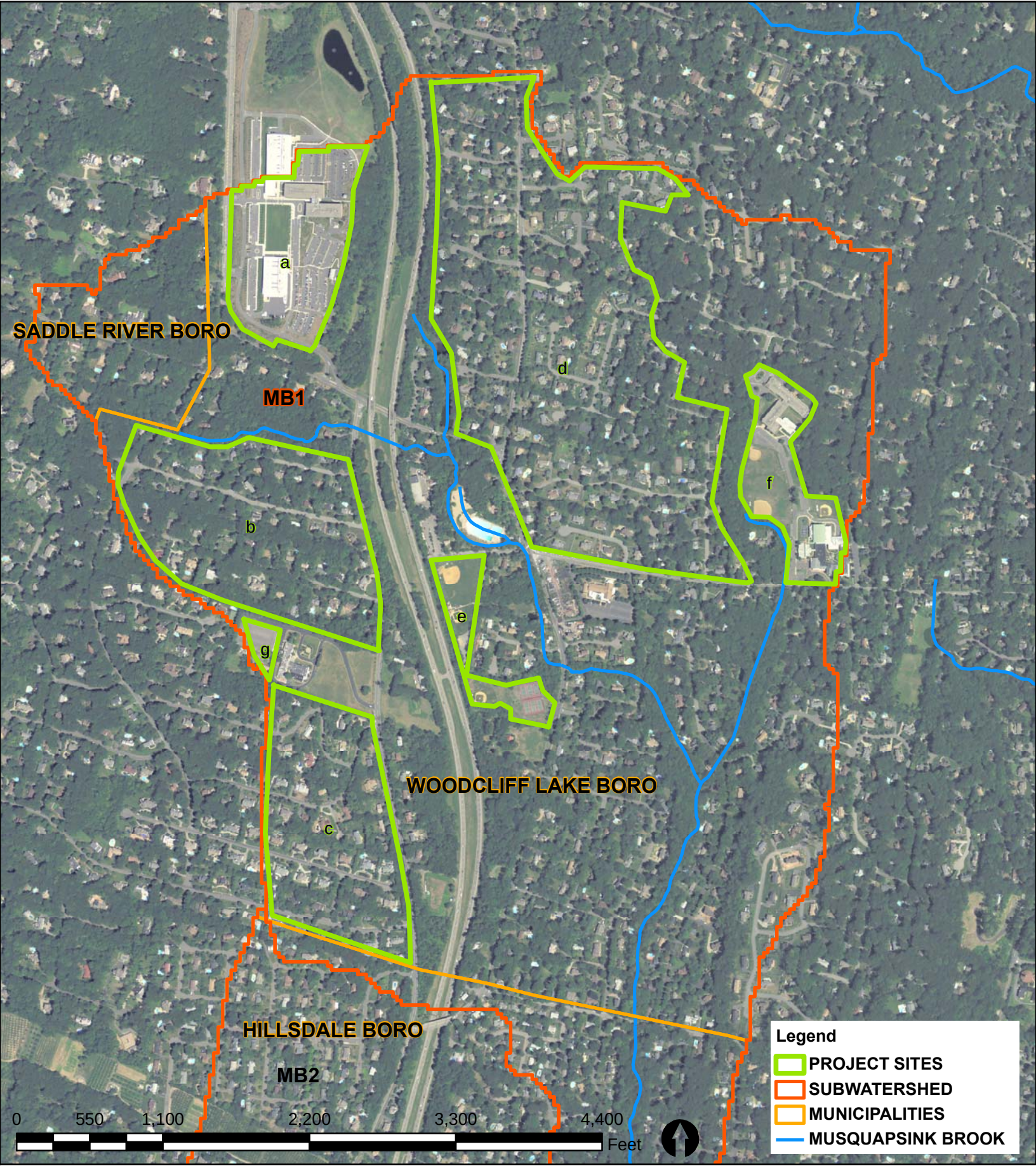
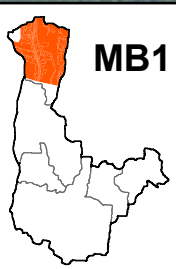
APPENDIX C

Site Specific Restoration Projects





MB1 Borough of Woodcliff Lake

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB1

Borough of Woodcliff Lake

Project Identifier		**Geographic Coordinates**	
MB1_WL	a	N41°01'37.9"	W074°04'18.0"

Site Description and BMP Implementation Opportunities: The site is approximately 25 acres in area and is occupied by a car dealership. The parking lot contains several islands that could be retrofitted with curb cuts, rain gardens or vegetated swales. Parking areas could be re-paved with pervious concrete. Flow-through planter boxes (e.g., Filterra®) could be installed at the existing catch basins to capture and treat bacteria in runoff.

Site Photos:


Project Identifier		**Geographic Coordinates**	
MB1_WL	b	N41°01'19.1"	W074°04'33.5"

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB1_WL	c	N41°00'54.7"	W074°04'30.7"

Site Description and BMP Implementation Opportunities: The site is an alleyway located off Blueberry Drive. Demonstration rain gardens downgradient of the street could be used to educate the community about issues surrounding stormwater runoff. Rain barrels could be placed on downspouts of houses. Pervious pavement could replace existing concrete basketball court, increasing groundwater recharge and decreasing stormwater volumes entering waterways.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB1_WL	d	N41°01'22.9"	W074°03'55.7"

Site Description and BMP Implementation Opportunities: The site is a series of residential roadways, most of which are off of Werimus Road, about 14 streets and 110 acres in total. The majority of roads in this community contain no curbs or sidewalks. Roadside vegetated swales and rain gardens could be implemented adjacent to the streets. In addition to downspout disconnection, swales along the road would greatly reduce stormwater volumes and pollutant loads to waterways.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB1_WL	e	N41°01'17.8"	W074°04'02.1"

Site Description and BMP Implementation Opportunities: The site is Woodcliff Lake Historic Park and is currently under construction. Opportunities for rain garden installations and pervious pavement retrofits exist. A rain garden can be incorporated into the landscape alterations near the historic building, collecting roof runoff and increasing infiltration on site. Pervious asphalt or pavers in the parking spots, approximately 27 spots, near the swimming pool would decrease runoff volumes and pollutant loads. Public access to the site offers opportunities for educational workshops.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB1_WL	f	N41°01'29.6"	W074°03'35.7"

Site Description and BMP Implementation Opportunities: Dorchester Elementary School is located off Dorchester Road and has recently been repaved. However, a rain garden opportunity exists with the aid of a curb cut in the island of the lot. The island is of substantial size and would provide adequate space for a rain garden. The rain garden would capture pollutants from the parking lot, while reducing runoff volumes. Stormwater education with the rain garden installation as the focus could be implemented at the school.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB1_WL	g	N41°01'11.1"	W074°04'23.6"

Site Description and BMP Implementation Opportunities: The site is a large parking lot at Temple Emmanuel, approximately 3,800 square feet. Pervious pavement in the upper portion of the parking lot would limit stormwater runoff and allow for a route for recharge.

Site Photos:



MB2 Hillsdale Borough

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB2

Borough of Hillsdale

Project Identifier		**Geographic Coordinates**	
MB2_H	a	N41°00'31.1"	W074°04'13.4"

Site Description and BMP Implementation Opportunities: The site is a parking lot located on Werimus Road. The parking lot is a combination of grassed area and gravel. Strategic tree/shrub selection and planting location would infiltrate runoff and provide shade to the lot.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_H	b	N41°00'30.3"	W074°04'34.1"

Site Description and BMP Implementation Opportunities: The site a large residential community located near the intersection of Craig and Glen Hook roadways. BMPs such as residential rain gardens and rain barrels for downspout disconnections would decrease stormwater runoff volumes and pollutant loads.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_H	c	N41°00'42.5"	W074°04'26.1"

Site Description and BMP Implementation Opportunities: The site is a neighborhood of medium density residential housing. An applicable BMP would be the implementation of Green Streets to the community on some blocks. Due to the above-average width of the streets, more stormwater runoff is directed to storm sewers. The volume may be limited by creating curb cuts in some locations along the street, allowing for runoff to flow to adjacent rain gardens or stormwater planters. In addition, narrowing the streets with curb extensions in certain areas would lessen the volume created while still providing adequate space for traffic flow.

