



THE BOROUGH OF

Tenafly

BERGEN COUNTY, NEW JERSEY

ENVIRONMENTAL RESOURCE INVENTORY





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Special Thanks To:

Tenafly Historic Preservation Commission

Tenafly Nature Center

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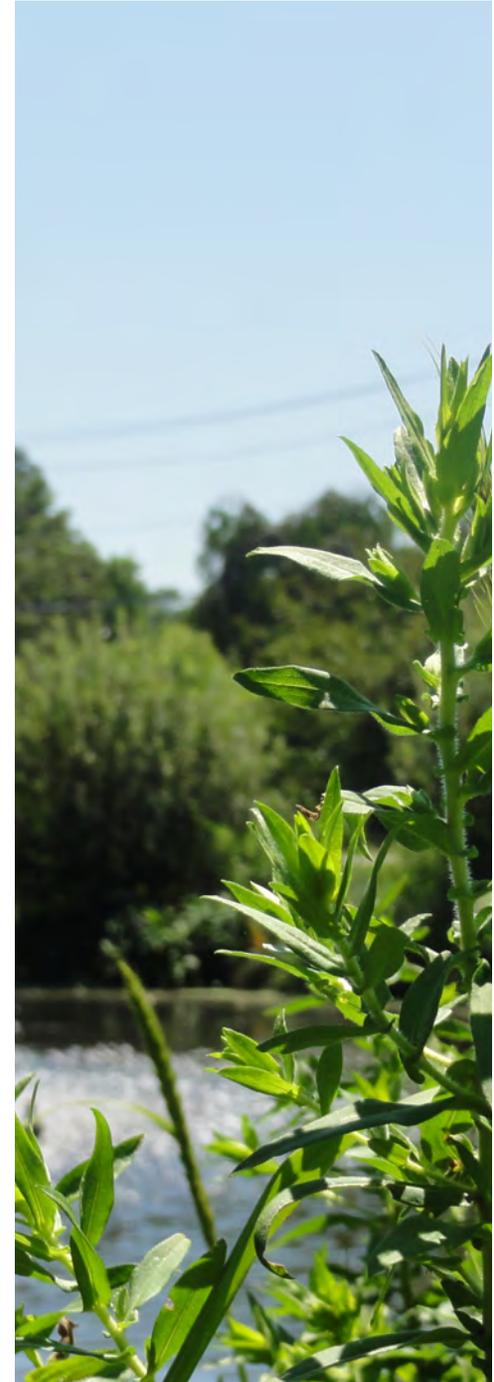
The Environmental Resource Inventory (ERI) is an unbiased report of data that describes the current state of the various environmental resources in a community. It is a compilation of text and maps, and forms the baseline documentation that the community can use to evaluate, and possibly revise, planning documents, policy initiatives, and local ordinances to better protect the remaining resources, and when possible, improve the state of the natural environment.

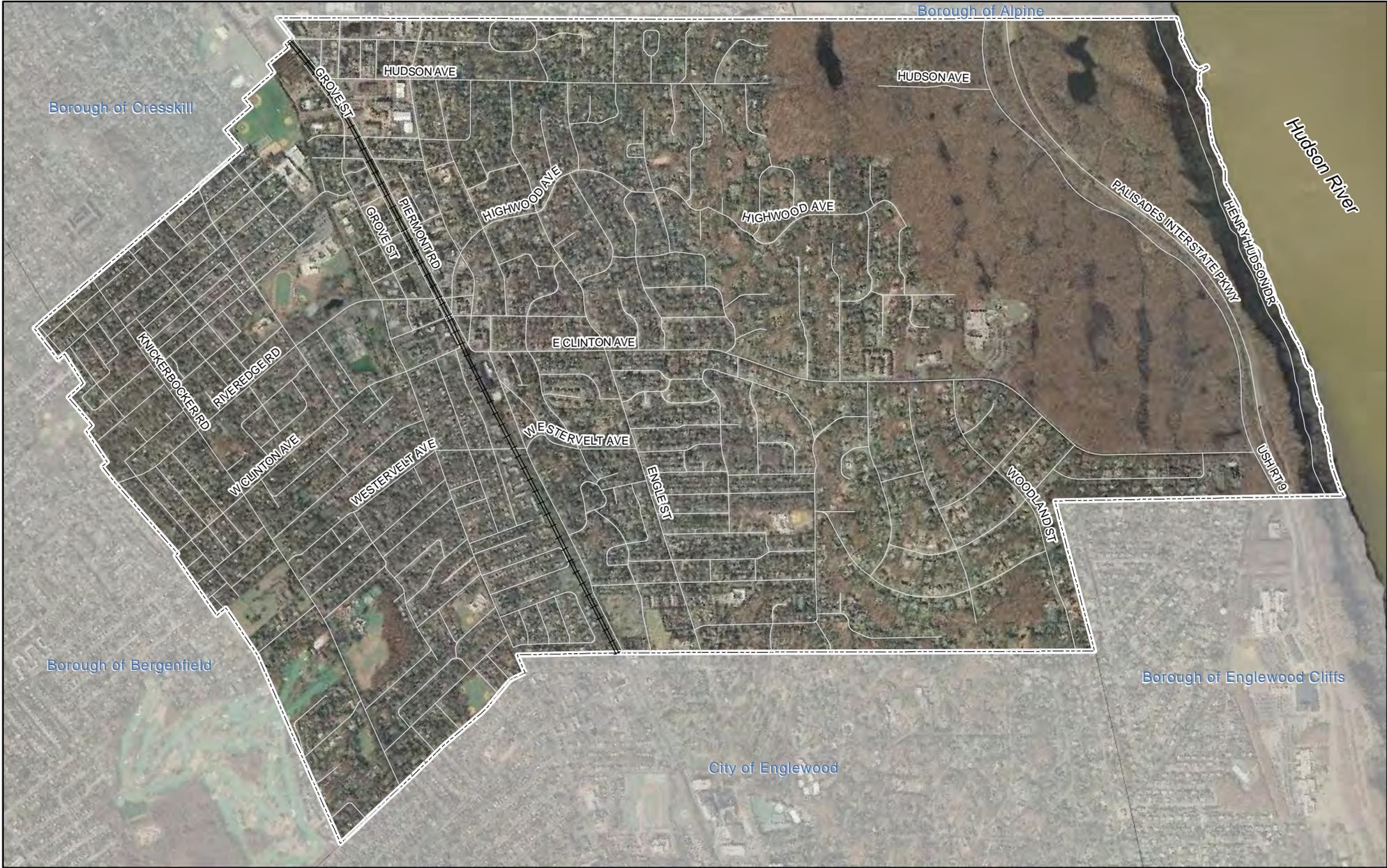
The ERI is not a policy statement or a plan. Rather, it is an objective listing of the resources in the community. It can be used as a tool for Environmental Commissions, Planning Boards and Zoning Boards, as well as by the Borough administration and the public at large. The ERI can be adopted as part of Master Plan, or it can be combined with policy statements and programs to create a Conservation Element for the Master Plan. ERI's are often the basis for resource protection ordinances in a community, which are designed to protect the resources inventoried in the ERI. Whether the ERI is part of a Conservation Element, or a separate reference document, it is always seen as dynamic and revisable as circumstance on the ground evolve and change.

The legal authority for the drafting and adoption of an ERI is the Environmental Commission Enabling Legislation (N.J.S.A. 40:56A), which states, "Power to conduct research into the use and possible use of open land areas of the municipality...It shall keep an index of the marshlands, swamps, and wetlands...the proper use of such areas...

recommend to the Planning Board...plans and programs for a master plan and the development of such areas." Additionally, the Municipal Land Use Law (N.J.S.A 40:55D) requires a Land Use Plan element and states that "Whenever the Environmental Commission has prepared and submitted to the Planning Board and to the Board of Adjustment an index of the natural resources of the municipality, the Planning Board or the Board of Adjustment shall make available to the Environmental Commission an informational copy of every application for development submitted to the board."

It should be noted that all of the information included in this ERI should be considered to be reasonably accurate for planning purposes, but does not replace site-specific investigations for regulatory purposes. It should also be noted that the most up-to-date data sources were used to create this document; however, some of the most recent information is based on data and aerial photography collected by NJDEP in 2002 and 2007. Other information is based on topographic maps that were last updated prior to that time. Environmental resource information is dynamic and should always be understood to be so.

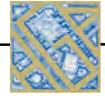




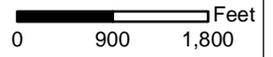
-  Borough Boundary
-  Roads
-  Railroad

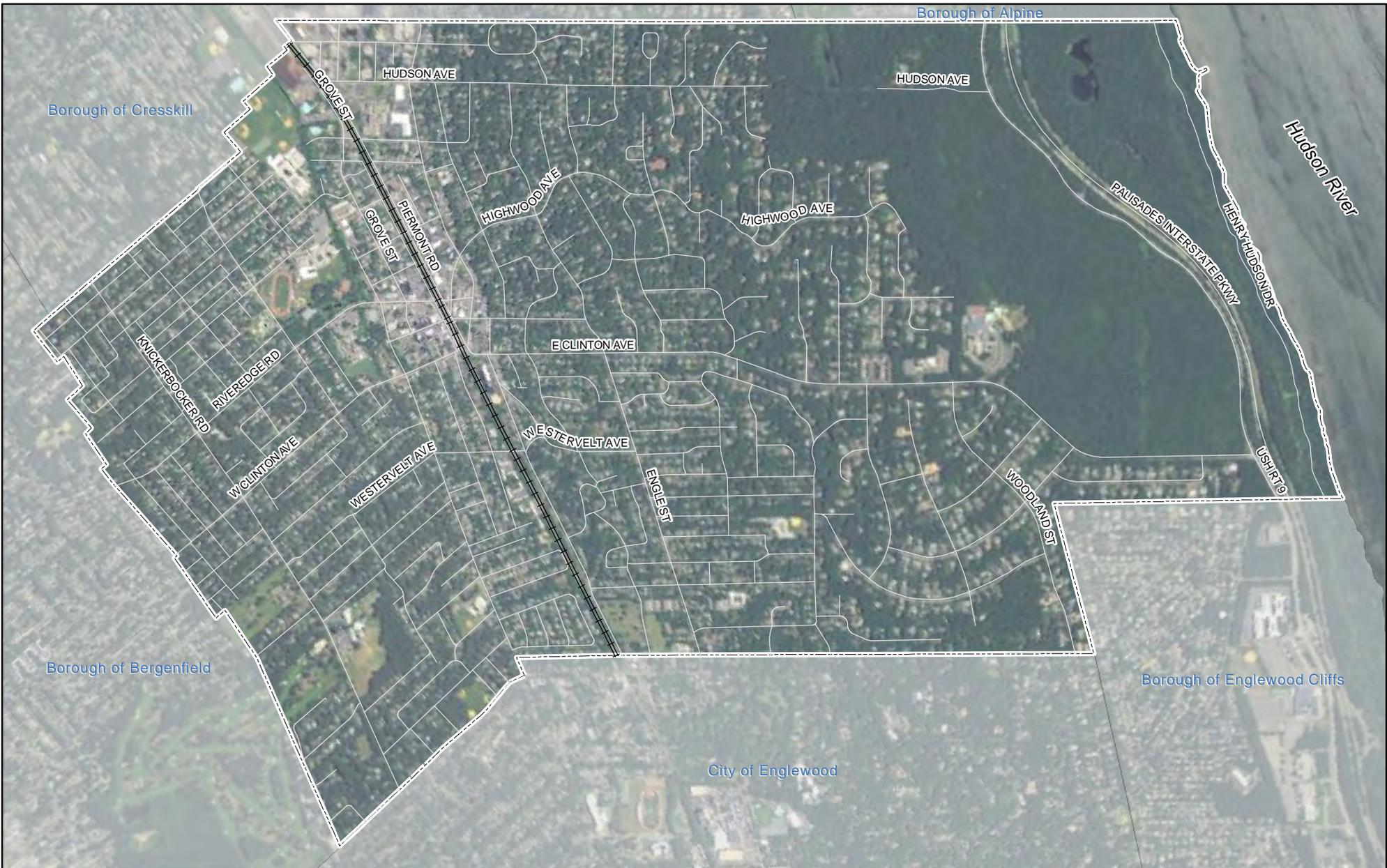
Borough of Tenafly
Environmental Resource Inventory
2007 AERIAL

Bergen County
 New Jersey



April 2011
 1 inch = 1,800 feet





-  Borough Boundary
-  Roads
-  Railroad

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory

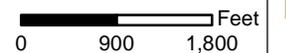
2010 AERIAL

Bergen County
New Jersey



April 2011

1 inch = 1,800 feet





Tenafly Borough is comprised of 4.5 square miles. According to the 2010 census the Borough had a population of 14,390, making the Borough fairly densely populated with a density of 2,767 people per square mile. The first European settlers in Tenafly were the Dutch, who began to populate the area during the late 17th century. The name “Tenafly” itself is derived from the early-modern Dutch phrase “Tiene 2Vly” or “Ten Swamps” which was given by Dutch settlers in 1688. Tenafly was incorporated as a borough on January 24, 1894 by an Act of the New Jersey Legislature from portions of the now-defunct Palisades Borough, based on the results of a referendum held the previous day, at the height of the Borough phenomenon through Bergen County at the time. The first newspaper in New Jersey was printed at Parker’s Press in Tenafly. The Borough also had a role in the Revolutionary War, with some minor conflicts settled in 1777, 1779, and 1782.

Tenafly’s street plan and overall development were largely determined by its hills, its valleys and its tall trees, which give the borough its special charm. The eastern part of the borough is customarily referred to as the “East Hill” for its higher elevation in relation to the rest of the borough. There, the terrain rises dramatically to the east of the downtown area, terminating at the New Jersey Palisades, overlooking the Hudson River. Nearby is the Tenafly Nature Center, located at 313 Hudson Avenue.

Bus service to and from New York City is available via New Jersey Transit bus routes 166, and Coach

USA (Red and Tan) routes 9, 14, 20, and 84. County Route 501, U.S. Route 9W, and the Palisades Interstate Parkway all pass through Tenafly. There are no exits on the Palisades Interstate Parkway in Tenafly. The nearest interchanges are Exit 1 in Englewood Cliffs to the south, and Exit 2 in Alpine in the north. The average one-way commute in Tenafly, NJ, takes 38 minutes. 68% of commuters drive their own car alone. 12% carpool with others. 11% take mass transit and 6% work from home.

The Borough Master Plan Reexamination of 2005 resulted in the adoption of the following goals and policy statements:

Goal 1: To maintain and enhance the existing areas of stability in the community; to encourage a land use pattern that establishes areas which have their own unique development characteristics. A principal goal of this plan is to preserve and protect the residential character and existing density of the community, and reinforce the borough’s commercial and business areas, by restricting incompatible land uses from established neighborhoods, and limiting intensities of use to the levels prescribed herein.

Policy Statement: The Borough of Tenafly recognizes that one of its most significant attributes is its unique land use arrangement. This land use pattern is characterized by attractive detached single-family residential neighborhoods with a distinctive suburban flavor, with distinct commercial areas. The Plan’s land use recommendations are





designed to protect and reinforce this prevailing residential development pattern by recognizing the established densities within the community and preclude any introduction of incompatible non-residential use or intensities of use in these neighborhoods.

Goal 2: To ensure that any prospective development and/or redevelopment is responsive to Tenafly's environmental features.

Policy Statement: The Borough seeks to limit development to that which is sensitive to the community's particular physical characteristics, and preserves the Borough's sensitive environmental elements. In particular, the Borough seeks to limit development to that which preserves steeply sloped area, wetlands, and flood plains, and retains existing vegetation. Additionally, there are numerous sites in the Borough that are typified by extensive environmentally sensitive features and therefore may not be able to accommodate their full zoned development potential.

Goal 3: To ensure that any future development of the Borough's infrastructure be limited to accommodate the Borough's present level of intensity of development as identified in this Plan.

Policy Statement: The Borough seeks to encourage a limited level of infrastructure improvements to accommodate local needs and discourage the imposition of new facilities that may be utilized to support higher levels of development than contemplated in this Plan. The Borough's land use policy is expressly designed to discourage

infrastructure improvements that would enable a significant increase in the carrying capacity of the land, and result in increased pressures for higher levels of development.

Goal 4: To encourage and provide buffer zones to separate incompatible land uses.

Policy Statement: The Borough recognizes the need to reinforce the delineation of boundaries separating residential and non-residential uses and residential uses of a distinctly different intensity-of-use. Appropriate buffer/screening devices are to be encouraged to separate incompatible land uses in order to minimize adverse impacts on residential and other properties. This should be accomplished primarily within the framework of appropriate open space buffer widths containing suitable planting elements (incorporating such elements as multiple rows of plant material, planting clusters, etc. as a means to provide suitable buffer protection), with supplemental aesthetically pleasing fencing where appropriate. It is appropriate to provide suitable distances between on-site activity on non-residential lots and adjoining residential uses, in addition to the physical elements noted above, in those instances where it can be provided.

Goal 5: To encourage residential zone bulk requirements, such as setbacks and coverage, as well as regulations regarding lighting, noise, etc., to permit development consistent with the established community character.

