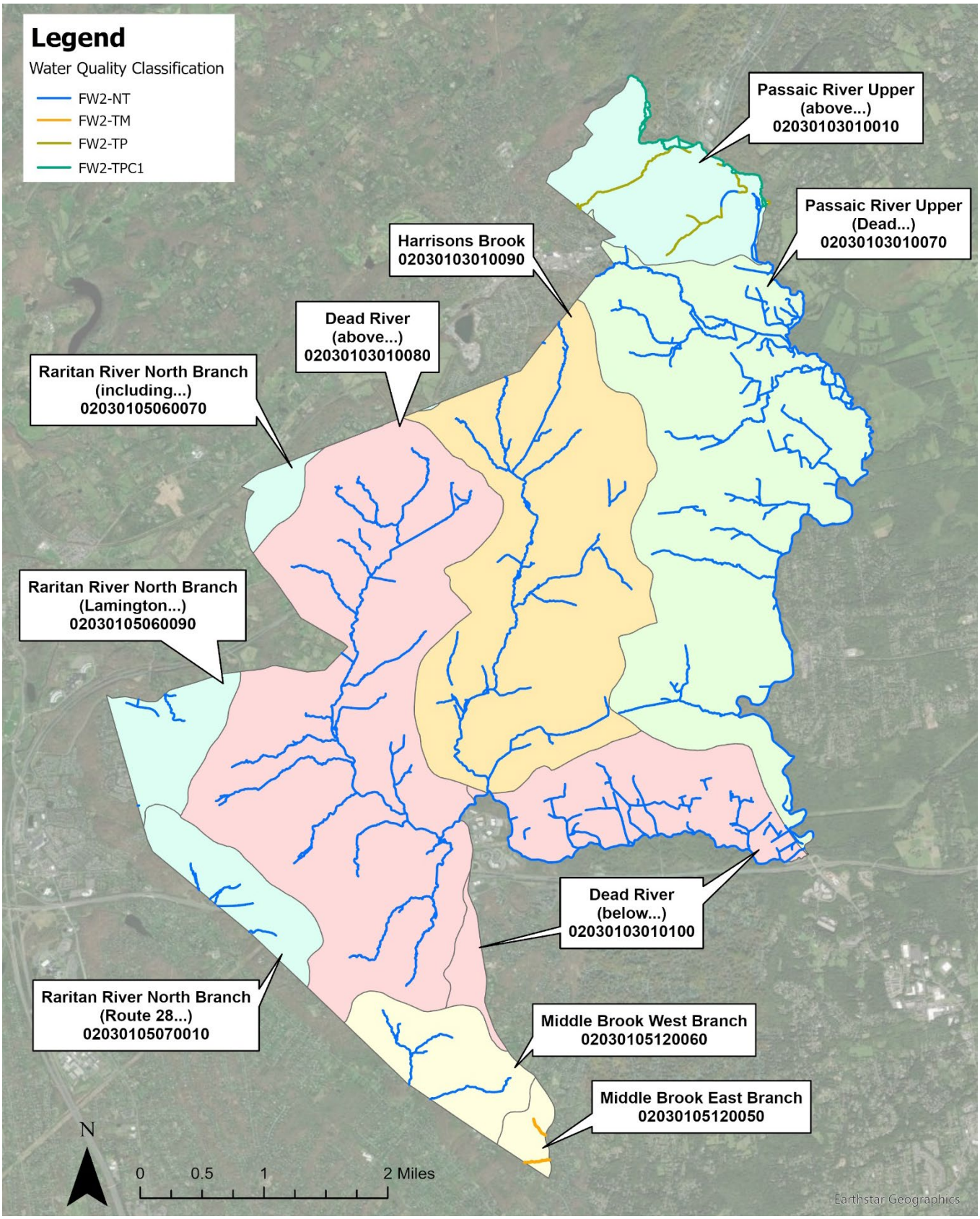


Figure 10. Water Quality Classification of Surface Waters in Bernards Township

Table 8. Surface Water Quality Classifications of Bernards Township Streams

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	79.9	93.0%
Freshwater 2, trout production, Category One	FW2-TPC1	3.2	3.7%
Freshwater 2, trout maintenance	FW2-TM	0.4	0.5%
Freshwater 2, trout production	FW2-TP	2.4	2.8%