Site Photos:

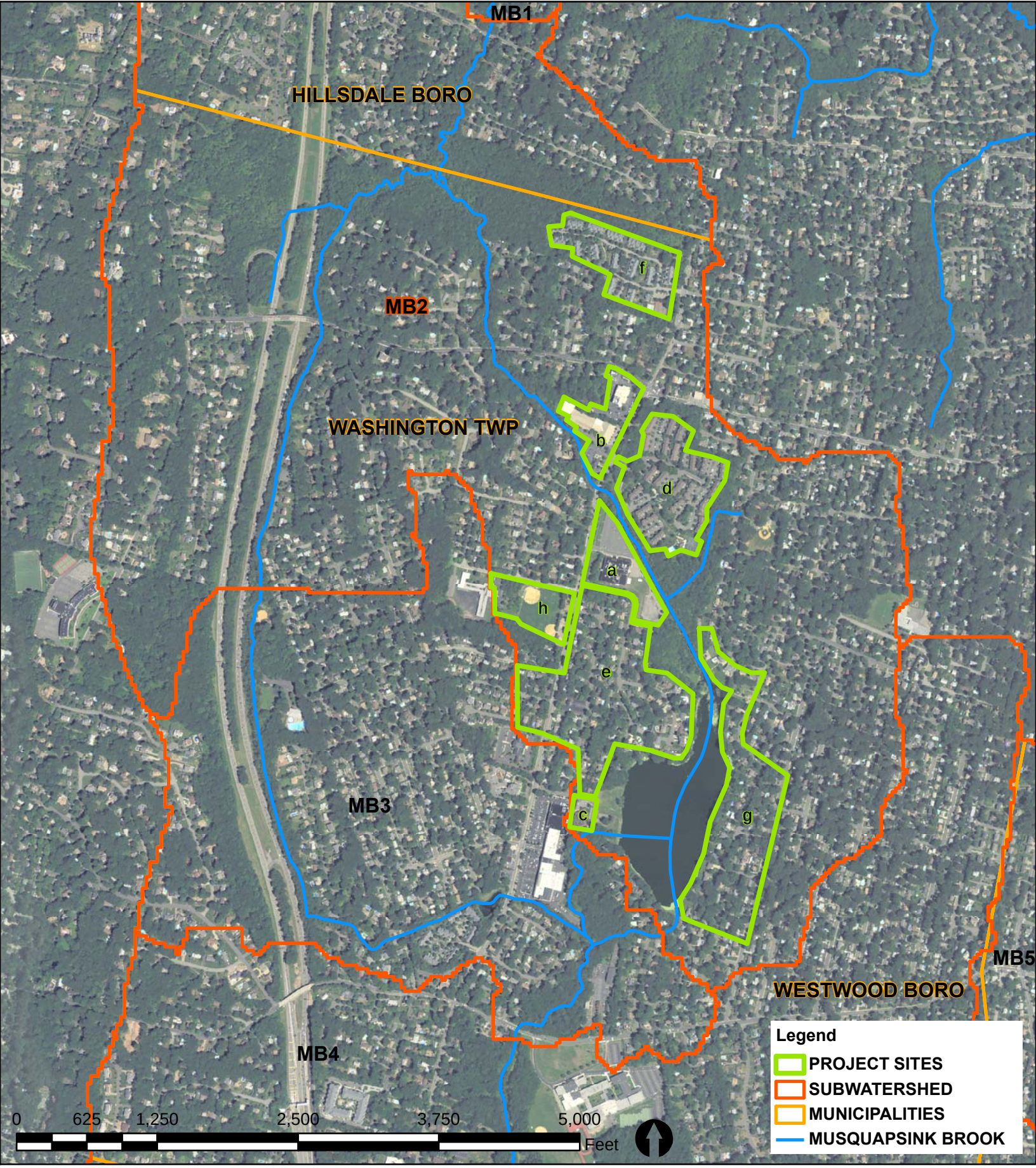


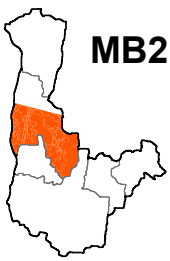
Project Identifier		**Geographic Coordinates**	
MB2_H	d	N41°00'22.9"	W074°04'1.3"

Site Description and BMP Implementation Opportunities: The site is the Ann Blanche Smith Elementary School located on Hillsdale Avenue. The school is an ideal location to provide educational outreach about stormwater issues and BMPs. BMPs would include rain barrels, a rain garden on the island of the parking lot, and vegetated swales adjacent to the roadways.

Site Photos:







MB2 Washington Township

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB2

Washington Township

Project Identifier		**Geographic Coordinates**	
MB2_Wa	a	N40°59'38.7"	W074°03'37.4"
Site Description and BMP Implementation Opportunities: The Bergen County Jewish Community Center near Berkley Court is located at this site. Recommended BMPs for implementation at this site include a naturalized detention basin and vegetated swales. Rain gardens can be installed on the parking lot islands. Invasive species, such as the Japanese knot weed, would have to be removed before BMPs are installed.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_Wa	b	N40°59'43.4"	W074°03'39.4"
Site Description and BMP Implementation Opportunities: The site is located at the Washington Township Fitness and Tennis Club. The parking lot, approximately 1,115 ft^2, could be replaced with permeable pavement.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_Wa	c	N40°59′03.1″	W074°03′44.3″

Site Description and BMP Implementation Opportunities: This site is occupied by a shopping center. The parking lot of the shopping center is in close proximity to the Musquapsink Brook; they are separated by just a small grassed area. There is evidence of streambank erosion, and the site would benefit from streambank stabilization measures. A rain garden or swale can be installed to capture the pollutants in runoff from the nearby parking lot. In addition, the parking lot can be retrofitted with permeable pavement.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_Wa	d	N40°59'03.1"	W074°03'44.3"

Site Description and BMP Implementation Opportunities: This site includes an alleyway, approximately 1,600 ft^2 in area, located between two apartment buildings. The apartment buildings contain a directly-connected impervious cover. The downspouts of the buildings should be disconnected with rain barrels or cisterns. A green alleyway can be installed in the area between the two apartment buildings to further collect stormwater runoff.

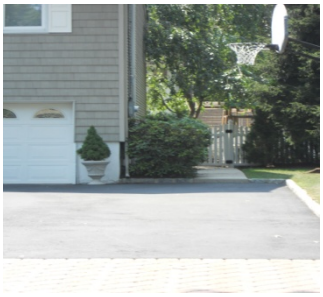
Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_Wa	e	N40°59'18.4"	W074°03'44.1"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood with approximately 50 homes on approximately ¼ acre lots. About 55% of the properties are directly connected to impervious cover. The downspouts of these homes should be disconnected with rain gardens or rain barrels. The driveways should incorporate permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:


Project Identifier		**Geographic Coordinates**	
MB2_Wa	f	N41°00'0.8"	W074°03'35.0"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood with approximately 11 condominium buildings on ¼ acre lots. Almost all of the downspouts are directly connected to roadway catch basins. The downspouts should be disconnected with rain gardens and rain barrels. In addition, the existing detention basin and swale near the condos can be naturalized using native plants and shrubs.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB2_Wa	g	N40°59'21.1"	W074°03'23.2"

Site Description and BMP Implementation Opportunities: This site is a park in a residential neighborhood. A rain garden can be installed to collect runoff from the parking lot. In addition, shoreline stabilization methods should be implemented to deter geese from entering the nearby Schlegel Lake. Geese fecal matter has been linked to the spread of diseases and bacterial contamination of water. To prevent this fecal matter from entering the water, high-growing native plants should be installed along the perimeter of the lake.