Policy Statement: The Borough wishes to encourage single-family detached housing that permits more creative design while minimizing impacts that would detract from the neighborhood character prevalent in Tenafly.

Goal 6: To consider environmentally sensitive features and extensive woodland vegetation as a means of preserving steep slopes, wetlands, wooded areas, scenic qualities, historic facilities, retaining open space and reducing infrastructure costs.

Policy Statement: The Borough wishes to encourage single-family detached housing development that preserves and protects environmentally sensitive features, wooded acreage and open space. Such development would permit more creative design for potential development of the sites.

Goal 7: Age-restricted housing development should be encouraged in areas where such uses are permitted to address a growing need that would not adversely impact the Borough school system.

Policy Statement: A variety of housing options for senior citizens is permitted in certain zones that are deemed appropriate for this use. Such uses should be compatible with the surrounding development and not have any adverse impact on single-family residential districts.

Goal 8: To preserve and enhance the Borough's community facilities, ensuring that the Borough

addresses the public safety, recreational, and other needs.

Policy Statement: The Borough seeks to enhance existing community facilities and add additional facilities where possible. In particular, the Borough should pursue opportunities to meet open space and recreation needs. Major residential and non-residential development should address how their proposals would affect the provision of community services and what additional burdens, if any, would be placed on the Borough because of said development.

Goal 9: To preserve and enhance the Borough's Central Business District by defining its functional role in the community and enhancing the quality of life within the commercial center through an appropriate mixture of activities; permit a reasonable level of development in the business district; and to encourage the use of off-street parking facilities to provide greater convenience for shoppers and reduce conflicting traffic movements in the Central Business District.

Policy Statement: The Borough seeks to encourage the continued development of the Central Business District for retail and commercial uses serving the daily needs of the area's resident population. The Borough's broad land use policy is to limit commercial development to the areas depicted on the Land Use Plan map. Additionally, this Plan seeks to encourage a building design that is oriented toward the street corridor, to the extent possible. Consideration should be given





to design features that encourage the integration of building, parking, signage and landscaping elements including tree wells in parking lots, into a comprehensive and unified framework.

Goal 10: To encourage New Jersey Transit and other officials to develop any future rail system that is friendly to adjacent residential uses and minimizes the number of transfers required by commuters.

Policy Statement: The Borough recognizes that commuter rail provides both opportunities and concerns regarding long-term development. Any reactivation of the Northern Branch railroad line should minimize negative impacts regarding pollution and noise. Additionally, concerns regarding parking and traffic should be addressed in conjunction with any reactivation.

Goal 11: To address the Borough's affordable housing obligation in a manner consistent with other goals and objectives set forth herein.

Policy Statement: The Borough recognizes that the State has refined the housing issue to direct attention to the specific need for lower income housing. The Borough is prepared to address its third-round fair share housing obligation to the extent possible, recognizing the limited availability and suitability of site in the community for higher density development. Participation in a regional contribution agreement is one affirmative approach that Tenafly should pursue to satisfy a portion of the Borough's obligation.

Goal 12: To promote a safe and efficient traffic circulation system that serves the Borough, while retaining Tenafly's community character within the overall framework of the circulation system.

Policy Statement: The Borough has made efforts to improve circulation issues, particularly with regarding to roads in the Central Business District. The intention is to improve the effectiveness and safety of certain intersections, improve roadway alignments and implement the provision of improve traffic signage and signalization, as is necessary. Future development, both residential and non-residential, should review the impact of activity on the Borough's road network and minimize, if not eliminate, any potential adverse impacts.

Goal 13: To preserve the historic features of the Borough as an integral part of Tenafly's unique character.

Policy Statement: The Borough continues its policy of protecting historically significant structures as identified in the Historic Preservation Plan Element through the adoption of regulations, consistent with the land use act's intention to preserve historic properties.

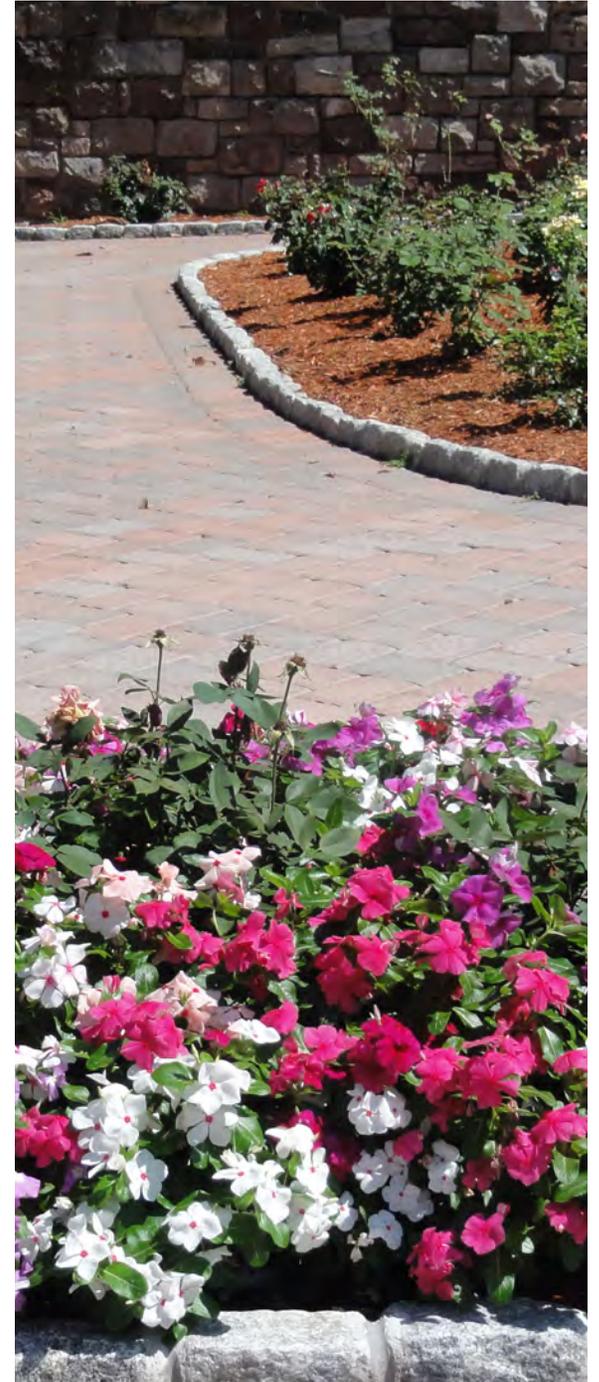
Goal 14: To support the overall philosophy of the State Development and Redevelopment Plan (SDRP) as a means of providing growth management on a statewide basis while retaining the principles of home-rule.

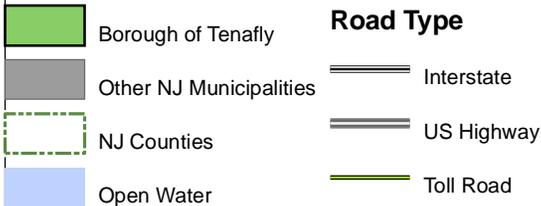
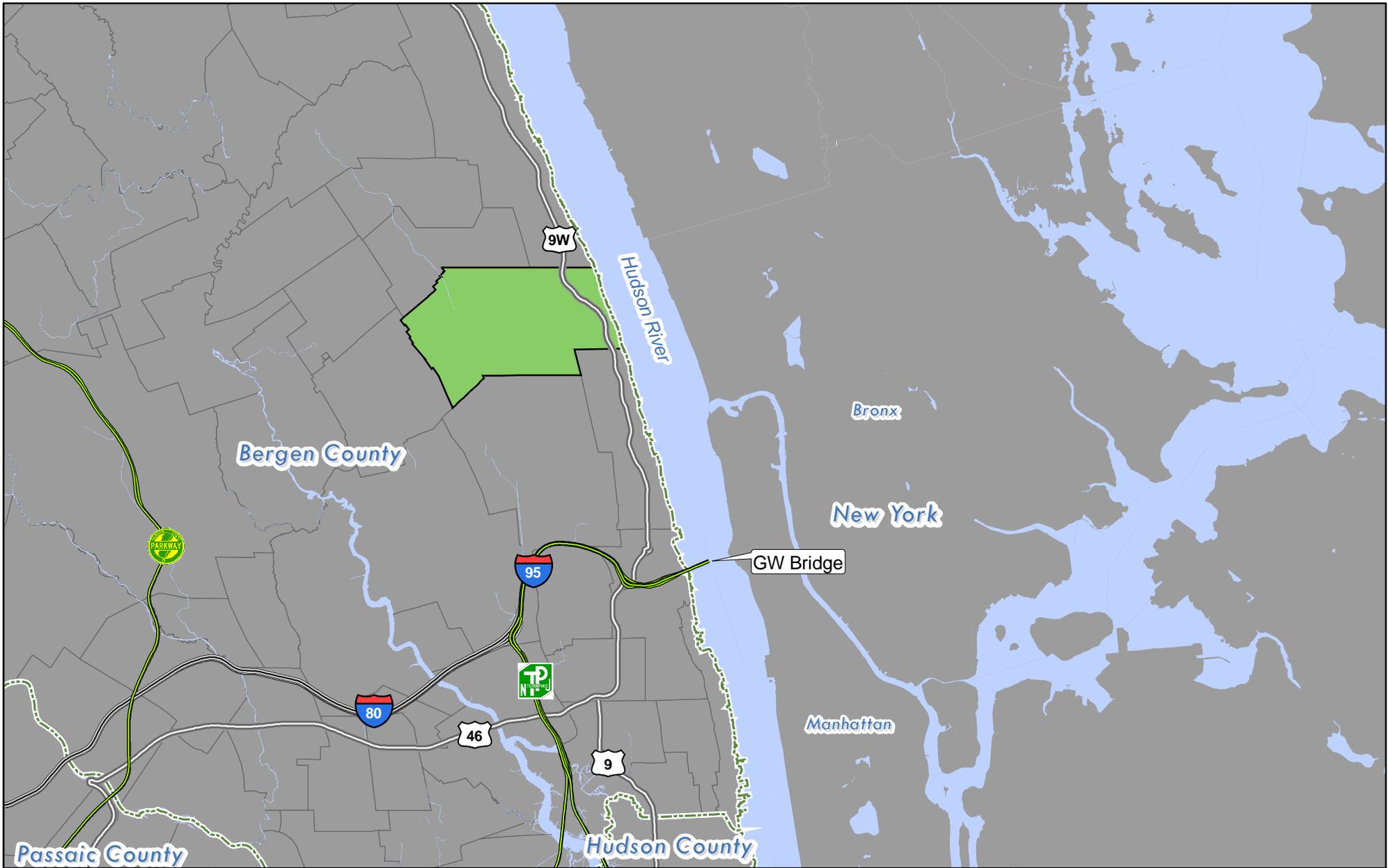
Policy Statement: The Borough maintains that the general intent of the SDRP, to manage growth

within the framework of an assessment of needs and infrastructure capabilities and a municipality's environmental constraints, and the SDRP's specific tier designations for Tenafly, represents a reasonable approach to growth management.

In Tenafly Borough, environmental conservation is a longstanding tradition. The Borough has been named a "Tree City USA" municipality for 8 consecutive years by the National Arbor Day Foundation. The Borough is also active in Community Forestry as it recently had a five-year Community Forestry Management Plan approved by the state in September of 2008.

The Tenafly Borough Environmental Commission was established February 27, 1973 and the Environmental Commission promotes an environmental, ecological conservation and natural resources program for the Borough of Tenafly. The Commission has the power to study and make recommendations to the Mayor and Council concerning open space preservation, water resources management, air pollution control, solid waste management, noise control, soil and landscape protection and protection of flora and fauna.





Borough of Tenafly
Environmental Resource Inventory

CONTEXT MAP

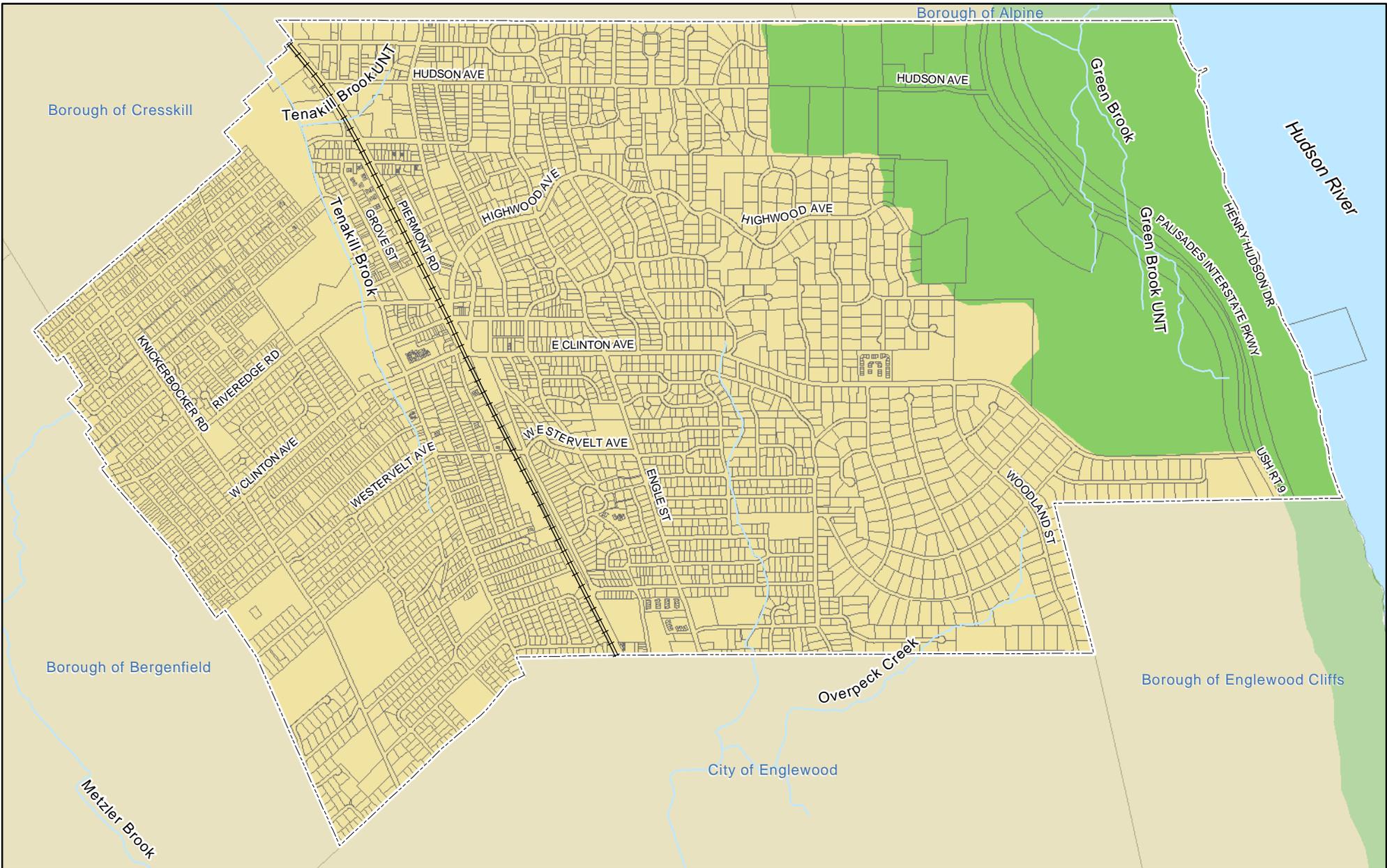
Bergen County
New Jersey



April 2011

1 inch = 2 miles





-  Borough Boundary
 -  Borough Parcels
 -  Streams
 -  Open Water
- STATE PLANNING AREAS**
-  PA 1 - Metropolitan
 -  PA 8 - State Park