Site Photos:

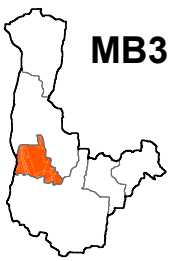


Project Identifier		**Geographic Coordinates**	
MB2_Wa	h	N40°59'31.8"	W074°03'52.4"

Site Description and BMP Implementation Opportunities: The Washington Township Elementary School is located at this site. A rain garden can be installed near the right wing of the school to collect runoff from the 760 ft^2 parking lot. Also, the parking lot can be retrofitted with permeable pavement. Students would benefit from the educational opportunities offered by the Water Resources Program through the *Stormwater Management in Your School Yard* curriculum.

Site Photos:





MB3 Washington Township

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB3

Washington Township

Project Identifier		**Geographic Coordinates**	
MB3_Wa	a	N40°59'5.856"	W074° 3' 45.1866"

Site Description and BMP Implementation Opportunities: The site is Washington Township Shopping Center located on Pascack Road, near Finnerty Place. In the rear parking lot of the site, the creek is in view and is accessible. Runoff from the site enters the waterway directly. A vegetated buffer should be installed. A vegetated swale placed along a fence that separates the brook from the parking lot would serve the purpose of filtering stormwater runoff and conveying it away from the stream. Pervious pavement should be installed where possible to limit the runoff from the parking lot. Rain gardens should also be installed to limit pollutant (sediment and hydrocarbon) load into the creek.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB3_Wa	b	N40° 58' 53.6082"	W074° 3' 41.5182"

Site Description and BMP Implementation Opportunities: The site is Our Lady of Good Counsel Church, which is located off Ridgewood Road. The location consists of a large parking lot. There is an opportunity for downspout disconnection and rain gardens near the main entrance.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB3_Wa	c	N40° 59' 0.5784"	W074° 3' 59.8428"

Site Description and BMP Implementation Opportunities: Pine Lake Estates, a townhouse complex, is located at this site. All driveways and downspouts are directly connected to roadways or catch basins in nearby lawns. Disconnection by means of rain barrels and rain gardens would be ideal for this community.

Site Photos:


Project Identifier		**Geographic Coordinates**	
MB3_Wa	d	N40° 59' 24.8058"	W074° 3' 53.136"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of about 60 homes on ¼ acre lots. 69% of the homes are directly connected to impervious cover. Some streets (Crest Place & Viola Terrace) do not have sidewalks. Therefore, rain gardens or vegetated swales along the streets with curb cuts to capture, treat, infiltrate runoff from roadways would be ideal BMPs. The disconnection of impervious cover by rain barrels or rain gardens is also appropriate for this site. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:


Project Identifier		Geographic Coordinates	
MB3_Wa	e	N40° 59' 7.4286"	W074° 4' 10.326"

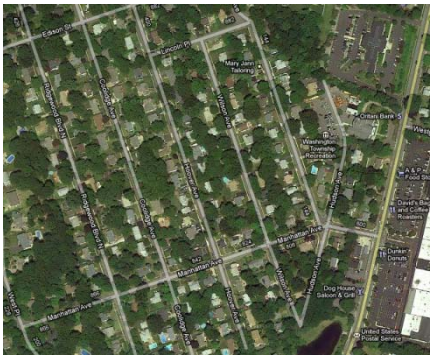
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood on West Place. The streets have no sidewalk, and the development contains about 25 homes on ¼ acre lots. 77% of the homes are directly connected to impervious cover. The creek is located behind homes on the west side of West Place. Rooftops should be disconnected with rain barrels or rain gardens on the residents' property. Also, roadside vegetated swales or gardens would limit stormwater volume entering waterways while filtering out pollutants. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		Geographic Coordinates	
MB3_Wa	f	N40° 59' 17.5194"	W074° 4' 5.7288"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood consisting of about 170 houses on ¼ acre lots. Almost 70% of the homes are directly connected to impervious cover. Rooftops should be disconnected by means of rain barrels or rain gardens. Roadways could be converted to Green Streets and retrofitted with vegetated swales, curb extensions, and/or planter boxes. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB3_Wa	g	N40° 59' 22.8264"	W074° 4' 17.3136"

Site Description and BMP Implementation Opportunities: The site is Washington Township Recreation Park on Ridgewood Boulevard East. The location consists of an office building, an athletic field, and a ¾ acre parking lot in poor condition. The site is adjacent to a stream and has little buffer to protect waterway from polluted runoff. The buffer should be increased to adequately filter pollutants and slow stormwater flow.

Site Photos:

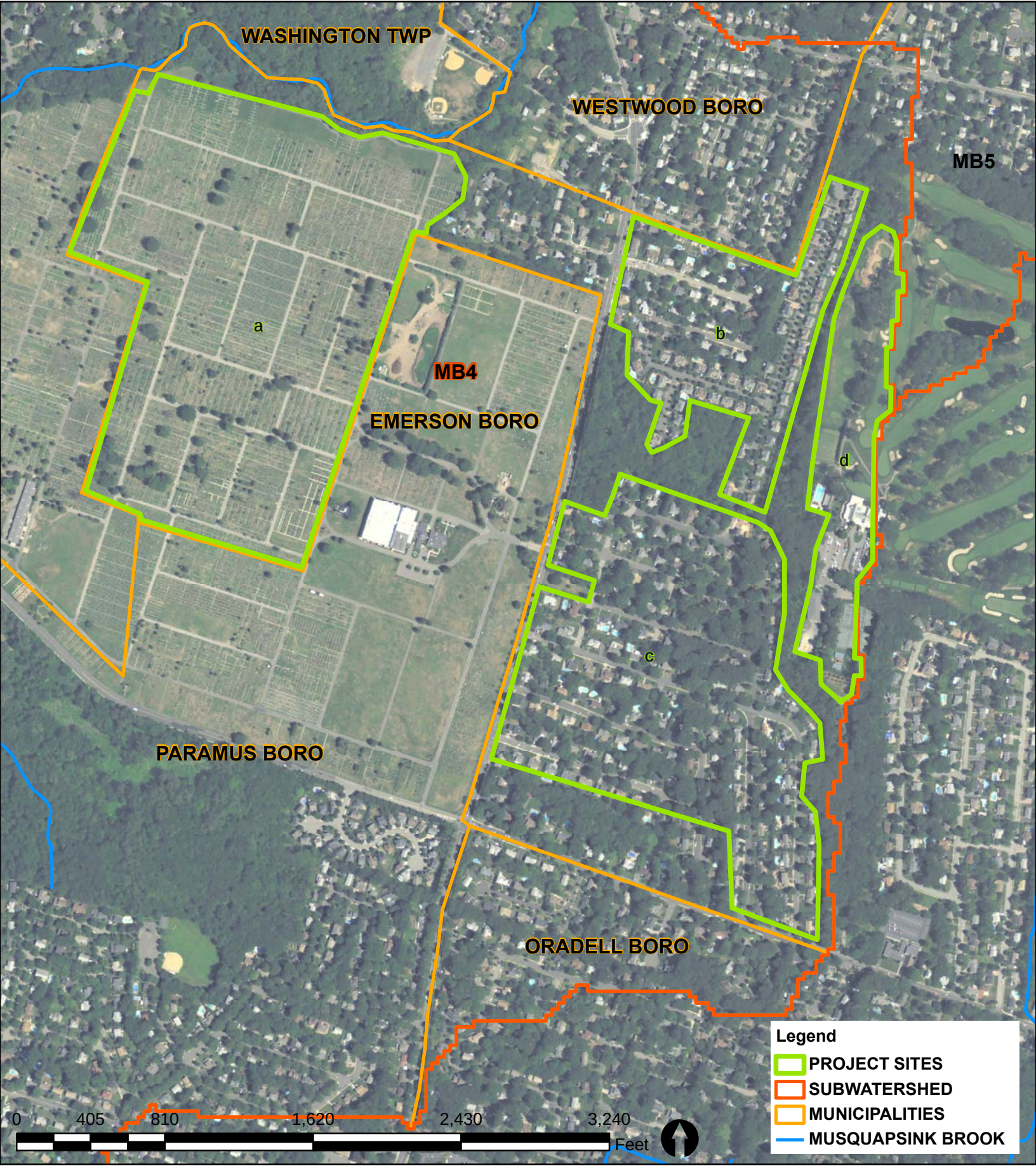


Project Identifier		**Geographic Coordinates**	
MB3_Wa	h	N40° 59' 31.164"	W074° 3' 55.3746"