Source: NJDEP, NCRS, NJGS, NJDOT and Borough of Tenafly

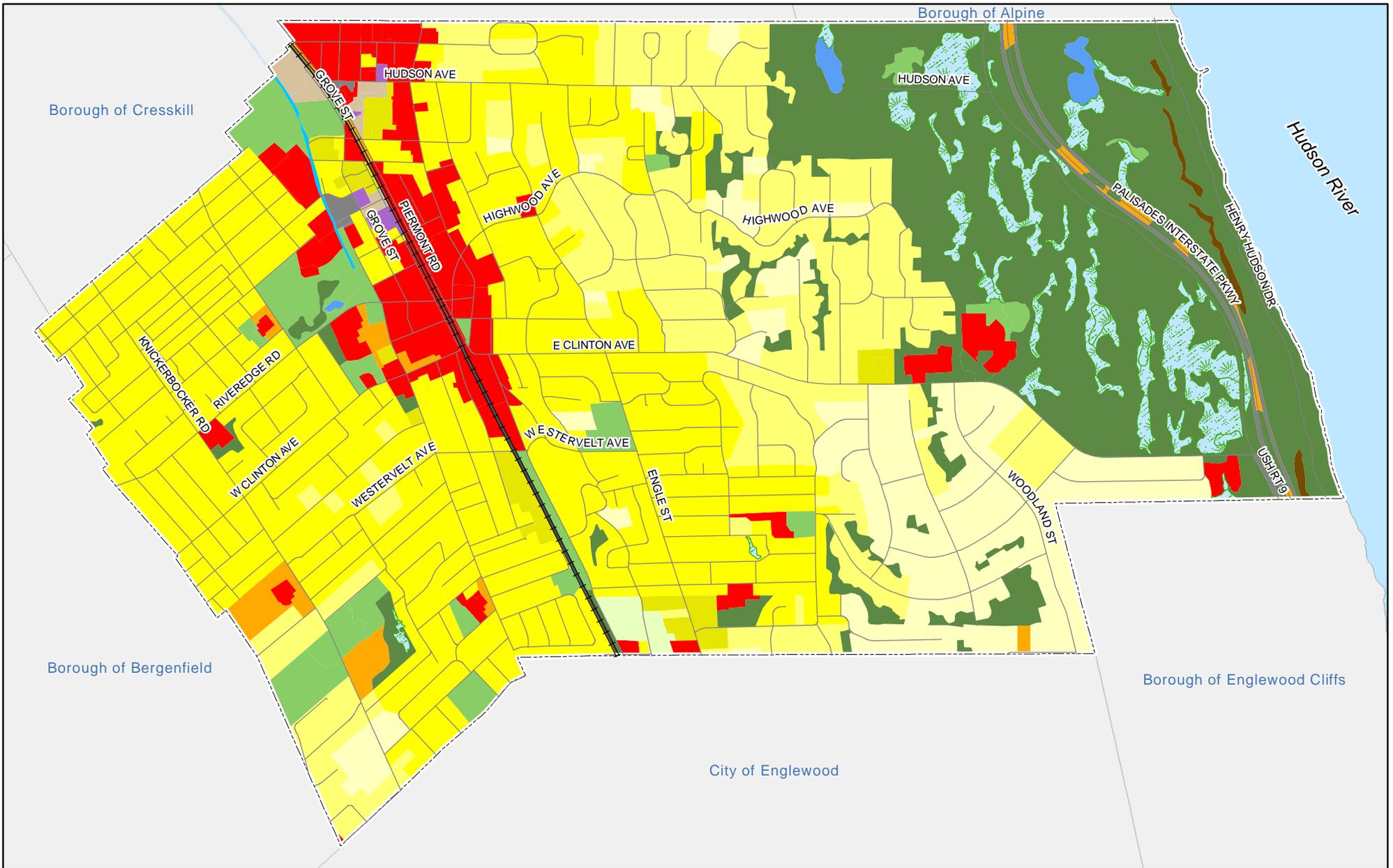
Borough of Tenafly
Environmental Resource Inventory
STATE PLANNING AREAS

Bergen County
 New Jersey

April 2011

1 inch = 1,800 feet





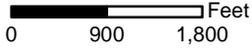
	Residential - High Density		Industrial		Recreation Areas and Athletic Fields		Wetlands
	Residential - Medium Density		Transportation, Roadways, Utilities		Forest		Bare Exposed Rock
	Residential - Low Density		Railroads		Streams and Canals		Transitional Areas
	Residential - Rural		Other urban or Built-up Land		Artificial Lakes		
	Commercial		Cemetery		Tidal Rivers and other Tidal Waters		

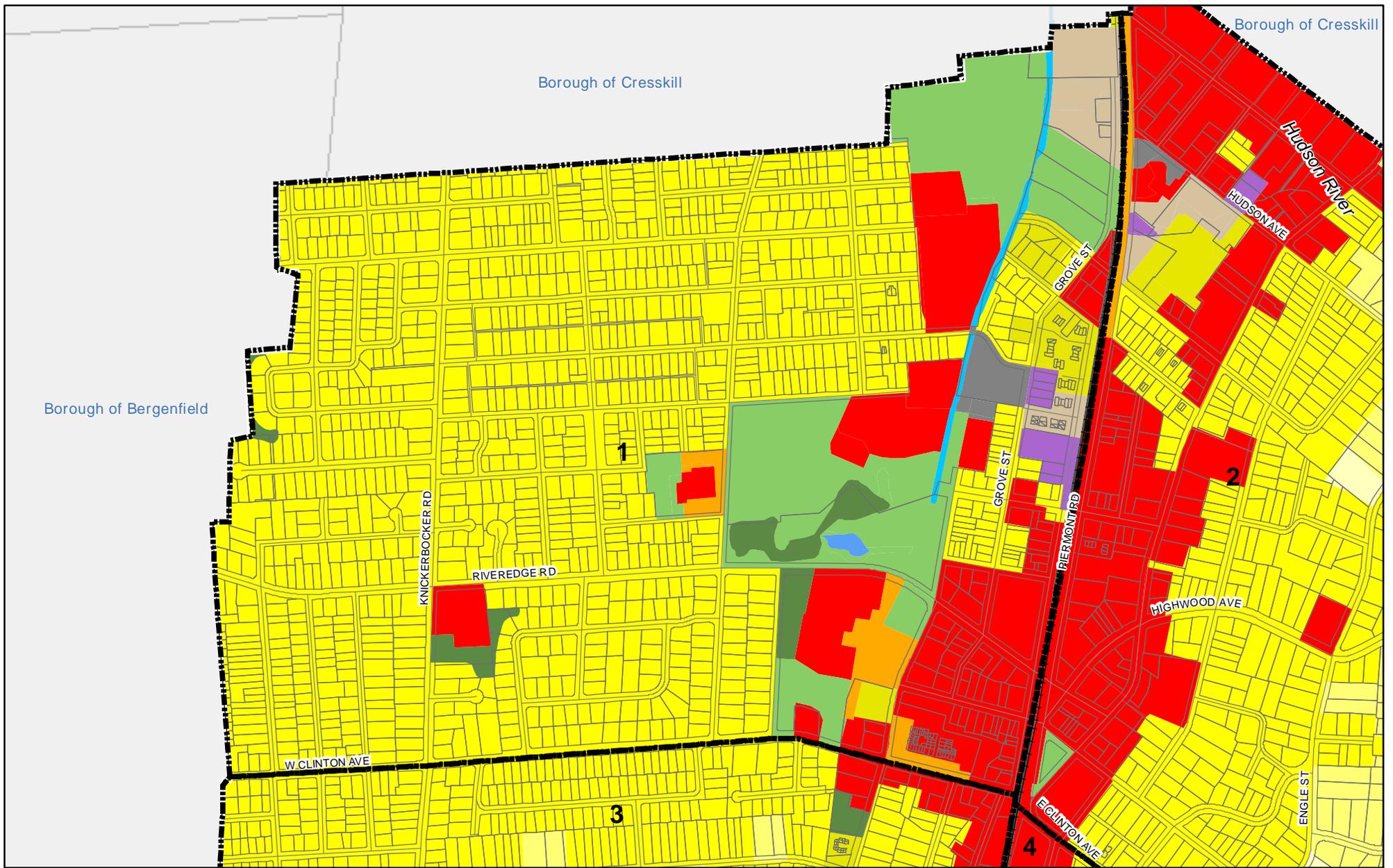
Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory

LAND USE / LAND COVER

Bergen County  April 2011
New Jersey 1 inch = 1,800 feet



Borough of Cresskill

Borough of Cresskill

Borough of Bergenfield

1

2

3

4

Quadrants	Commercial	Cemetery	Tidal Rivers and other Tidal Waters
Residential - High Density	Industrial	Recreation Areas and Athletic Fields	Wetlands
Residential - Medium Density	Transportation, Roadways, Utilities	Forest	Bare Exposed Rock
Residential - Low Density	Railroads	Streams and Canals	Transitional Areas
Residential - Rural	Other urban or Built-up Land	Artificial Lakes	

Borough of Tenafly
Environmental Resource Inventory
LAND USE / LAND COVER
Quadrant 1

Bergen County
New Jersey

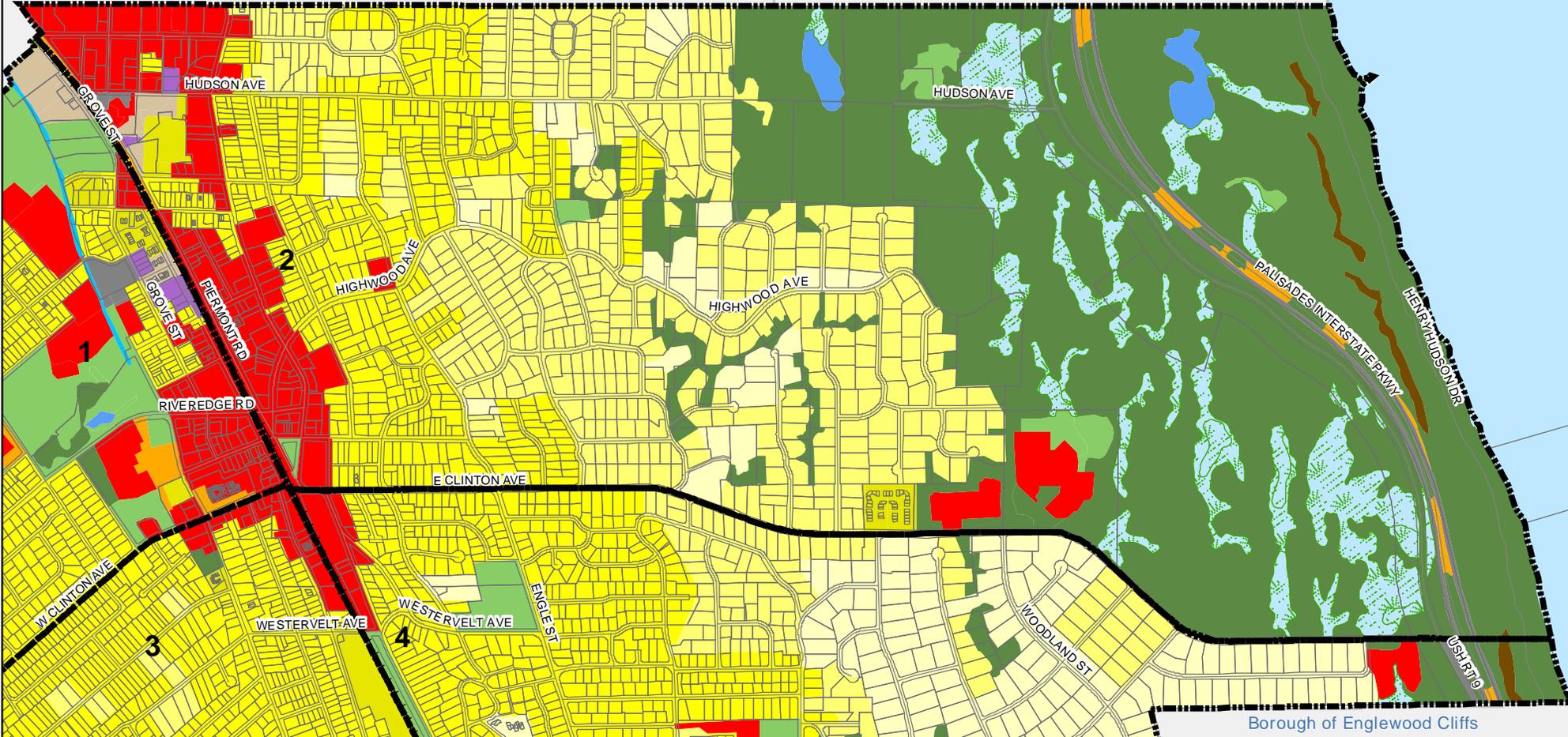
April 2011
1 inch = 800 feet

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Cresskill

Borough of Alpine

Hudson River



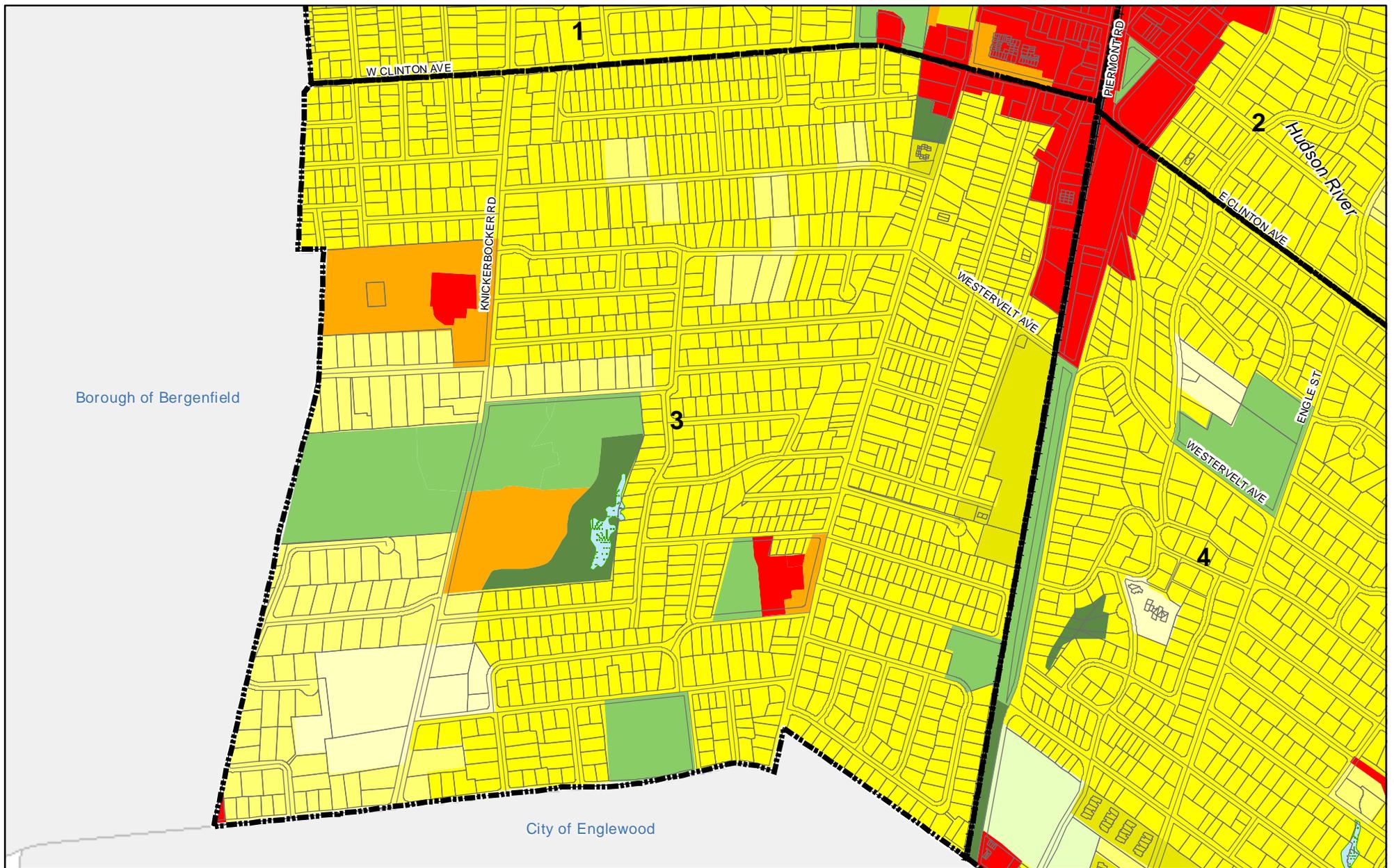
Borough of Englewood Cliffs

Quadrants	Commercial	Cemetery	Tidal Rivers and other Tidal Waters
Residential - High Density	Industrial	Recreation Areas and Athletic Fields	Wetlands
Residential - Medium Density	Transportation, Roadways, Utilities	Forest	Bare Exposed Rock
Residential - Low Density	Railroads	Streams and Canals	Transitional Areas
Residential - Rural	Other urban or Built-up Land	Artificial Lakes	

Borough of Tenafly
Environmental Resource Inventory
LAND USE / LAND COVER
Quadrant 2

Bergen County
 New Jersey
 April 2011
 1 inch = 1,400 feet

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



Borough of Bergenfield

City of Englewood

	Quadrants		Commercial		Cemetery		Tidal Rivers and other Tidal Waters
	Residential - High Density		Industrial		Recreation Areas and Athletic Fields		Wetlands
	Residential - Medium Density		Transportation, Roadways, Utilities		Forest		Bare Exposed Rock
	Residential - Low Density		Railroads		Streams and Canals		Transitional Areas
	Residential - Rural		Other urban or Built-up Land		Artificial Lakes		

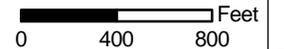
Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