Site Description and BMP Implementation Opportunities: The site is Washington Elementary School at 600 School Street. The site has a 3,000 square-foot parking lot, ranging from average to poor conditions. There are cement channels for stormwater conveyance. Recommendations include replacement of cement channels with vegetated swales, installation of rain gardens to capture, treat, and infiltrate stormwater before it reaches storm drains, and implementation of *Stormwater Management In Your School Yard* curriculum in the school.

Site Photos:





MB4 Borough of Emerson

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB4

Borough of Emerson

Project Identifier		**Geographic Coordinates**	
MB4_E	a		
Site Description and BMP Implementation Opportunities: Approximately 82 acres of the Beth El and Cedar Park Cemetery is located on this site. The cemetery property extends to the stream edge, with approximately 20 feet of existing riparian buffer. Storm drains located along the roadways appear to be clogged with sediment. Geese populations are abundant. Flow-though planter boxes could be installed near storm drains on the property.			

Project Identifier		**Geographic Coordinates**	
MB4_E	b	N40° 58' 24.276"	W074° 2' 34.3428"
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of about 90 homes. 87% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_E	c	N40° 58' 6.6606"	W074° 2' 40.1382"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood which consists of about 160 homes on ¼ acre lots. 61% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Some streets in the neighborhood have no curbs. Vegetated swales or roadside rain gardens could be utilized to capture, treat and infiltrate roadway runoff. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_E	d	N40° 58' 7.842"	W074° 2' 48.6918"

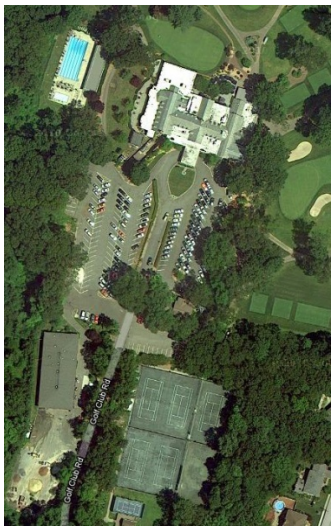
Site Description and BMP Implementation Opportunities: The site is a community park located within a residential neighborhood. There is an opportunity for roadway disconnection via vegetated swales or rain gardens installed on the park property. This would provide stormwater capture and filtering, as well as improved aesthetic and wildlife habitat.

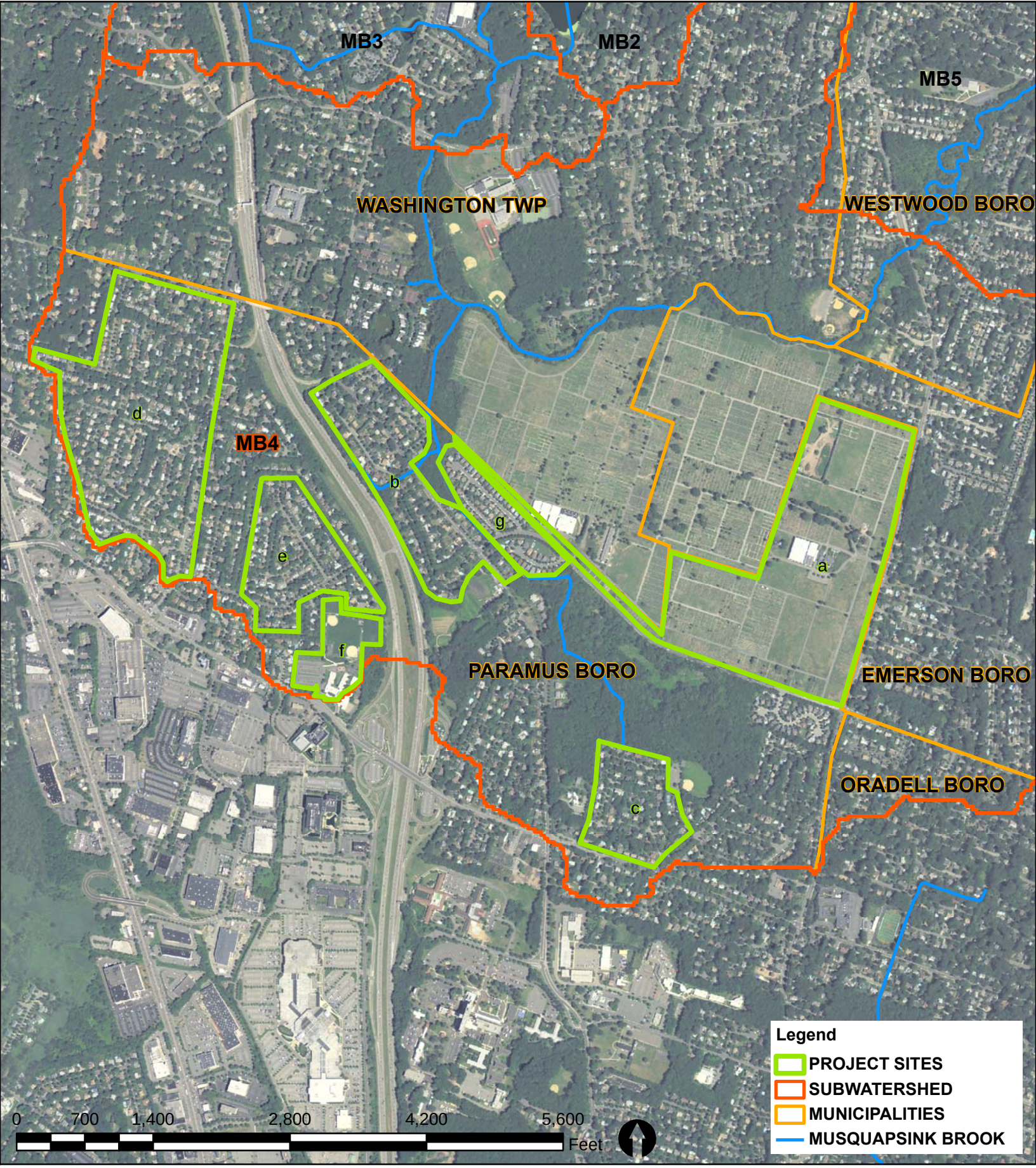
Site Photos:

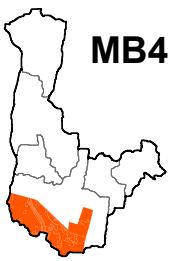
Project Identifier		**Geographic Coordinates**	
MB4_E	e	N40° 58' 9.7248"	W074° 2' 28.935"

Site Description and BMP Implementation Opportunities: The site is a private golf club located on Golf Club Road, near Soldier Hill Road. The site has large portions of impervious cover, including the parking lot and club building. Pervious asphalt or permeable pavers would aid in groundwater recharge and would protect nearby waterways.