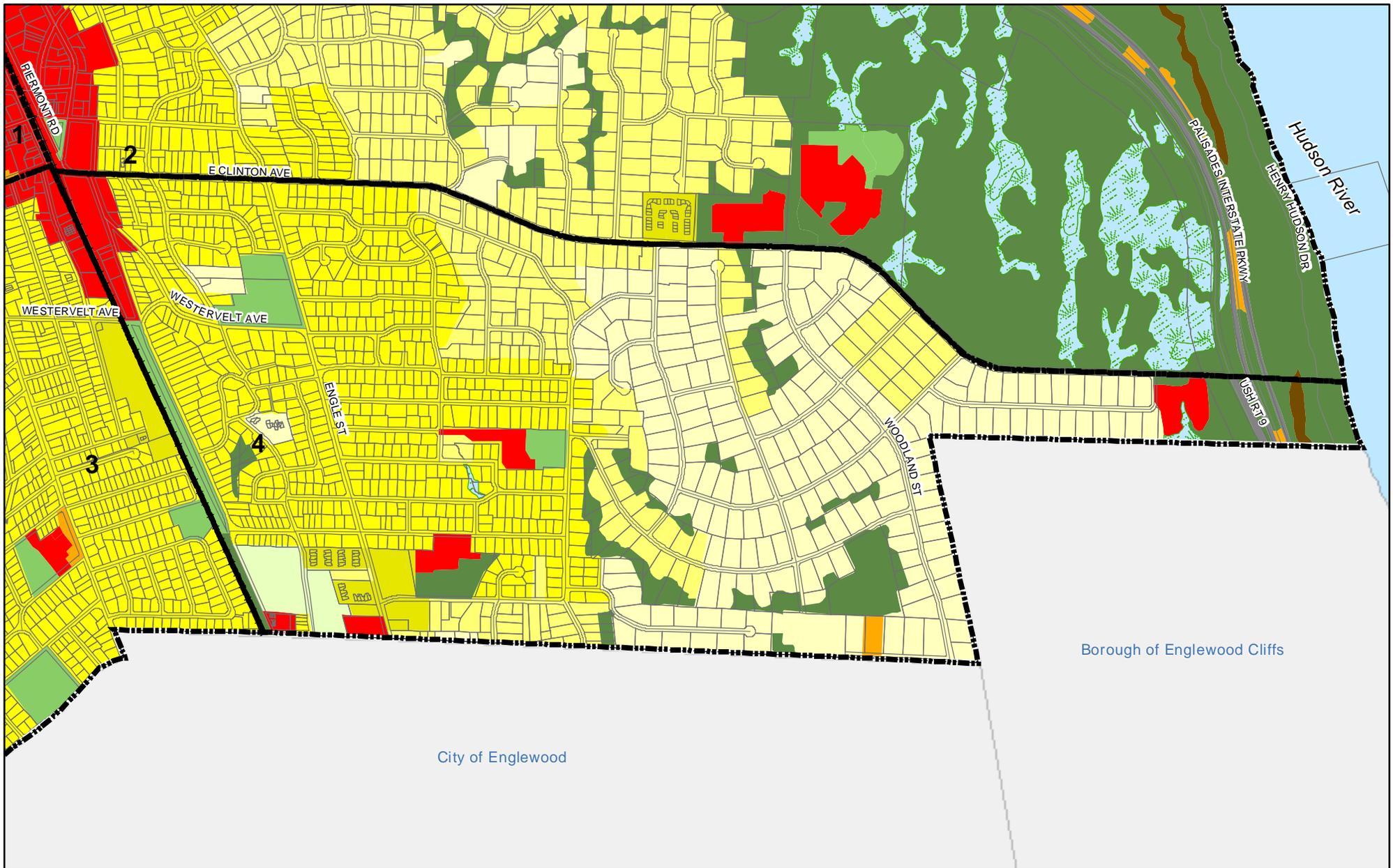
Borough of Tenafly
Environmental Resource Inventory
LAND USE / LAND COVER
Quadrant 1

Bergen County
 New Jersey



April 2011
 1 inch = 800 feet





City of Englewood

Borough of Englewood Cliffs

	Quadrants		Commercial		Cemetery		Tidal Rivers and other Tidal Waters
	Residential - High Density		Industrial		Recreation Areas and Athletic Fields		Wetlands
	Residential - Medium Density		Transportation, Roadways, Utilities		Forest		Bare Exposed Rock
	Residential - Low Density		Railroads		Streams and Canals		Transitional Areas
	Residential - Rural		Other urban or Built-up Land		Artificial Lakes		

Borough of Tenafly
Environmental Resource Inventory
LAND USE / LAND COVER
Quadrant 4

Bergen County April 2011

New Jersey 1 inch = 1,200 feet




Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Tenaflly Borough is dominated by urban areas that consist of residential uses, commercial uses, industrial uses, lands used for transportation networks, schools, churches, cemeteries, recreation areas, etc., that amount to approximately 2,189.86 acres, or just over 75 percent of total land area. It is covered to a much less extent by water (0.52 percent) and wetlands (3.35 percent). Much of the eastern side of the Borough is preserved and forested. The forested portions of the Borough encompass approximately 20 percent of the total area of the Borough. The total land area is approximately 4.5 square miles, or 2915.81 acres. The following chart is a summary of land uses by five major land use types in the Borough, derived from the 2007 NJDEP Land Use/Land Cover GIS data. While this data is now five years old, it is the most current data available.

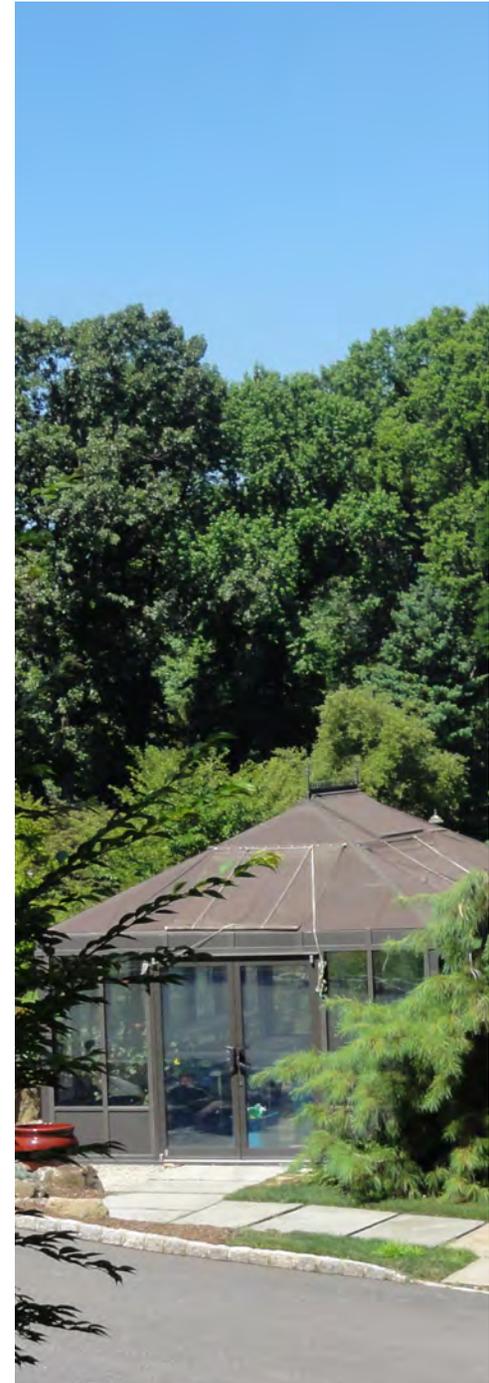
Major Land Use Types	Area (in Acres)	Percent of Total
Urban	2189.86	75.10%
Forest	593.24	20.35%
Wetlands	97.78	3.35%
Barren Land	19.86	0.68%
Water	15.07	0.52%
Total Area	2915.81	100.00%

The single largest land use identified in the Borough is urban land, which occupies 2,189.86 acres, or just more than 75 percent of the total land cover. Forest, which covers slightly less than 594 acres, is the second most predominant land-use, and Wetlands is the third significant land use in the Borough. Urban land uses combine to cover

three-quarters of all the land in the community which indicates the character of the Borough.

Residential land uses represent the most substantial portion of the land uses in the Borough. Most prevalent are single unit medium density homes, and single unit low density homes. These two land use, together cover 1,481.3 acres or a little more than 50 percent of land area within the Borough. Rural residential areas cover just less than 280 acres, while high density or multiple dwelling uses occupy 40.62 acres or about 1.4 percent of the total land area.

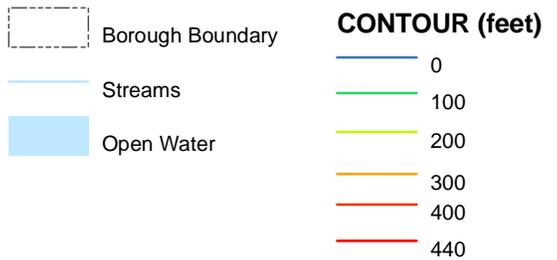
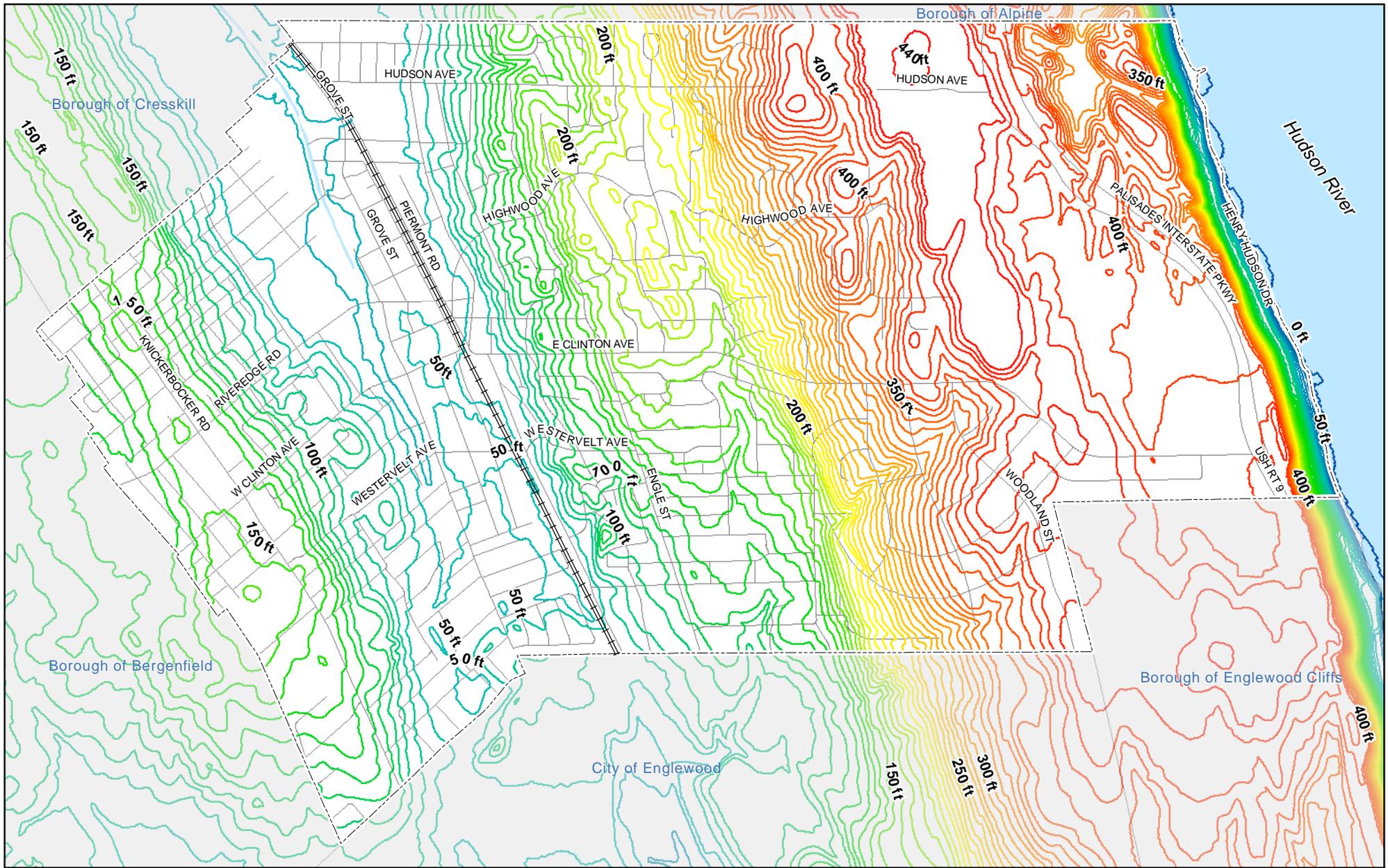
Other important land uses in the area include urban uses such as commercial, industrial, transportation, cemeteries and communication or utilities. In Tenaflly Borough, these uses cover more than 270.67 acres. Recreational land, including playgrounds and school athletic fields, takes up a little over 117.53 acres, while unused, barren land only occupies about 20 acres. Commercial and service-oriented uses, including retail stores, individually take up 188 acres, and industrial uses take up only four acres. The following table summarizes the land uses in the Borough by the five broad based types, and their subtypes.



Land Use Types and Subtypes	Area (in acres)	Percent of Total
Urban		
Residential, Single Unit, Medium Density	1004.63	34.45%
Residential, Single Unit, Low Density	476.67	16.35%
Residential, Rural, Single Unit	279.78	9.60%
Commercial/Services	188.83	6.48%
Recreational Land	67.36	2.31%
Athletic Fields (Schools)	50.18	1.72%
Residential, High Density Or Multiple Dwelling	40.62	1.39%
Other Urban Or Built-Up Land	38.70	1.33%
Major Roadway	16.86	0.58%
Cemetery	11.14	0.38%
Railroads	5.69	0.20%
Transportation/Communication/Utilities	4.34	0.15%
Industrial	4.21	0.14%
Stormwater Basin	0.87	0.03%
Bridge Over Water	0.04	0.00%
Total of all Urban Subtypes	2189.90	75.10%
Forest		
Deciduous Forest (>50% Crown Closure)	575.49	19.74%
Deciduous Forest (10-50% Crown Closure)	14.33	0.49%
Mixed Forest (>50% Coniferous With 10-50% Crown Closure)	3.41	0.12%
Total of all Forest Subtypes	593.24	20.35%
Wetlands		
Deciduous Wooded Wetlands	91.12	3.13%
Deciduous Scrub/Shrub Wetlands	5.16	0.18%
Herbaceous Wetlands	0.98	0.03%
Managed Wetland In Built-Up Maintained Rec Area	0.51	0.02%

Total of all Wetland Subtypes	97.78	3.35%
Barren Land		
Bare Exposed Rock, Rock Slides, Etc	7.72	0.26%
Altered Lands	6.92	0.24%
Transitional Areas	5.22	0.18%
Total of all Barren Land Subtypes	19.86	0.68%
Water		
Artificial Lakes	10.08	0.35%
Streams And Canals	2.50	0.09%
Tidal Rivers, Inland Bays, And Other Tidal Waters	2.45	0.08%
Total of all Water Subtypes	15.03	0.52%
Total Acreage of all Land Use Types	2915.81	100.00%



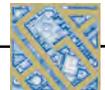


Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory

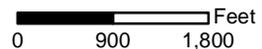
TOPOGRAPHY

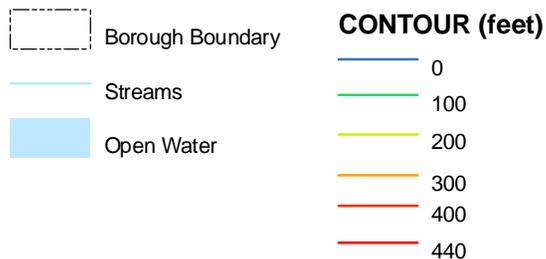
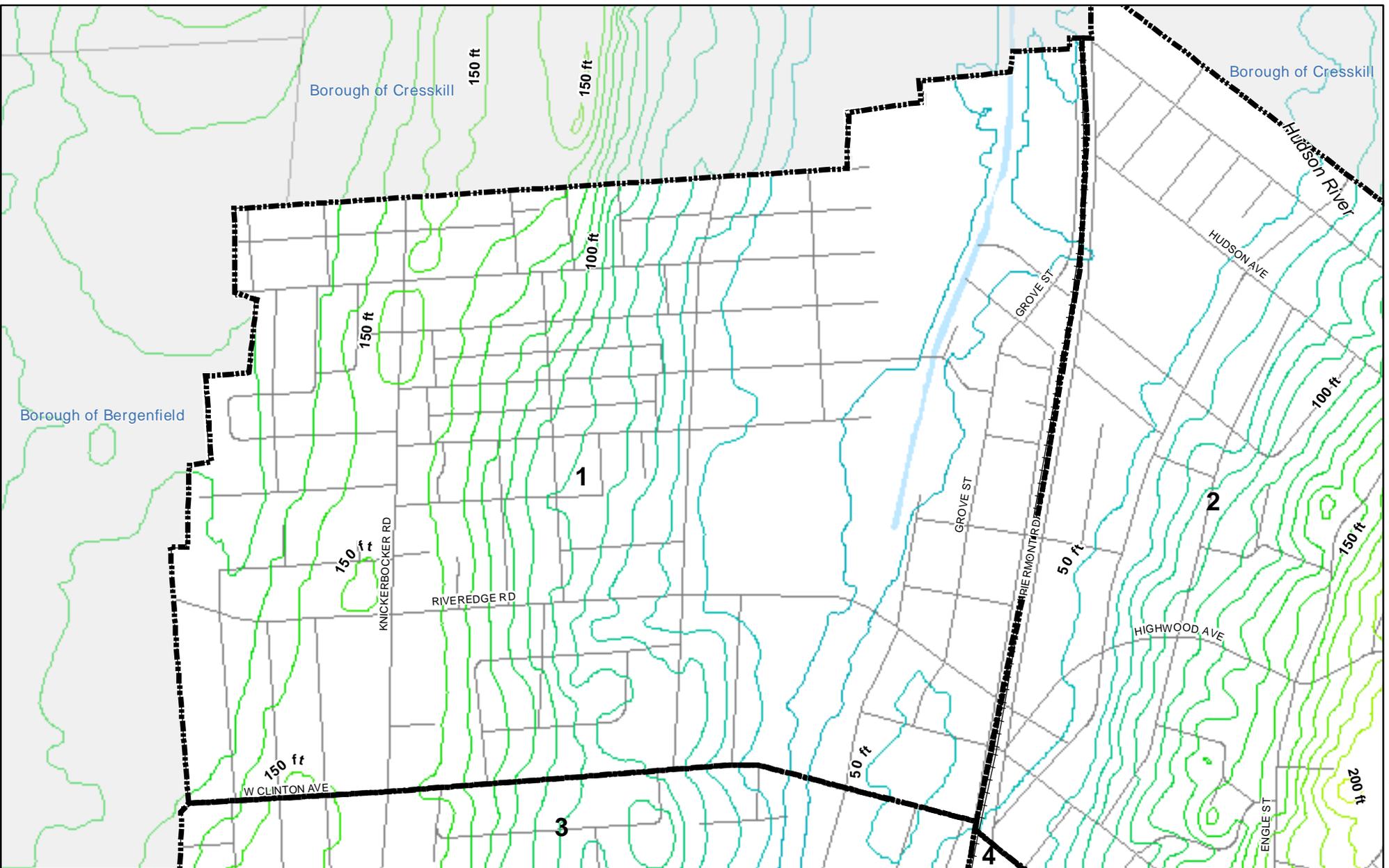
Bergen County
New Jersey



April 2011

1 inch = 1,800 feet



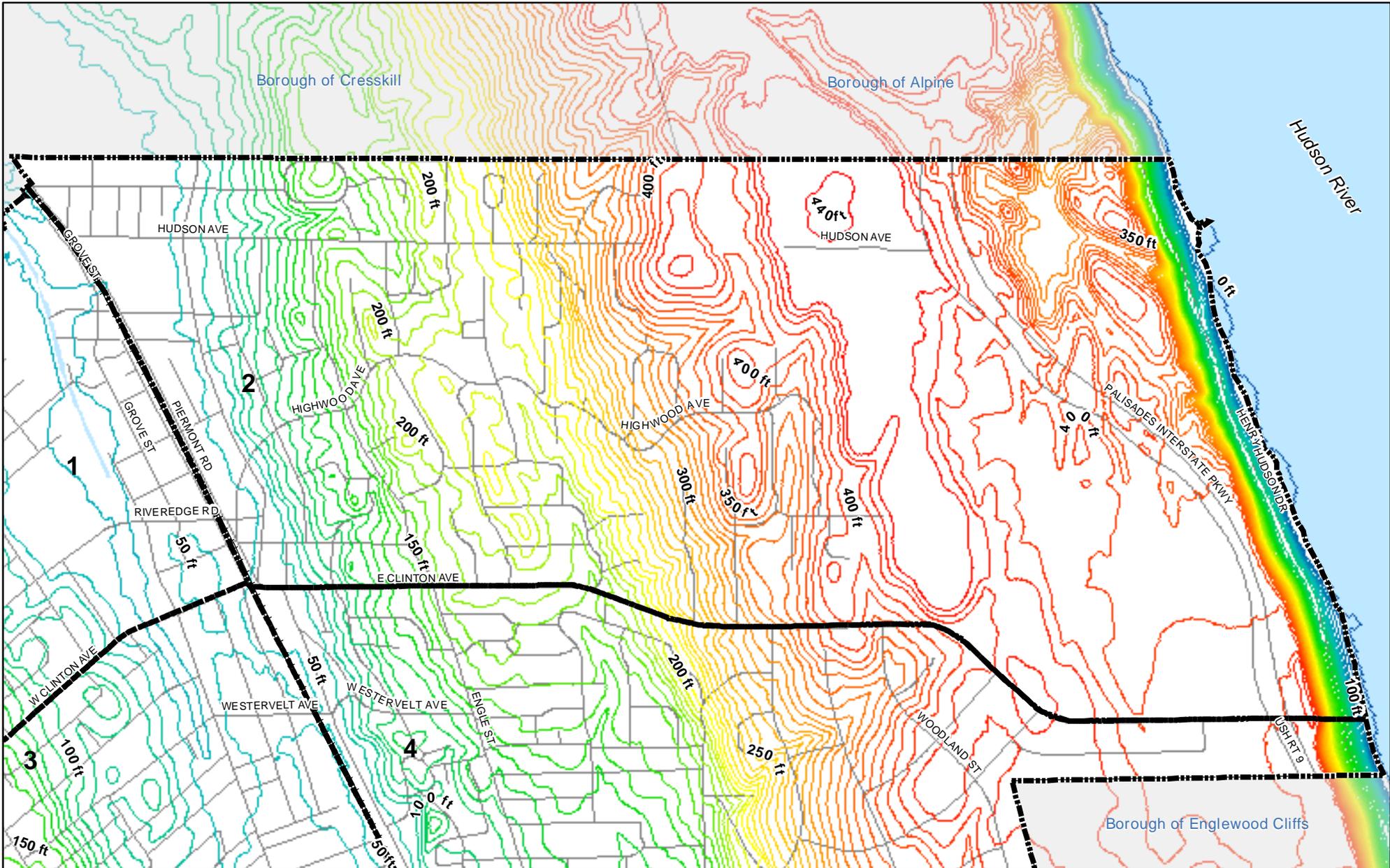


Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
TOPOGRAPHY
Quad 1

Bergen County
New Jersey

April 2011
1 inch = 800 feet



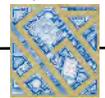
- Borough Boundary
- Streams
- Open Water

CONTOUR (feet)

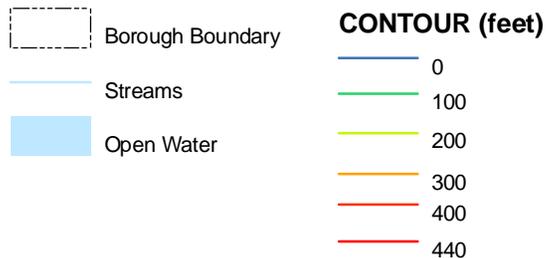
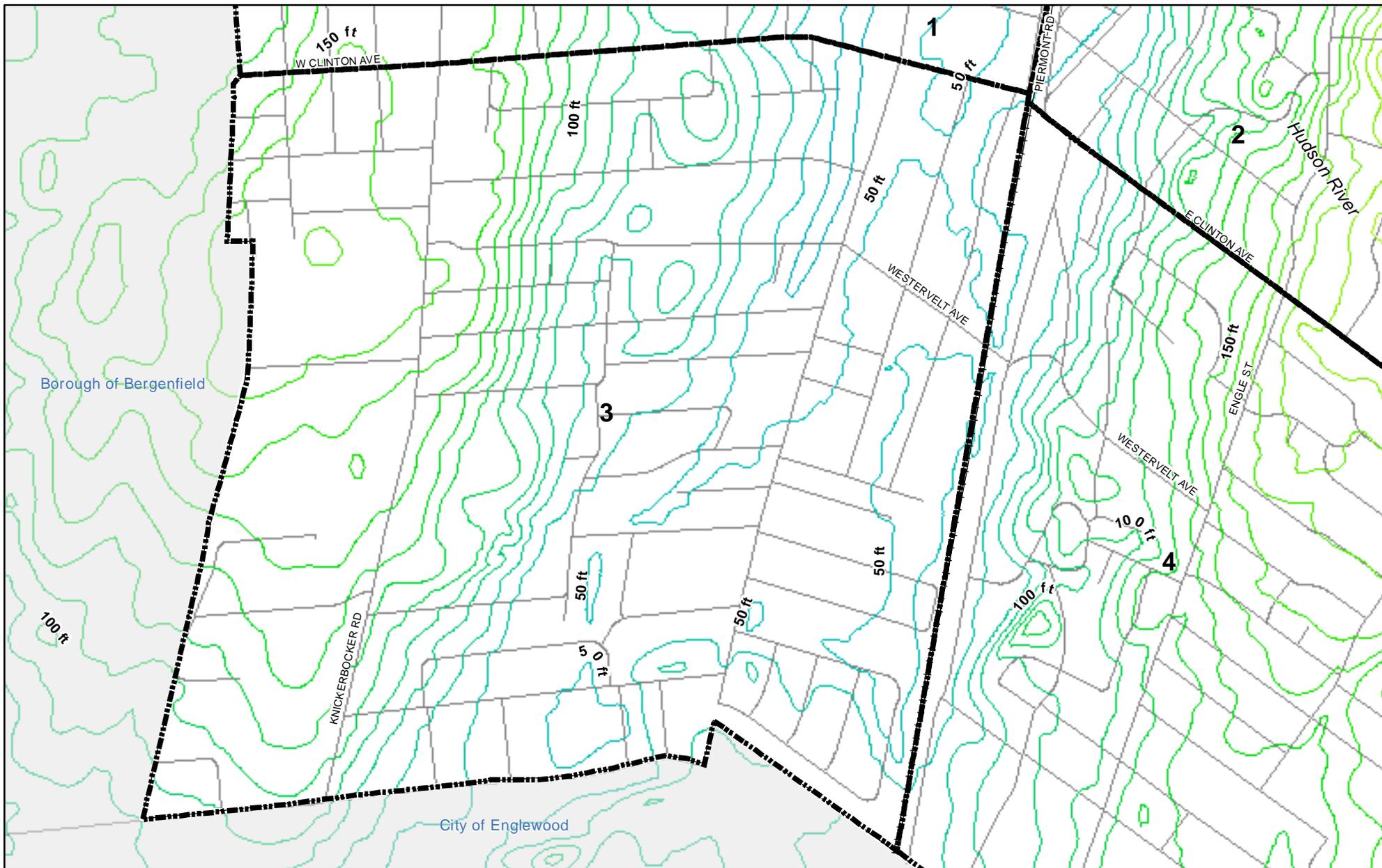
	0
	100
	200
	300
	400
	440

Borough of Tenafly
Environmental Resource Inventory
TOPOGRAPHY
 Quad 2

Bergen County
 New Jersey
 April 2011
 1 inch = 1,400 feet



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
TOPOGRAPHY

Quad 3

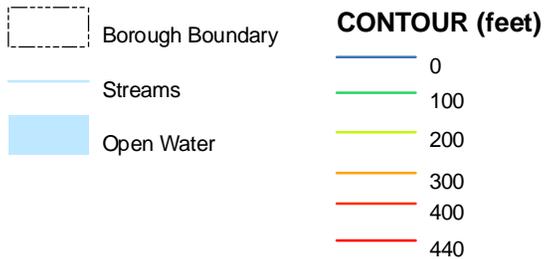
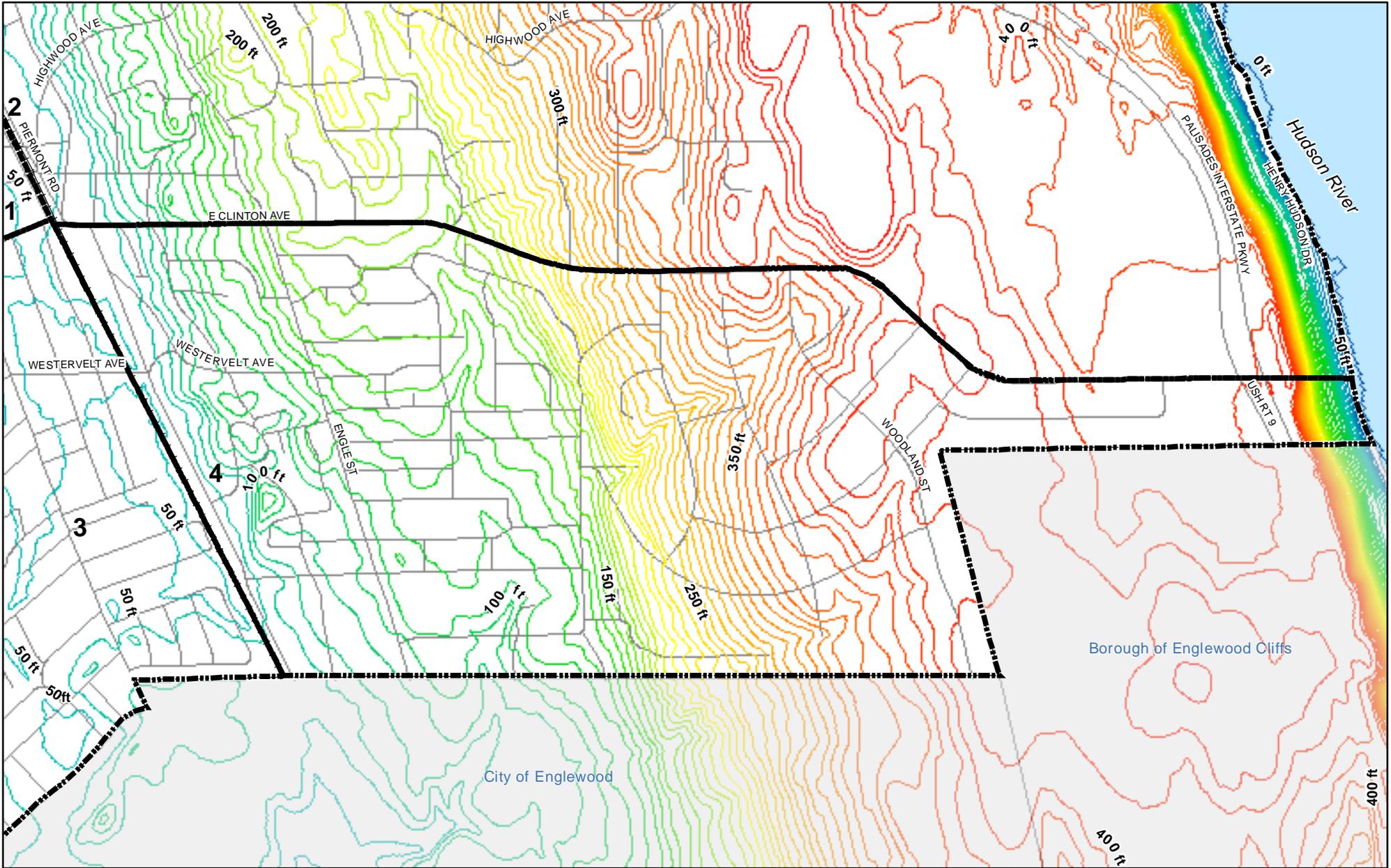


Bergen County
 New Jersey

April 2011

1 inch = 800 feet



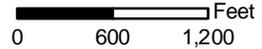
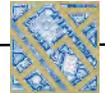


Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
TOPOGRAPHY
 Quad 4

Bergen County
 New Jersey

April 2011
 1 inch = 1,200 feet



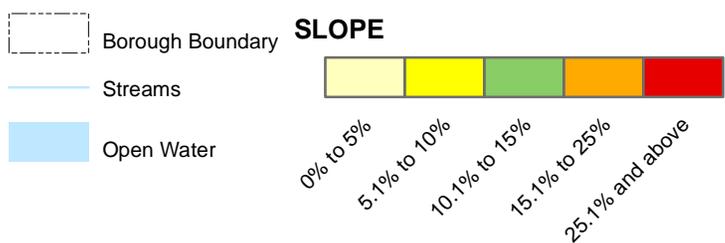
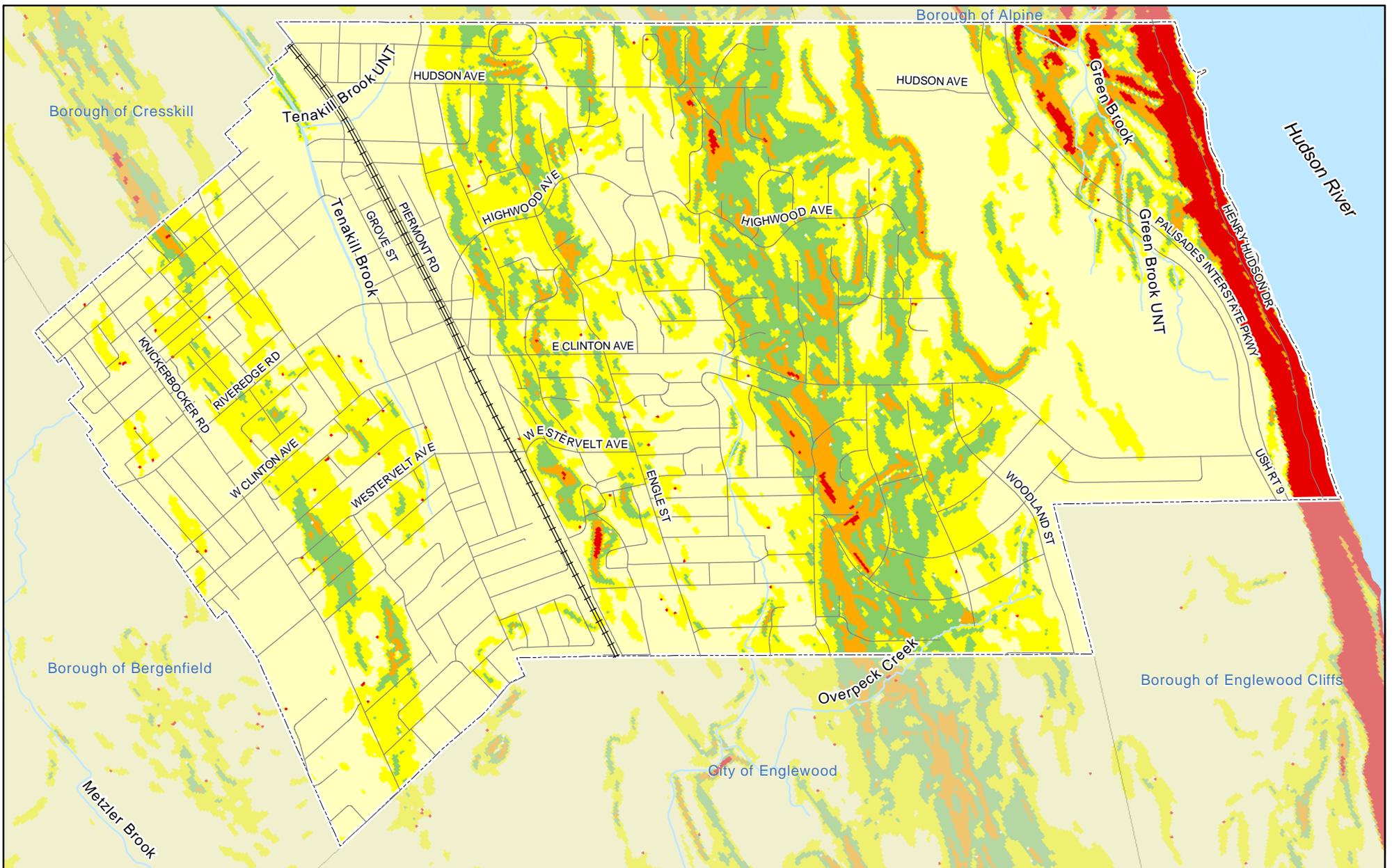
The topography of Tenafly Borough is varied due to its unique location on the palisades above Hudson River. The Borough terrain generally slopes from the highest points in the eastern portion of town along the Palisades west to the lowest points which are located along Tenakill Brook. There are steep slopes along the whole of the eastern edge of the Borough along the Palisade cliffs which drop approximately 400 feet to the Hudson River. However, a very small portion of the Borough have steep slopes that are not suitable for building.