Site Photos:







MB4 Borough of Paramus

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB4

Borough of Paramus

Project Identifier		**Geographic Coordinates**	
MB4_P	a		
Site Description and BMP Implementation Opportunities: This site contains 100 acres of the Beth El and Cedar Park cemetery. Storm drains located along the roadways are clogged with sediment. Geese populations are abundant. Flow-though planter boxes could be installed near storm drains on the property to capture and treat bacteria from geese fecal matter and nutrients from fertilizer applications.			

Project Identifier		**Geographic Coordinates**	
MB4_P	b	N40°58.337’	W074°03.789’
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood with the Musquapsink Brook passing through near Bluebell Court and Cottonwood Court. The neighborhood consists of about 40 homes on ¼ acre lots. 74% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_P	c		

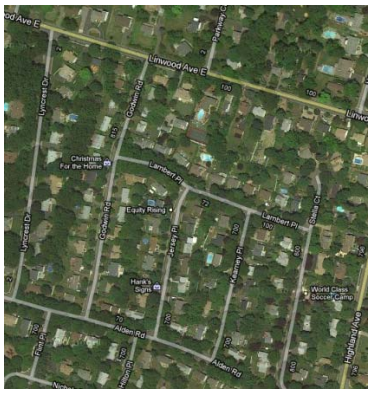
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood; the Musquapsink Brook is accessible at the end of Drexel Road. The neighborhood consists of about 40 homes on ¼ acre lots. 77% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of management and BMP implementation. An adequate buffer should be in place to provide the stream with protection.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_P	d		

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of about 90 homes on ¼ acre lots. 67% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB4_P	e		

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood which consists of about 100 homes on ¼ acre lots. 75% of the rooftops are directly connected to impervious surfaces. Rooftops should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation. .

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_P	f	N40°57.987'	W074°04.117'

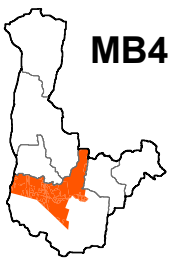
Site Description and BMP Implementation Opportunities: The site is Parkway School, approximately 10 acres in area. Approximately five acres is occupied by athletic fields and 1.5 by parking lot. Rain gardens could be implemented on the islands in the parking lot or near the school. Educational workshops or implementation of *Stormwater Management in Your School Yard* curriculum would increase the knowledge of the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_P	g	N40°58.337'	W074°03.789'

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood with the Musquapsink Brook passing through behind Manchester Way. The neighborhood consists of about 45 homes on ¼ acre lots. 30% of the rooftops are directly connected to impervious surfaces. The rooftops, therefore, should be disconnected with residential rain gardens or rain barrels. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:



MB4 Washington Township

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB4

Washington Township

Project Identifier		**Geographic Coordinates**	
MB4_Wa	a	N040°58.4'	W074°03.8'
Site Description and BMP Implementation Opportunities: Approximately 90 acres of the Beth El and Cedar Park Cemetery is located on this site. The cemetery property extends to the stream edge, with approximately 20 feet of existing riparian buffer. Storm drains located along the roadways appear to be clogged with sediment. Geese populations are abundant. Flow-though planter boxes could be installed near storm drains on the property. There is an opportunity to increase the riparian buffer width along the northern edge of the property.			

Project Identifier		**Geographic Coordinates**	
MB4_Wa	b	40° 58' 42.4128"	W074° 3' 57.3834"
Site Description and BMP Implementation Opportunities: The site contains a large parking lot, approximately ½ an acre, in both the front and the back of the building. The front parking lot does not offer any possibility for BMPs. The back parking lot drains to a field through multiple curb cuts and accounts for approximately 35% of the total impervious area on the site. Rain gardens and permeable pavement are viable implementation options.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_Wa	c	N040°58.7'	W074°04.1'

Site Description and BMP Implementation Opportunities: The site is the Valley Bible Chapel, off of Pascack Road. The majority of the chapel's downspouts are disconnected. There is a possible location behind the building, near the garbage, for a rain garden, which can serve to capture, treat, and infiltrate stormwater at the source.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_Wa	d	N040°58.6'	W074°04.3'

Site Description and BMP Implementation Opportunities: This site belongs to a business with a large parking lot. The parking lot covers approximately one acre of the property with impervious surface. Permeable pavement is the only BMP option for this site.

Project Identifier		Geographic Coordinates	
MB4_Wa	e	N040°58.4'	W074°03.9'

Site Description and BMP Implementation Opportunities: The site is Washington Pond, which is a series of streets surrounding a central pond in a residential area. Divided into Pond Court, Pond Drive, and Pond Terrace, several opportunities for BMP implementation exist. Pond Court contains approximately five townhouse buildings on approximately ¼ acre lots. All but one downspout are directly connected. Pond terrace contains approximately six townhouse buildings, also on approximately ¼ acre lots, where only some side downspouts are disconnected. Pond Drive contains approximately four townhouse buildings, also on ¼ acre lots, with the majority being directly connected. Downspouts should all be disconnected with rain barrels to reduce the stormwater runoff from the roofs of the development. There is potential for a community rain garden to infiltrate and reduce the stormwater flow. The upper half of the development drains to the pond, where no buffer currently exists. A vegetated buffer should be installed to reduce both stormwater flow and pollutant loading. The lower half of the development drains to Musquapsink Brook.

Site Photos:



Project Identifier		Geographic Coordinates	
MB4_Wa	f	N040°58.685'	W074°04.013'

Site Description and BMP Implementation Opportunities: This site is a small residential community, with less than 50 townhouse units. There are two main drainage channels to the Musquapsink Brook, all from impervious surfaces. One section drains to a riprap swale, which is in poor condition. Most of the impervious surfaces in this development drain to this. The rest drain to a 28″ reinforced concrete pipe, which discharges into the Brook as well. The roof leaders are all directly connected to these conveyance channels. The riprap swale is eroding because of the large stormwater volumes. The channel also lacks a buffer and a significant amount of sediment has accumulated. Rain gardens and rain barrels are recommended for disconnection of impervious surfaces on this site. Vegetated buffers around the riprap channel would help to filter out pollutants and sediment while also reducing erosion from stormwater flows.

Site Photos:



Project Identifier		Geographic Coordinates	
MB4_Wa	g	N40°58.7'	W074°03.1'

Site Description and BMP Implementation Opportunities: This site is a residential area centered about the Pershing Avenue, with approximately 120 homes on ¼ acre lots. 55% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain barrels or rain gardens. Also, the driveways could be retrofitted with pervious pavement. The homeowners should be offered an educational program stressing the importance of stormwater management and BMP implementation.

Site Photos:



Project Identifier		Geographic Coordinates	
MB4_Wa	h	N040°58'34.22"	W074°02'57.6"

Site Description and BMP Implementation Opportunities: This site contains 3 baseball fields and a gravel parking lot located on the side. There is a stream along the backside of the field that lacks a buffer, therefore a vegetated buffer should be installed to help control erosion, stabilize stream channels, reduce flooding, and filter pollutants.