The highest elevations in the Borough are near the eastern boundary along the palisade between the 9W and the Hudson River, which reach a maximum of about 400 feet above sea level. The lowest elevations are found along Tenakill Brook and the Railroad tracks. The majority of the Borough is found between the 150- and 400-foot contours.

Steep slopes are those areas with land topology gradient greater than 15 percent. These areas have limited capacity for community development, often accompanied by adverse environmental impacts, due to high construction costs and the potential for soil erosion. According to Soil Conservation Service data, there are a few areas in the Borough with major slopes that exceed 15 percent.



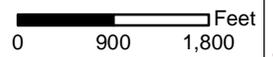
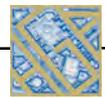




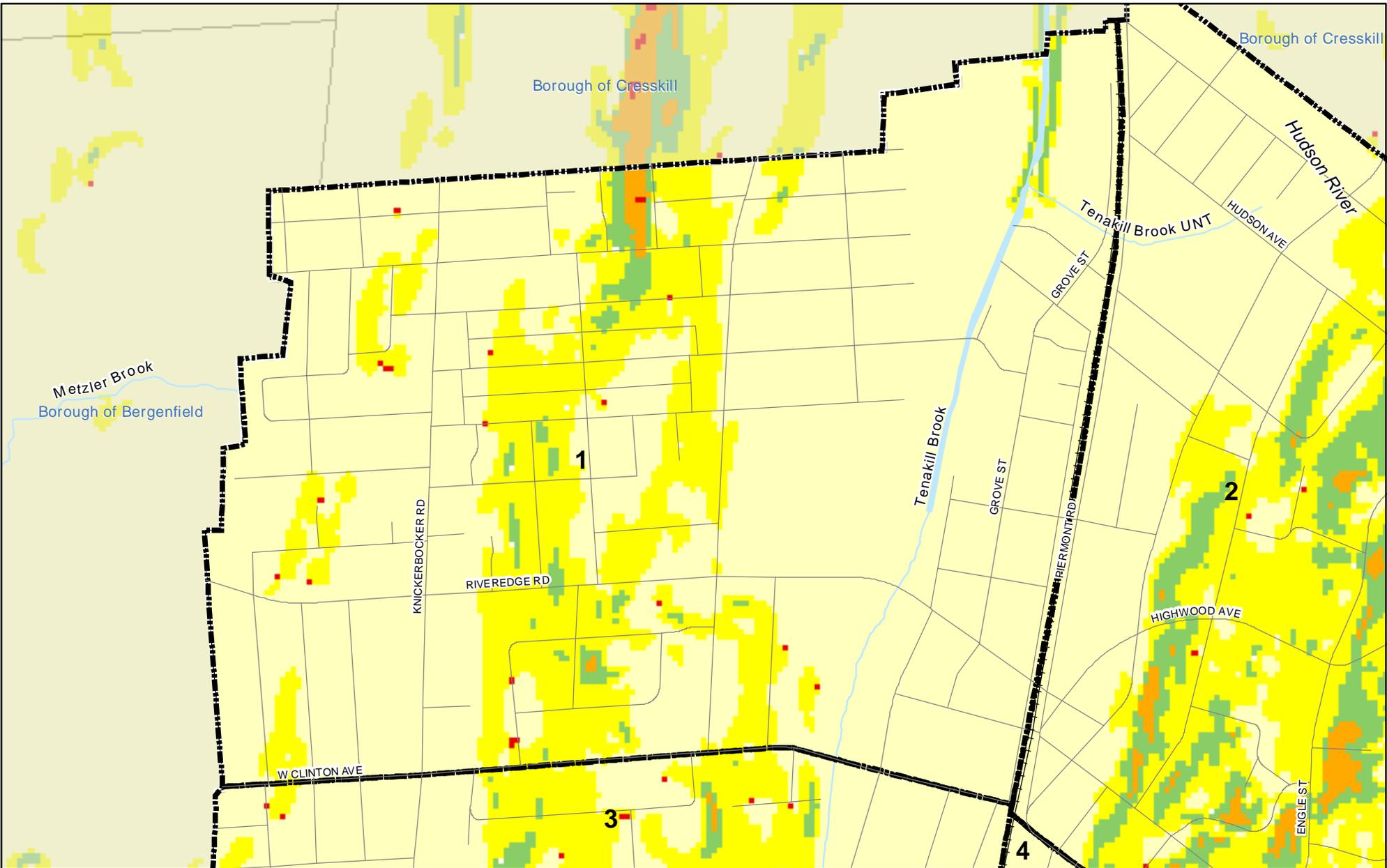
Borough of Tenafly
Environmental Resource Inventory

STEEP SLOPES

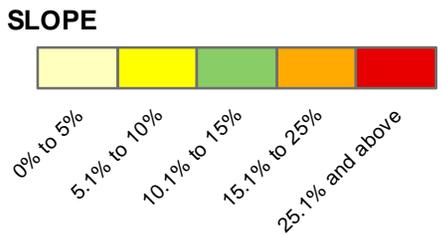
Bergen County
New Jersey
April 2011
1 inch = 1,800 feet



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



-  Quadrants
-  Borough Boundary
-  Streams
-  Open Water



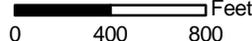
Borough of Tenafly
Environmental Resource Inventory
STEEP SLOPES

Quad 1

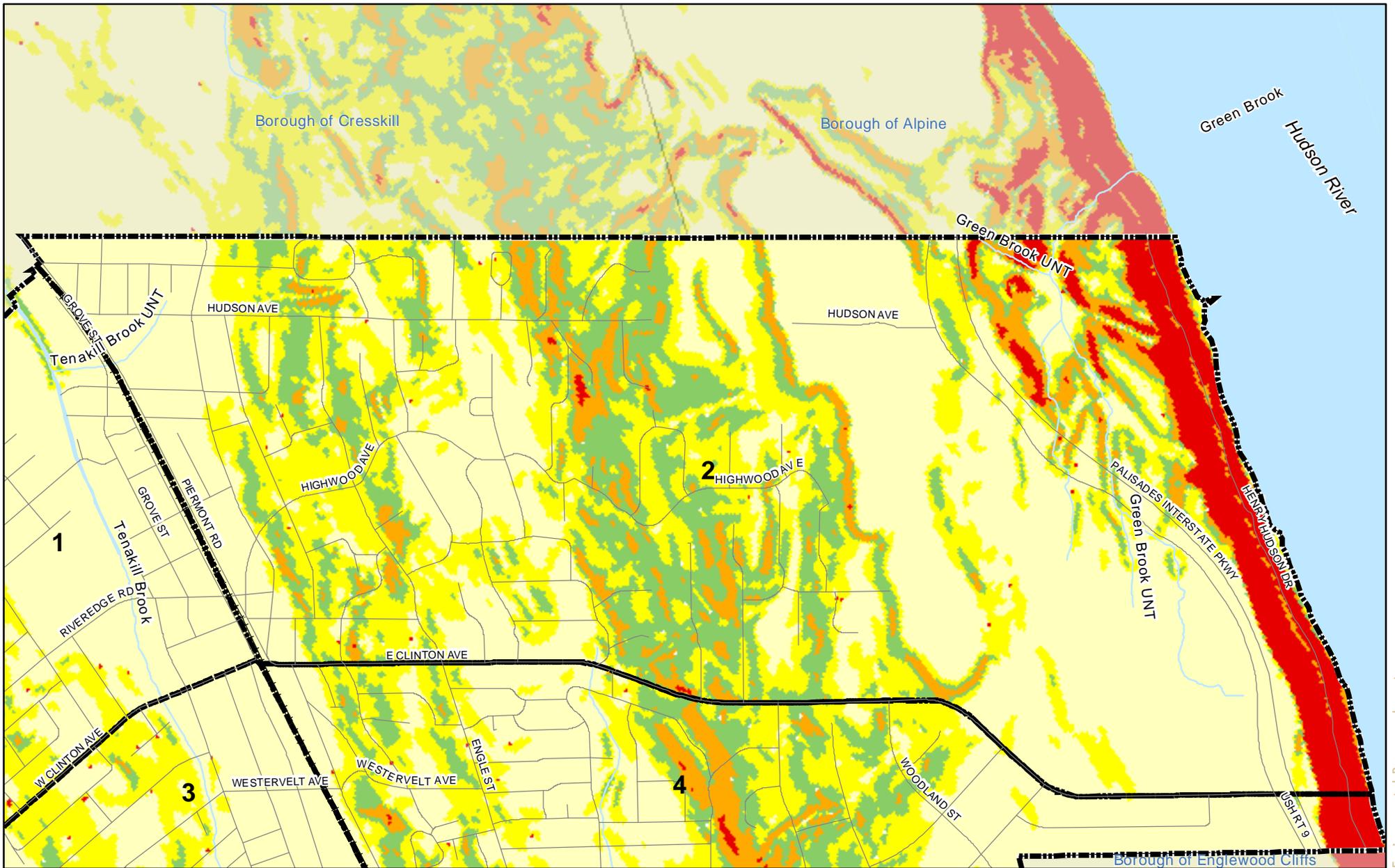
Bergen County
New Jersey



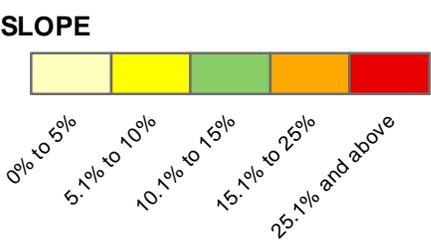
April 2011
1 inch = 800 feet

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

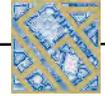


- Quadrants
- Borough Boundary
- Streams
- Open Water



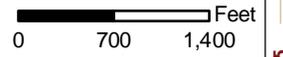
Borough of Tenafly
Environmental Resource Inventory
STEEP SLOPES

Quad 2

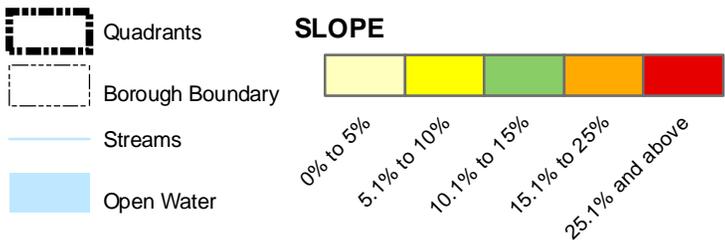
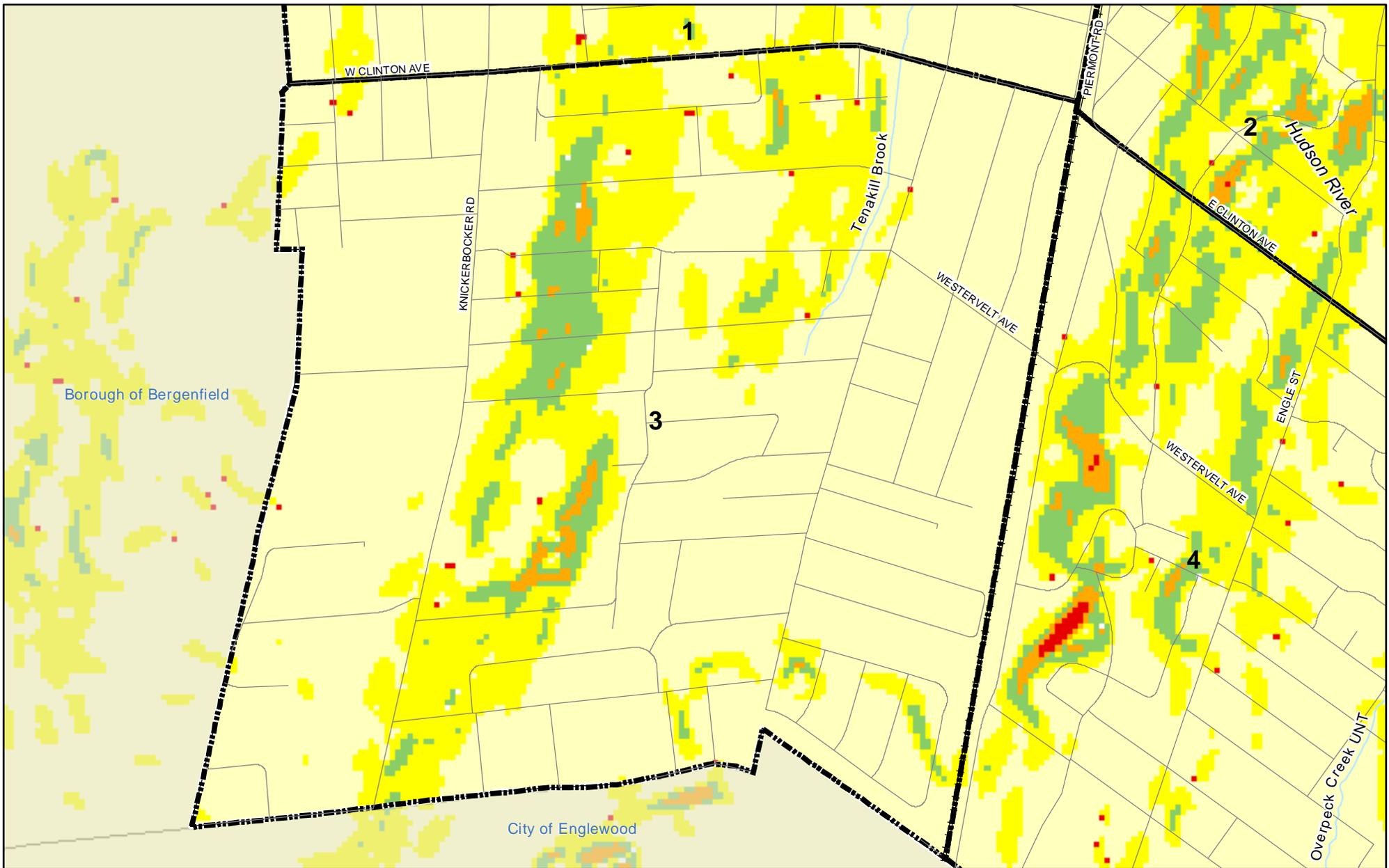