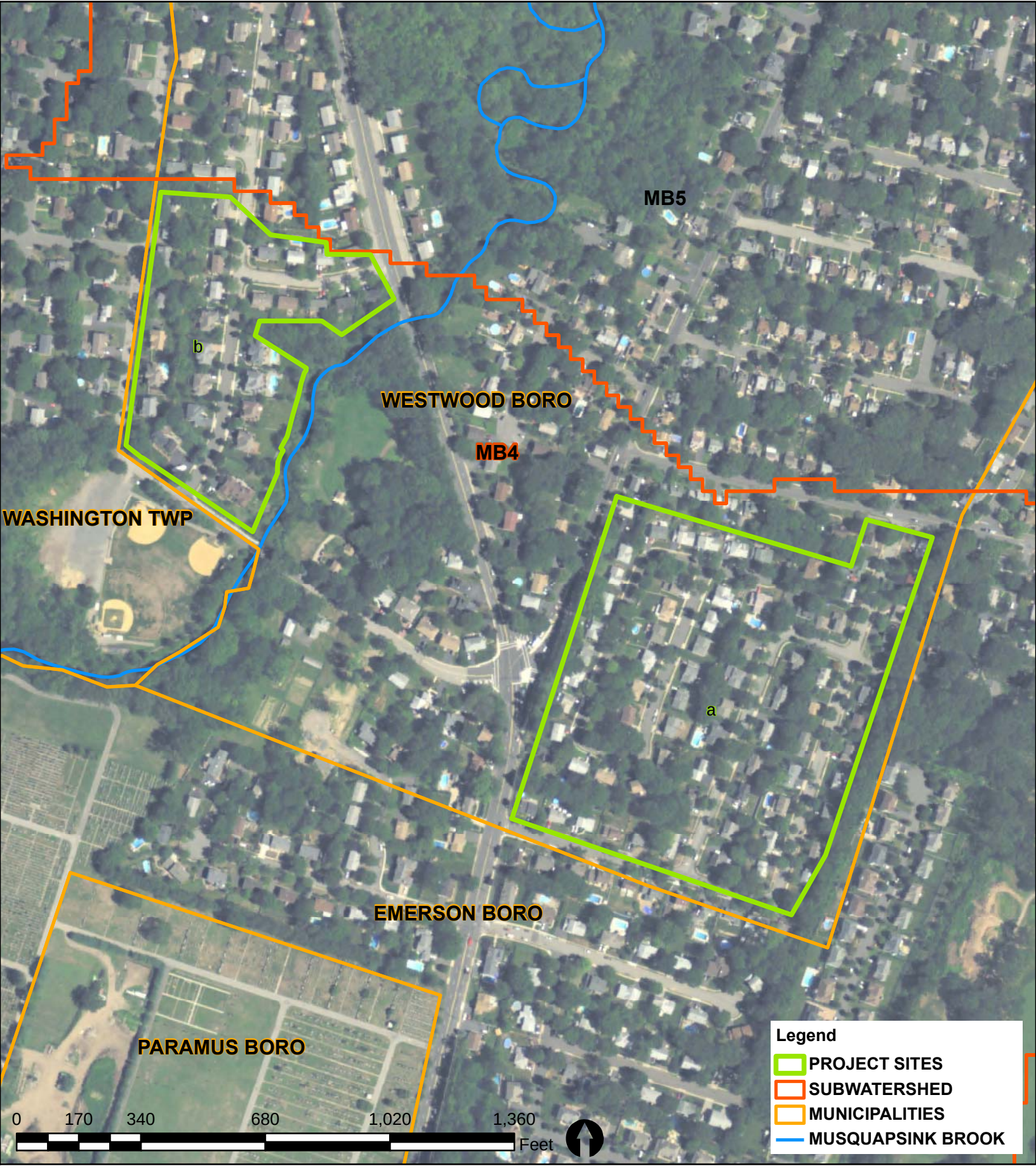
Site Photos:



Project Identifier		**Geographic Coordinates**	
MB4_Wa	i	N040°58.820'	W074°03.741'

Site Description and BMP Implementation Opportunities: This site is the Westwood High School property, and has a possible rain garden location in the back of the school, near the tennis courts. This rain garden would serve to collect, treat, and infiltrate runoff from the parking lot. There is also another rain garden implementation opportunity near the tennis court parking lot, which covers approximately 0.5 acres.

Site Photos:



MB4 Borough of Westwood

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB4

Borough of Westwood

Project Identifier		**Geographic Coordinates**	
MB4_We	a	N40° 58' 31.4034"	W074° 2' 37.3596"

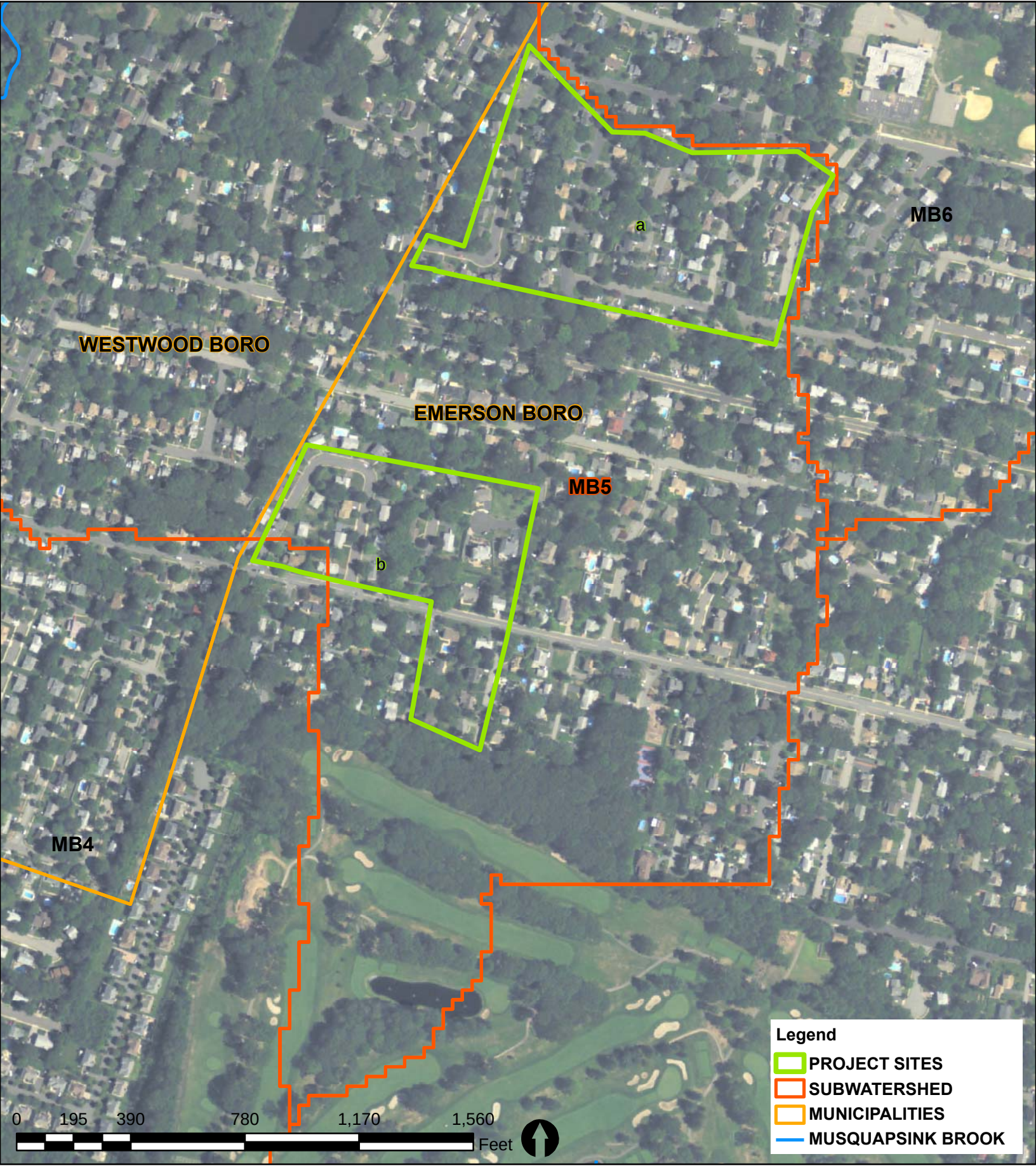
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of about 7 streets and 100 houses on ¼ acre lots. 62% of the homes are directly connected to impervious cover. Rooftops should be disconnected via residential rain gardens or rain barrels. Driveways can be converted to permeable pavement. In addition, roadways can be converted to Green Streets with curb cuts and roadside rain gardens or with curb extensions. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB4_We	b	N40° 58' 40.8396"	W074° 2' 52.0728"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of about 4 streets and 70 houses on ¼ acre lots. 54% of the homes are directly connected to impervious cover. Rooftops should be disconnected by residential rain gardens or rain barrels. Driveways can be converted to permeable pavement. In addition, roadways can be converted to Green Streets with curb cuts and roadside rain gardens or with curb bump outs. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:



MB5 Borough of Emerson

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

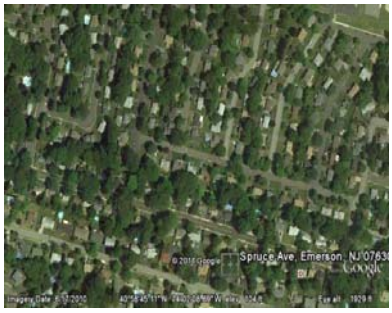
RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB5

Borough of Emerson

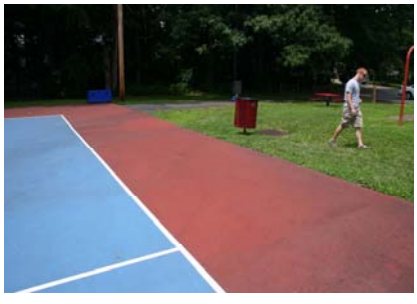
Project Identifier		**Geographic Coordinates**	
MB5_E	a	N040°58'40.3"	W074°02'06.1"
Site Description and BMP Implementation Opportunities: This site is a residential area with approximately 80 homes on ¼ acre lots. 53% of the properties in this area contain directly connected downspouts to impervious surface. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted with permeable pavement. Homeowners should also be offered an educational workshop on the importance of stormwater management and BMP implementation.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB5_E	b	N040°58'36.37"	W074°02'22.13"
Site Description and BMP Implementation Opportunities: The site consists of residential streets, totaling approximately 40 homes with about 44% containing directly connected downspouts. Ackerman Park is located in this neighborhood. The park is small, and the area is limited, but there is a potential to install a community rain garden. Public access to the park provides educational opportunities centered around the rain garden installation.			

Site Photos:



MB5 Borough of Westwood

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB5

Borough of Westwood

Project Identifier		**Geographic Coordinates**	
MB5_We	a	N40° 58' 46.26"	W074° 2' 38.76"

Site Description and BMP Implementation Opportunities: This site includes residential neighborhoods along Carl Place and Langner Place. Gabion baskets and riprap have been placed along portions of Carl Place for stabilization and flood control. Homeowners have also included riprap in their landscaping to mitigate flooding on their property. These two streets contain approximately 30 houses on ¼ acre lots. 87% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted with permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation

Site Photos:

Project Identifier		**Geographic Coordinates**	
MB5_We	b	N40°58.730′	W074°02.799′

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood, located along Forest Avenue, with approximately 15 houses on ¼ acre lots. 30% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted with permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation**.**

Project Identifier		**Geographic Coordinates**	
MB5_We	c	N40° 58' 42.38"	W074° 2' 33.5724"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood located along Ward Avenue and Taco Avenue with approximately 25 houses on ¼ acre lots. 72% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

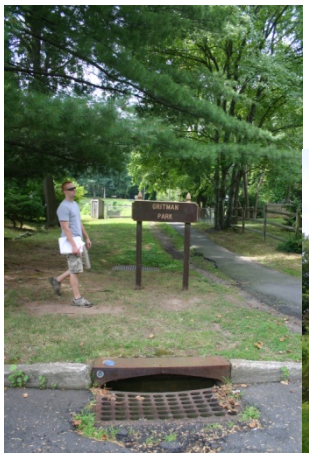
Project Identifier		**Geographic Coordinates**	
MB5_We	d	N40°58.908′	W074°02.796′

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood located along Ruckner Avenue with approximately 20 houses on ¼ acre lots. 71% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Project Identifier		**Geographic Coordinates**	
MB5_We	e	N40° 58' 54.48"	W074° 2' 24.55"

Site Description and BMP Implementation Opportunities: This site is occupied by Gritman Park and the surrounding residential neighborhood. The park contains a man-made pond with four stormwater inlets that drain the adjacent properties and roadways. The pond has no riparian buffer and evidence of geese presence was documented on the park property. The pond ultimately discharges to the Musquapsink Brook.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB5_We	f	N 40° 59' 8.44"	W074° 2' 21.75"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood located along 4th Avenue with approximately 15 houses on ¼ acre lots. Several of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted with permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Project Identifier		**Geographic Coordinates**	
MB5_We	g	N 40° 59' 7.69"	W0 74° 2' 46.64"

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood located between Lafayette Avenue and Clairmont Avenue with approximately 150 houses on ¼ acre lots. Approximately 60% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain gardens or rain barrels. Driveways should be retrofitted with permeable pavement. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		Geographic Coordinates	
MB5_We	h	N40° 59' 2.28"	W074° 2' 23.35"

Site Description and BMP Implementation Opportunities: This site is characterized by an open tract of land situated adjacent to the Musquapsink Brook and served as a sampling point (MB005) for the surface water quality monitoring. The site is located along 3rd Avenue and across from athletic fields. It contains no riparian buffer, and geese presence has been documented on several occasions.

Site Photos:

Project Identifier		Geographic Coordinates	
MB5_We	i	N40°58.956′	W074°02.610′

Site Description and BMP Implementation Opportunities: This site is occupied by Brookside Elementary School and contains directly connected sidewalks, a roof, and a parking lot. The site offers an opportunity for a 400 square-foot rain garden installation at the main entrance. Students and teachers would benefit from both an in-class lesson and hands-on learning experience related to nonpoint source pollution and stormwater management.

Site Photos:

MB6 Borough of Emerson

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB6

Borough of Emerson

Project Identifier		**Geographic Coordinates**	
MB6_E	a	N40°58.957′	W074°02.014′

Site Description and BMP Implementation Opportunities: This site is a residential neighborhood with approximately 85 homes on ¼ acre lots. 76% of the properties contain directly connected impervious cover. Rooftops should be disconnected with rain barrels or rain gardens. Roadways should be converted to Green Streets. Homeowners should be offered educational workshops on the importance of stormwater management and BMP implementation.

Site Photos:

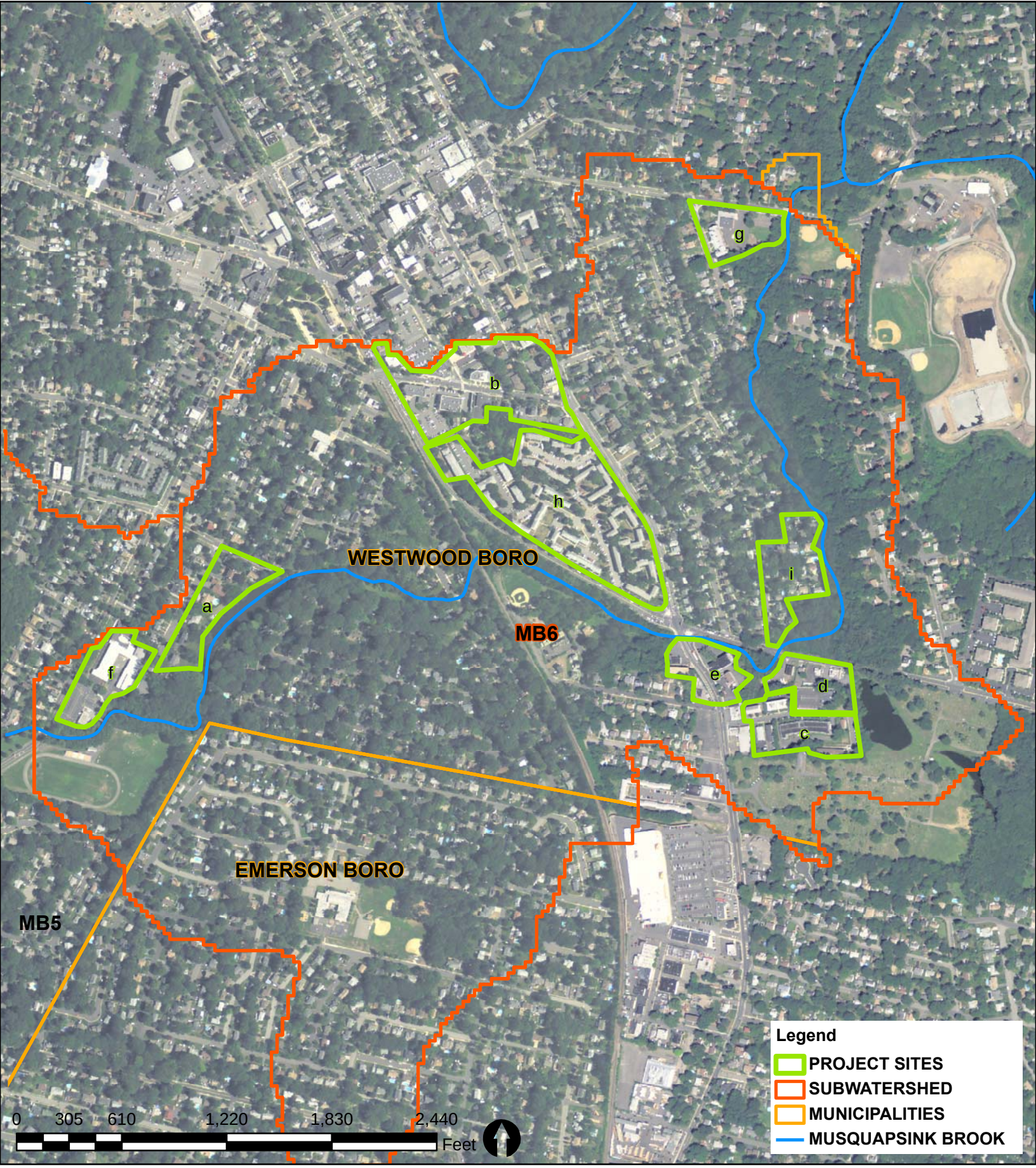


Project Identifier		**Geographic Coordinates**	
MB6_E	b	N40°58.908′	W074°01.993′

Site Description and BMP Implementation Opportunities: This site is the Emerson Memorial Elementary School property. The site is approximately six acres of which about 2.5 acres is impervious cover. The current stormwater conveyance system is in poor condition and sediment has built up in many of the cement channels on the property. Implementing vegetated swales in place of the cement channels would help infiltrate some of the rain water instead of simply directing it to storm drains. Rain gardens in the parking lot islands and near the school entrance would provide more opportunity for pollutant removal and groundwater recharge.

Site Photos:





MB6 Borough of Westwood

Map of Proposed Areas of Disconnection
Musquapsink Brook Watershed
Restoration and Protection Plan

RUTGERS
New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed MB6

Borough of Westwood

Project Identifier		**Geographic Coordinates**	
MB6_We	a	N40°59.203'	W074°02.099'

Site Description and BMP Implementation Opportunities: The site is a large mill pond receiving runoff from various sources – both grass runoff and storm sewer lines. The pond is located behind homes on 2nd Avenue and has no buffer. There is a stone reinforcement on the narrow side of pond. A buffer should be implemented to lower pollutant loads to the pond and slow stormwater flows.

Site Photos:



Project Identifier		**Geographic Coordinates**	
MB6_We	b	N40° 59' 34.1232"	W074° 1' 55.527"

Site Description and BMP Implementation Opportunities: The site is a commercial property, including The Learning Express and the Hanami Japanese and Chinese restaurant. The parking lot at this site should be retrofitted with pervious asphalt or pavers.

Site Photos:

Project Identifier		Geographic Coordinates	
MB6_We	c	N40° 59' 2.49"	W074° 1' 19.0662"

Site Description and BMP Implementation Opportunities: This site is a 2.5 acre apartment housing complex located on Crest Street. The Westwood Manor Complex is directly adjacent to a large pond which receives runoff from the back portion of the parking lot. The complex contains much impervious cover; downspouts should be disconnected via rain barrels or rain gardens. Limiting the volume of stormwater reaching the pond will limit the chance of contamination.

Site Photos:

Project Identifier		Geographic Coordinates	
MB6_We	d		

Site Description and BMP Implementation Opportunities: This site is occupied by a car leasing business on Old Hook Road. The parking lot is pitched toward the stream with little riparian buffer to protect the waterway. The parking lot should be replaced with permeable pavement to capture polluted runoff.

Project Identifier		Geographic Coordinates	
MB6_We	e	N40° 59' 7.386"	W074° 1' 28.8582"

Site Description and BMP Implementation Opportunities: The site, Bedrogian Reality Agency, is a commercial property adjacent to the stream. The site has an elevated parking lot, which drains to the lower lot and then to the Musquapsink Brook. Pervious pavement should be utilized to limit the amount of impervious cover, thereby reducing the amount of stormwater and pollutants entering the waterway.

Site Photos:



Project Identifier		Geographic Coordinates	
MB6_We	f	N40° 59' 4.8366"	W074° 2' 16.5006"

Site Description and BMP Implementation Opportunities: The site is Ketler Elementary School, located on 3rd Avenue. The Musquapsink Brook is accessible from some portions of the site, which includes a large parking lot, asphalt playground, and numerous impervious surfaces. Implementation of rain gardens near the school and off the parking lot would reduce pollutant loadings to the stream.

Site Photos:



Project Identifier		Geographic Coordinates	
MB6_We	g	N40° 59' 30.5514"	W074° 1' 27.5226"

Site Description and BMP Implementation Opportunities: The site is Berkeley Elementary School, located on the corner of Harrington and Berkeley Avenues in Westwood, New Jersey. The Musquapsink Brook is located adjacent to the parking lot for the school property. Runoff from the lot and the grassed area reaches the stream directly. Downspouts on the school should be disconnected with rain gardens. A green roof could be installed on a portion of the school building. The parking lot could be retrofitted with permeable pavement.

Site Photos:



Project Identifier		Geographic Coordinates	
MB6_We	h	N40° 59' 13.6998"	W074° 1' 38.0676"

Site Description and BMP Implementation Opportunities: The site is occupied by the Westwood Hills Apartment Complex and covers approximately 14 acres. The roofs of the buildings have external downspouts which should be disconnected with the implementation of rain barrels and cluster rain gardens.

Site Photos:


Project Identifier		**Geographic Coordinates**	
MB6_We	i	N40° 59' 12.2418"	W074° 1' 27.6018"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood, including Fern Street, Lexington Avenue, Brook Place, and Roosevelt Avenue with homes on ¼ acre lots. The Musquapsink Brook is accessible at the end of both Fern Street and Brook Place. An adequate buffer should be installed to ensure protection of the stream from common pollutants transported by road runoff. 58% of the properties contain directly connected impervious cover. Rooftops should be disconnected via rain barrels and/or rain gardens. Two cul-de-sac streets could take extra measures and push for street cleaning to prevent the entrance of pollutants and sediments into the storm drains.