Bergen County
New Jersey

April 2011
1 inch = 1,400 feet



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



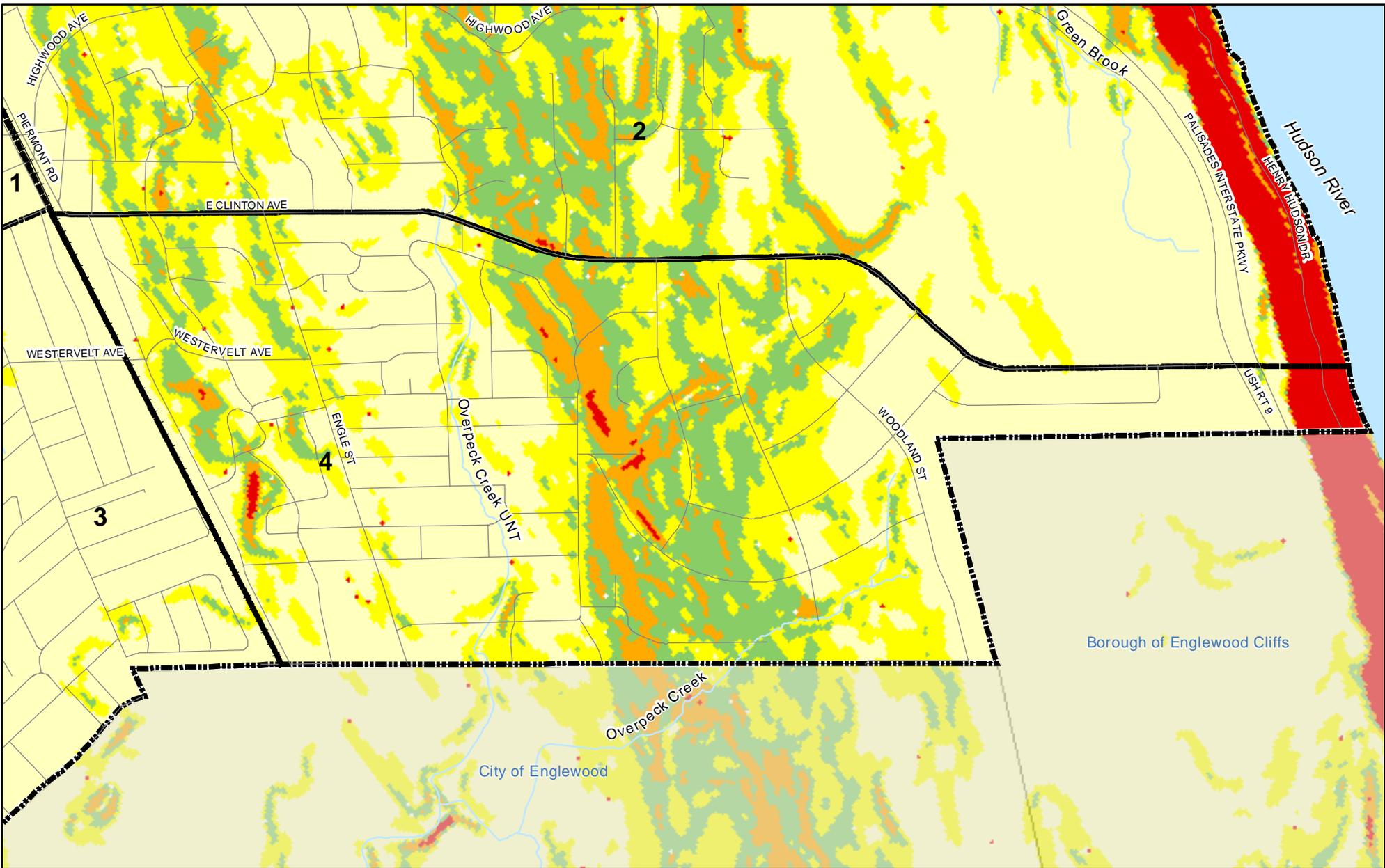
Borough of Tenafly
Environmental Resource Inventory
STEEP SLOPES
 Quad 1

Bergen County
 New Jersey

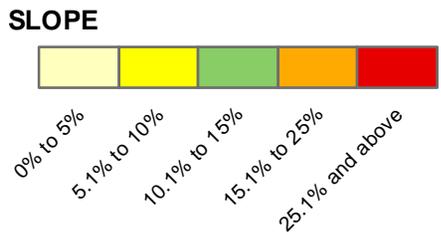
April 2011
 1 inch = 800 feet

0 400 800 Feet

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

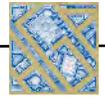


-  Quadrants
-  Borough Boundary
-  Streams
-  Open Water



Borough of Tenafly
Environmental Resource Inventory
STEEP SLOPES

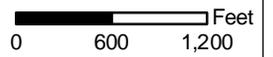
Quad 4



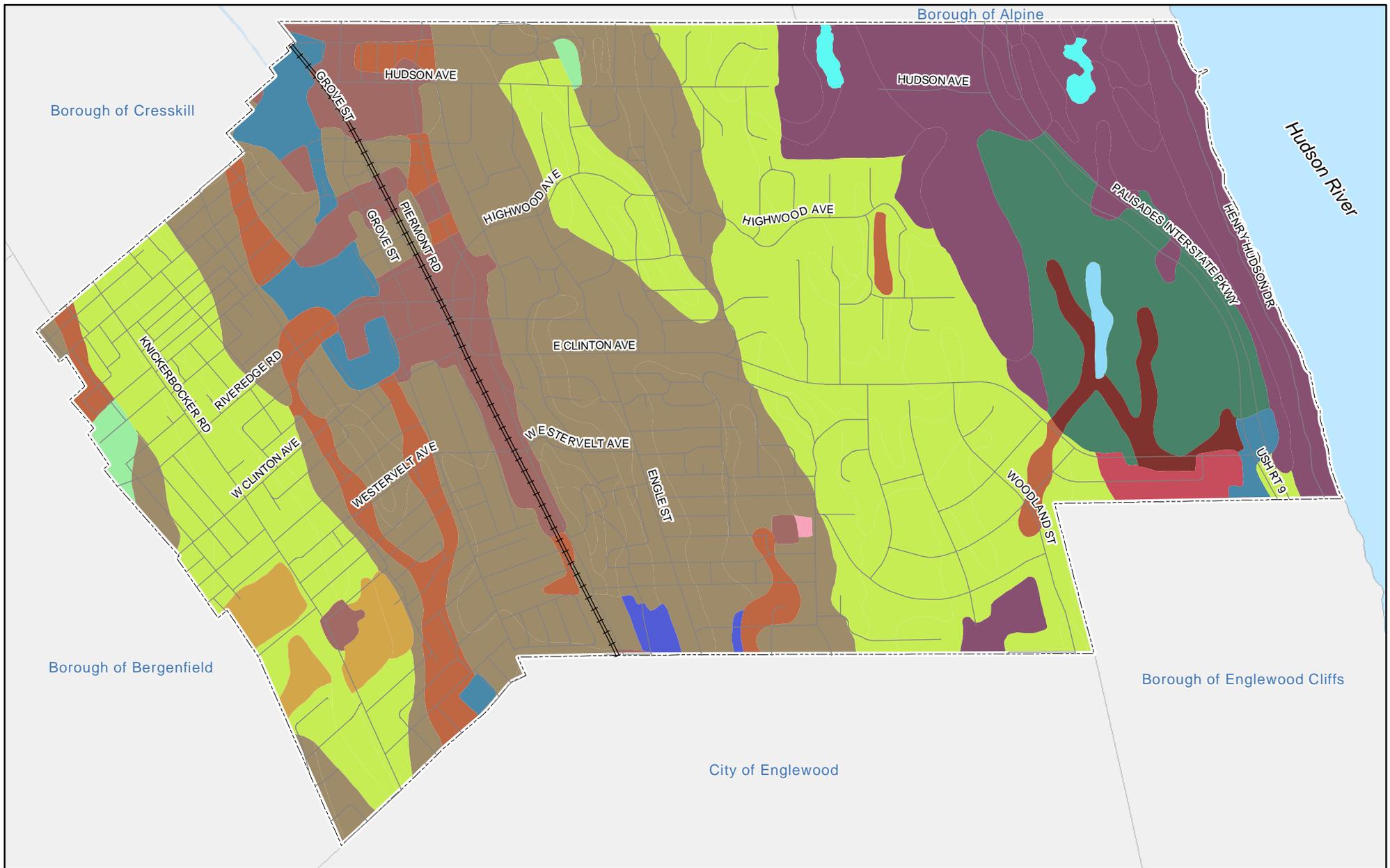
Bergen County
 New Jersey

April 2011

1 inch = 1,200 feet



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



 Boonton moderately well drained gravelly loam	 Fluvaquents, loamy, frequently flooded	 Udorthents, organic substratum-Urban land complex
 Boonton moderately well drained-Rock outcrop complex	 Haledon gravelly loam, very stony	 Udorthents, wet substratum
 Boonton-Urban land complex	 Haledon-Urban land complex	 Udorthents, wet substratum-Urban land complex
 Dunellen loam	 Hasbrouck loam, very stony	 Urban land
 Dunellen-Urban land complex	 Udorthents, loamy, frequently flooded	 Water

Source: NJDEP, NCRS, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory

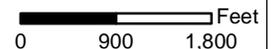
SOILS

Bergen County
New Jersey



April 2011

1 inch = 1,800 feet



Knowledge of soil types, characteristics, and their geographic distribution can inform the planning and policy processes and influence the smart growth and development of a community. Data on soil depth, permeability, water table and other physical properties are useful when determining the suitability of soils for foundation construction, location of septic system leaching fields, landscaping, preservation of farmland, and construction of roads, athletic fields or parks. The soil data in this report are provided by the National Resources Conservation Service of the United States Department of Agriculture, which started conducting national soil samples in 1899 and continues today.

Soil classifications address such issues as depth to ground water, depth to bedrock, and development suitability. The farmland classification prescribed by NRCS identifies map units as prime farmland soils, unique farmland soils, farmland soils of statewide importance, or farmland soils of local importance. Farmland classification identifies the location and extent of the most suitable soils for producing food, feed, fiber, forage, and oilseed crops. This identification is useful in the management and maintenance of productive agricultural soils.

Prime Farmland Soils

Prime Farmland Soils include all those soils in Land Capability Class I and selected soils from Land Capability Class II. Class 1 soils have slight limitations that restrict their use. Class 2 soils have moderate limitations that reduce the choice of plants or require moderate conservation

practices. Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods.

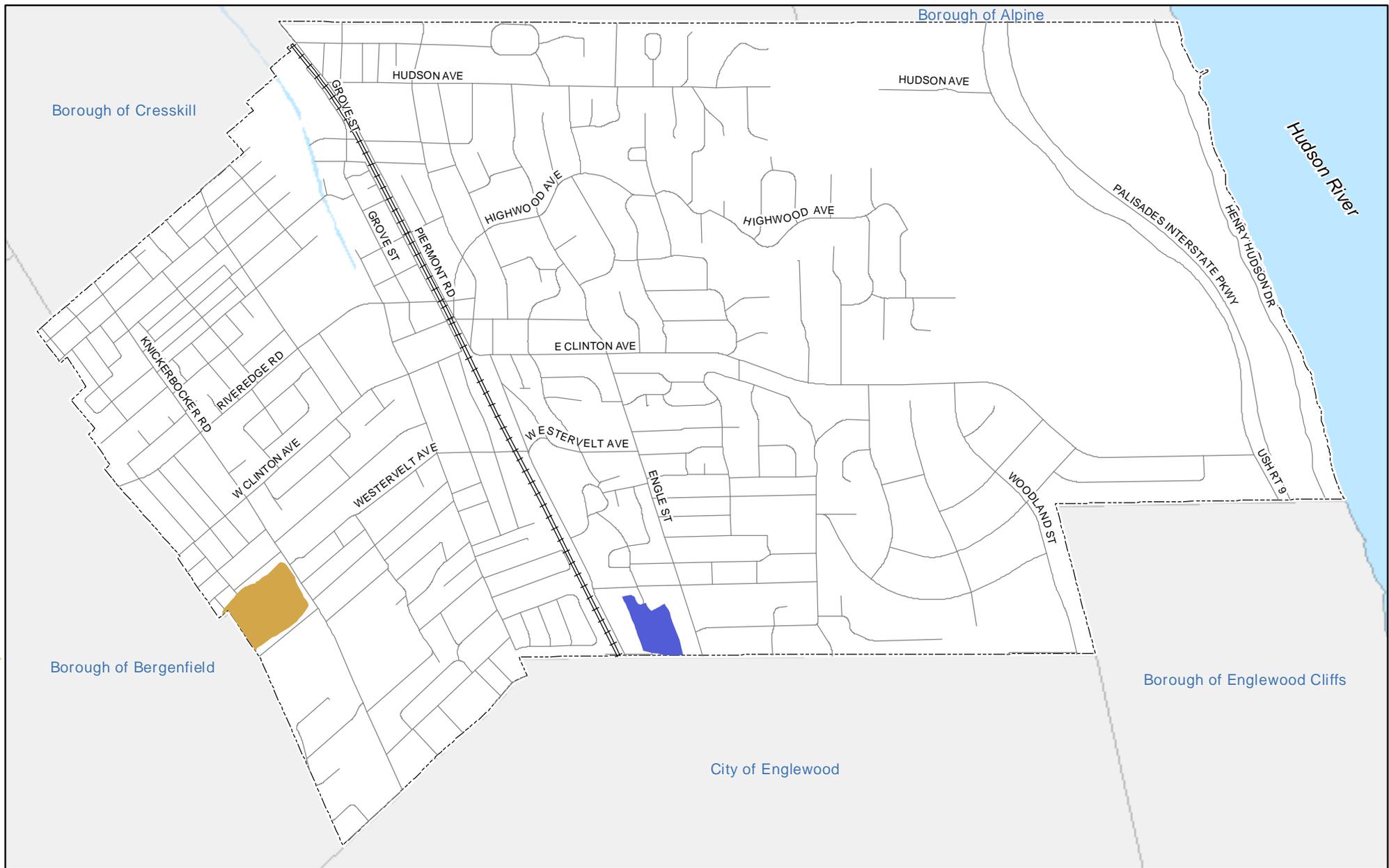
The major advantages of prime agricultural soils are their fertility and lack of limitations for crop production purposes. Because of their naturally high fertility and lack of limitations, prime agricultural soils produce superior crop yields on a consistent basis when measured against those soils not rated as prime. Prime Farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are often protected from flooding.

In Tenafly Borough, the following Prime Farmland Soils are found:

Prime Farmland Soil Description	Area in acres
Boonton gravelly loam, 3 to 8 percent slopes	17
Dunellen loam, 3 to 8 percent slopes	9
Total Acreage of Soils of Unique Farmland Soils	26

Note: The acres have been rounded off to the nearest whole number.



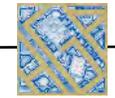


-  Boonton moderately well drained gravelly loam
-  Dunellen loam
-  Water

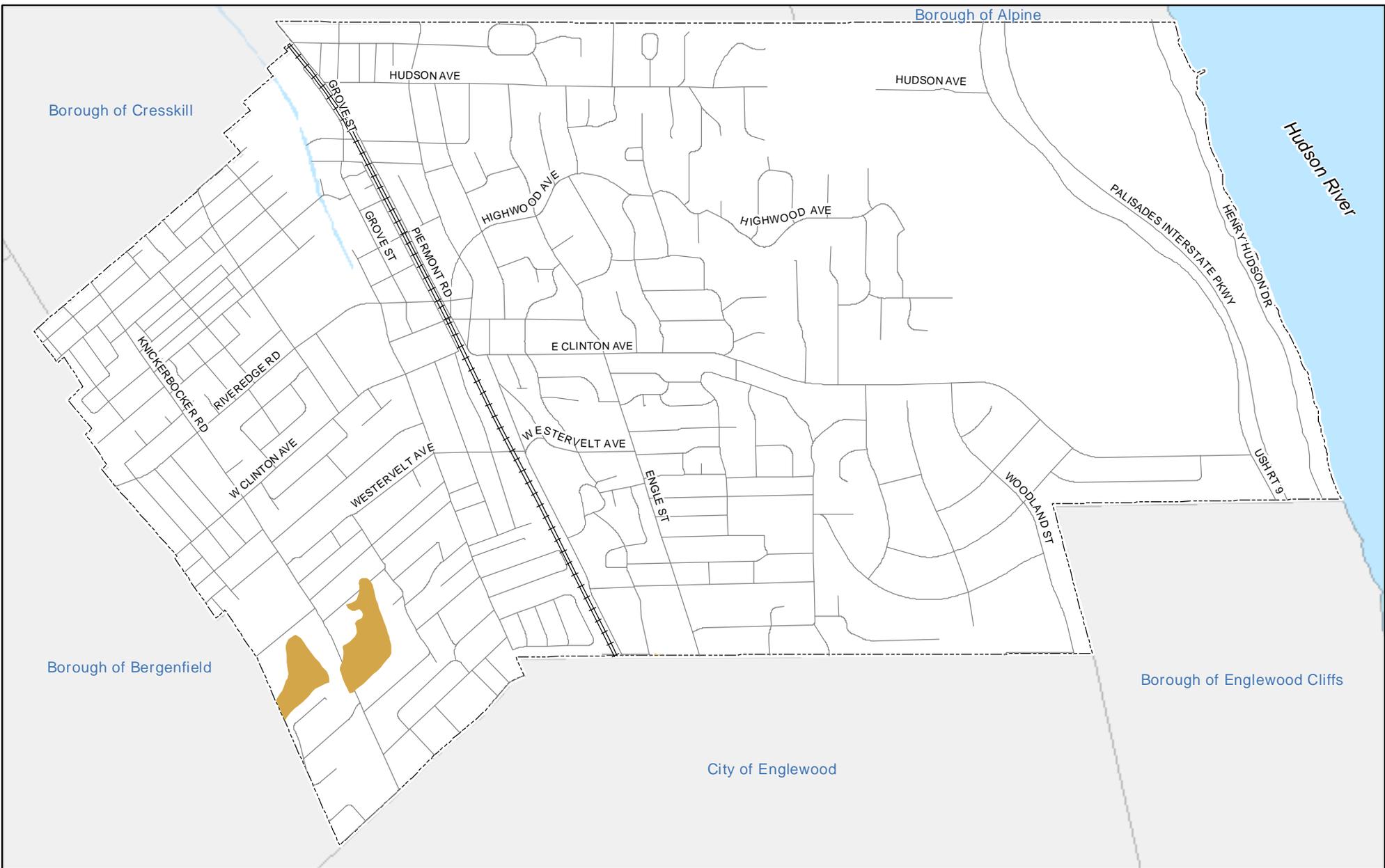
Borough of Tenafly
Environmental Resource Inventory
PRIME FARMLAND SOILS

Bergen County
 New Jersey

April 2011
 1 inch = 1,800 feet



Source: NJDEP, NCRS, NJGS, NJDOT and Borough of Tenafly



- Boonton moderately well drained gravelly loam
- Dunellen loam
- Water

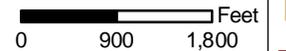
Source: NJDEP, NCRS, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
STATEWIDE IMPORTANCE
FARMLAND SOILS

Bergen County
 New Jersey

April 2011

1 inch = 1,800 feet





Soils of Statewide Importance

Soils of Statewide Importance include those soils in land capability Class II and III that do not meet the criteria as Prime Farmland Soils. Class 2 soils have moderate limitations that reduce the choice of plants or require moderate conservation practices and Class 3 soils have severe limitations that reduce the choice of plants or require special conservation practices, or both. These soils are nearly Prime Farmland Soils and economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce yields as high as Prime Farmland if conditions are favorable.

Criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. In some States, additional farmlands of statewide importance may include tracts of land that have been designated for agriculture by State law.

In Tenafly Borough, the following soils of statewide importance are found:

Statewide Importance Soil Description	Area in acres
Boonton gravelly loam, 8 to 15 percent slopes	23
Dunellen loam, 8 to 15 percent slopes	<1
Total Acreage of Soils of Statewide Importance	23

Note: The acres have been rounded off to the nearest whole number.

Tenafly Borough Soils

Tenafly Borough has 7 different soil series, broken down into 14 distinct soil sub-series. The land is generally sloped; however, slopes in certain areas vary greatly and can be anywhere between 0 to 25 percent. For the purpose of this section, the percentages of total land are based on the area of Tenafly Borough, excluding the area occupied by water bodies, as 2,904 acres.

The most prevalent soils are Boonton-Urban land complex and Dunellen–Urban land complex. It is interesting to note that all of the top two soil series within the Borough contain some percentage of Urban Land. This is due to the highly built-up and developed nature of the Borough that is characterized by medium and low residential uses.

Boonton-Urban land complex are suitable for lawns, shade trees, shrubs, vines and vegetable gardens. The slow permeability and slow run-off are limitations for community development.

Dunellen-urban land complex poses major limitations for community development due to the rapid permeability and moderate potential frost action of this soil. Most areas of this soil are used for woodlands or recreational facilities. The majority of this series is between 3 and 15 degree slopes.

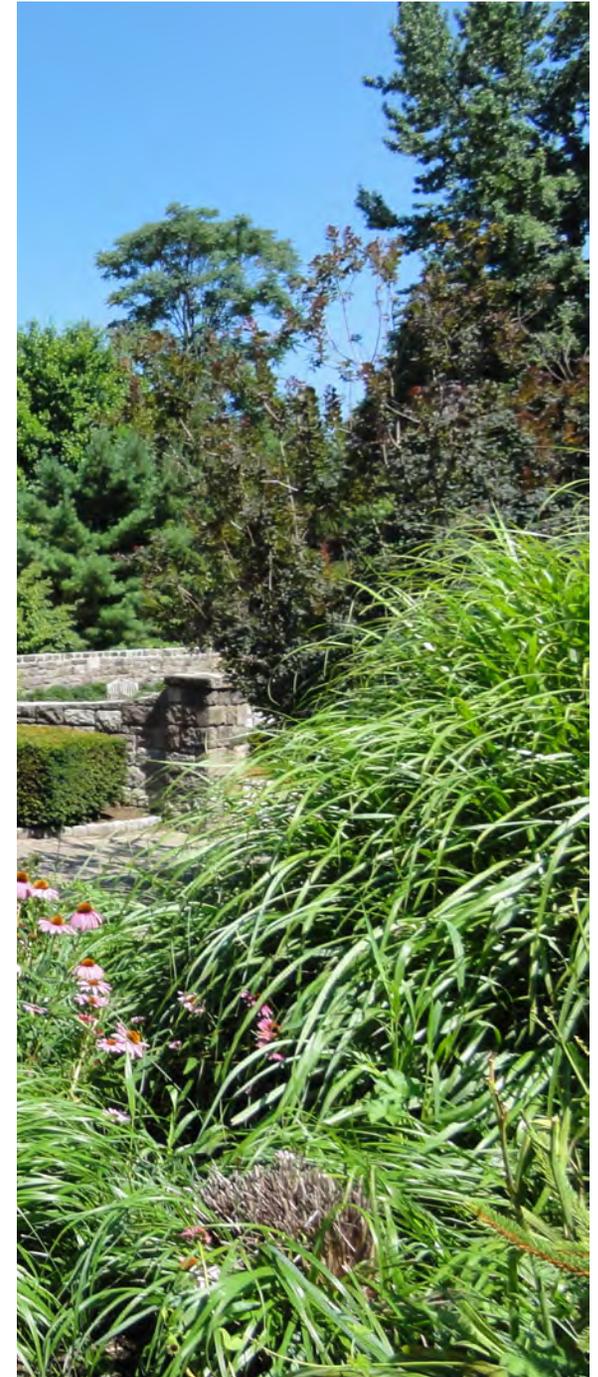
Urban Land is comprised of soil units where more than 80% of the surface is covered by buildings – industrial plants, shopping and business centers, residential developments, transportation

structures, and other structures. Within Tenafly Borough, Urban Land occupies 171 acres or just 6% of the total land surface. Most of these areas are nearly level, but fill material could have been used to build up wet soils or level the small areas of steep slopes. Especially since most of the urban land is in some of the lowest lying areas in the Borough. This soil is not suitable for any type of cultivation except for landscaping around the buildings.

The third most common soil series in the Borough is the Boonton moderately well drained-Rock outcrop complex. It consists of intense slopes, moderately well drained Boonton soils and areas not commonly used for development. The areas are predominantly located along the eastern and north eastern portion of the Borough in and around the Greenbrook Sanctuary and the Palisades Park. Within Tenafly Borough, this unit covers 395 acres or 14% of the total land surface, with slopes ranging between 3 and 45 degrees.

Tenafly Soil Series	Area in Acres	Percent of Total Land Area
Boonton-Urban land complex	907	31%
Dunellen-Urban land complex	881	30%
Boonton moderately well drained-Rock outcrop complex	395	14%
Haledon gravelly loam, very stony	189	6%
Urban land	171	6%
Udorthents, wet substratum-Urban land complex	144	5%
Udorthents, wet substratum	78	3%
Boonton moderately well drained gravelly loam	47	2%
Hasbrouck loam, very stony	36	1%
Haledon-Urban land complex	23	1%
Udorthents, organic substratum-Urban land complex	15	1%
Dunellen loam	10	0%
Fluvaquents, loamy, frequently flooded	7	0%
Udorthents, loamy, frequently flooded	1	0%
Total Acres	2915	100%

Note: The acres and percentages have been rounded off to the nearest whole number.



Soil Sub-Series and Constraints to Urban Development:

Symbol	Soil Description	Constraints to Urban Development
BohB	Boonton moderately well drained gravelly loam, 3 to 8 percent slopes	The perched water table and the permeability in the lower part of the subsoil are limitations for community development, particularly as a site for dwellings with basements, septic disposal systems, and streets.
BohC	Boonton moderately well drained gravelly loam, 8 to 15 percent slopes	The perched water table and the permeability in the lower part of the subsoil are limitations for community development, particularly as a site for dwellings with basements, septic disposal systems, and streets.
BohE	Boonton moderately well drained gravelly loam, 25 to 45 percent slopes	The perched water table and the permeability in the lower part of the subsoil are limitations for community development, particularly as a site for dwellings with basements, septic disposal systems, and streets.
BorB	Boonton moderately well drained-Rock outcrop complex, 3 to 8 percent slopes	Most of these areas are used for homesite development or recreational facilities. The slow permeability, depth to the perched seasonal high water table, very stony surface, and rock outcrop are major limiting factors for community development.
BorC	Boonton moderately well drained-Rock outcrop complex, 8 to 15 percent slopes	Most of these areas are used for homesite development or recreational facilities. The slow permeability, depth to the perched seasonal high water table, very stony surface, and rock outcrop are major limiting factors for community development.
BorD	Boonton moderately well drained-Rock outcrop complex, 15 to 25 percent slopes	Most of these areas are used for homesite development or recreational facilities. The slow permeability, depth to the perched seasonal high water table, very stony surface, and rock outcrop are major limiting factors for community development.
BorE	Boonton moderately well drained-Rock outcrop complex, 25 to 45 percent slopes	Most of these areas are used for woodlands or recreational facilities. The slow permeability, depth to the perched seasonal high water table, very stony surface, and rock outcrop are major limiting factors for community development.
BouB	Boonton-Urban land complex, 0 to 8 percent slopes	The soils in these areas are suitable for lawns, shade trees, shrubs, vines and vegetable gardens. The slow permeability and slow run-off are limitations for community development.
BouC	Boonton-Urban land complex, 8 to 15 percent slopes	The soils in these areas are suitable for lawns, shade trees, shrubs, vines and vegetable gardens. The slow permeability and slow run-off are limitations for community development.
BouD	Boonton-Urban land complex, 15 to 25 percent slopes	The soils in these areas are suitable for lawns, shade trees, shrubs, vines and vegetable gardens. The slow permeability and slow run-off are limitations for community development.
BouE	Boonton-Urban land complex, 25 to 45 percent slopes	The soils in these areas are suitable for lawns, shade trees, shrubs, vines and vegetable gardens. The slow permeability and slow run-off are limitations for community development.
DuoB	Dunellen loam, 3 to 8 percent slopes	Limitations for community development are due to the rapid permeability and moderate potential frost action of this soil. Most areas of this soil are used for woodlands or recreational facilities.
DuoC	Dunellen loam, 8 to 15 percent slopes	Limitations for community development are due to the rapid permeability and moderate potential frost action of this soil. Most areas of this soil are used for woodlands or recreational facilities.
DuoD	Dunellen loam, 15 to 25 percent slopes	Limitations for community development are due to the rapid permeability and moderate potential frost action of this soil. Most areas of this soil are used for woodlands or recreational facilities.

DuuA	Dunellen-Urban land complex, 0 to 3 percent slopes	The rapid permeability in the substratum and the moderate potential frost action are the major limiting factors for community and recreational facilities development. There are limitations for the installation of septic systems and basements and slight limitations for lawns and landscaping.
DuuB	Dunellen-Urban land complex, 3 to 8 percent slopes	The rapid permeability in the substratum and the moderate potential frost action are the major limiting factors for community and recreational facilities development. There are limitations for the installation of septic systems and basements and slight limitations for lawns and landscaping.
DuuC	Dunellen-Urban land complex, 8 to 15 percent slopes	The rapid permeability in the substratum and the moderate potential frost action are the major limiting factors for community and recreational facilities development. There are limitations for the installation of septic systems and basements and slight limitations for lawns and landscaping.
DuuD	Dunellen-Urban land complex, 15 to 25 percent slopes	The rapid permeability in the substratum and the moderate potential frost action are the major limiting factors for community and recreational facilities development. There are limitations for the installation of septic systems and basements and slight limitations for lawns and landscaping.
FmhAt	Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	Most areas contain reeds and herbaceous wetland plants. The frequent flooding and seasonal high water table are the major limiting factors for community, sanitary and recreational facilities development.
HamBb	Haledon gravelly loam, 0 to 8 percent slopes, very stony	Limitations for community development are the slow permeability in the lower part of subsoil, and seasonal high water table. They limit its use as a site for septic systems, dwellings with basements, and streets.
HamBb	Haledon gravelly loam, 0 to 8 percent slopes, very stony	Limitations for community development are the slow permeability in the lower part of subsoil, and seasonal high water table. They limit its use as a site for septic systems, dwellings with basements, and streets.
HasB	Haledon-Urban land complex, 3 to 8 percent slopes	Limitations for community development are the slow permeability in the lower part of subsoil, and seasonal high water table. They limit its use as a site for septic systems, dwellings with basements, and streets.
HcsAb	Hasbrouck loam, 0 to 3 percent slopes, very stony	The slow permeability, the seasonal high water table and the high potential frost action are the major limiting factors for community and reaction facilities development and on-site waste disposal. This soil is well suited as a wetland wildlife habitat.
UdktB	Udorthents, loamy, 0 to 8 percent slopes, frequently flooded	This soil includes areas occupied by parking lots, landfills, or recreation areas. Due to the variability of characteristics, on-site investigation is necessary to determine the suitability of this soil for any use
UdouB	Udorthents, organic substratum-Urban land complex, 0 to 8 percent slopes	This soil includes areas occupied by parking lots, landfills, or recreation areas. Due to the variability of characteristics, on-site investigation is necessary to determine the suitability of this soil for any use
UdwB	Udorthents, wet substratum, 0 to 8 percent slopes	This soil includes areas occupied by parking lots, landfills, or recreation areas. Due to the variability of characteristics, on-site investigation is necessary to determine the suitability of this soil for any use
UdwuB	Udorthents, wet substratum-Urban land complex (SSURGO1)	This soil includes areas occupied by parking lots, landfills, or recreation areas. Due to the variability of characteristics, on-site investigation is necessary to determine the suitability of this soil for any use
UR	Urban land	Nearly 80 % of the surface is covered by buildings and other impervious surfaces. Onsite investigation is needed to determine if the land is limited by steep slopes, permeability or landfill materials.



The geology of a place is important for several reasons; mainly that the physical and chemical properties of the land determine the quantity and quality of ground water the aquifers yield. They also control how ground water recharges and move through the aquifers, how contaminants seep into and move through soil and ground water, and where natural hazards like radon, sinkholes and seismic instability may occur. Finally, these properties establish where geologic resources such as sand, gravel, peat, clay, quarry rock and mineral ores are located. Geologic properties also determine the suitability of an area for the use of septic systems, the management of stormwater and surface runoff, and the stability of foundations for buildings, bridges, tunnels, and other structures.¹

Tenafly Borough is located within the Piedmont physiographic province of New Jersey. The Piedmont Province is an area of about 1,600 square miles and makes up approximately one-fifth of the state. It occupies all of Essex, Hudson, and Union Counties, most of Bergen, Hunterdon and Somerset, and parts of Mercer, Middlesex, Morris and Passaic. It is mainly underlain by slightly folded and faulted sedimentary rocks of Triassic and Jurassic age (240 to 140 million years old) and igneous rocks of Jurassic age. Highly folded and faulted lower Paleozoic sedimentary rocks along the northwestern margin in the Clinton and the Peapack areas, as well as at several smaller areas are included as part of the Piedmont. In the Trenton and Jersey City areas, along the southern margin of the province, there are small bands of

highly metamorphosed rocks ranging in age from Middle Proterozoic to Cambrian that are also included.

The geology of a place can be classified into two layers: the surficial geology, which extends from a few to a few hundred feet in depth; and bedrock geology, which is the underlying rock extending deeper into the Earth's crust. The geology map shows the various types of surficial materials and bedrock formations in Tenafly Borough.

Surficial Geology

Surficial materials are the unconsolidated sediments that overlie bedrock or Coastal Plain formations, and that are the parent material for agronomic soils (capable of supporting farming). In Tenafly Borough, they include: Alluvium; swamp, marsh, glacial, stream and ice-contact deposits; and, till. These materials range from coarse gravel to clay and peat. They affect the movement of ground water from the surface into underlying bedrock and are aquifers themselves in places. They also provide foundation support for structures, and supply sand and gravel for construction projects.

The surficial materials in Tenafly Borough consist of:

- Alluvium
- Swamp and Marsh Deposits
- Postglacial Stream Terrace Deposits
- Talus
- Late Wisconsinan Glacial Delta Deposits
- Ice-Contact Deposits
- Rahway Till



¹ Stanford, S.D. 1998, NJGS Information Circular: "Geologic Mapping in New Jersey". New Jersey Geological Survey, Trenton, NJ

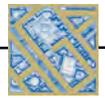


- | | |
|----------------------|---|
| Borough Boundary | Late Wisconsinan Glacial Delta Deposits |
| Open Water | Postglacial Stream Terrace Deposits |
| Alluvium | Rahway Till |
| Ice-contact Deposits | Swamp and Marsh Deposits |
| | Talus |

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

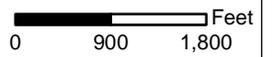
Borough of Tenafly
Environmental Resource Inventory
SURFICIAL GEOLOGY

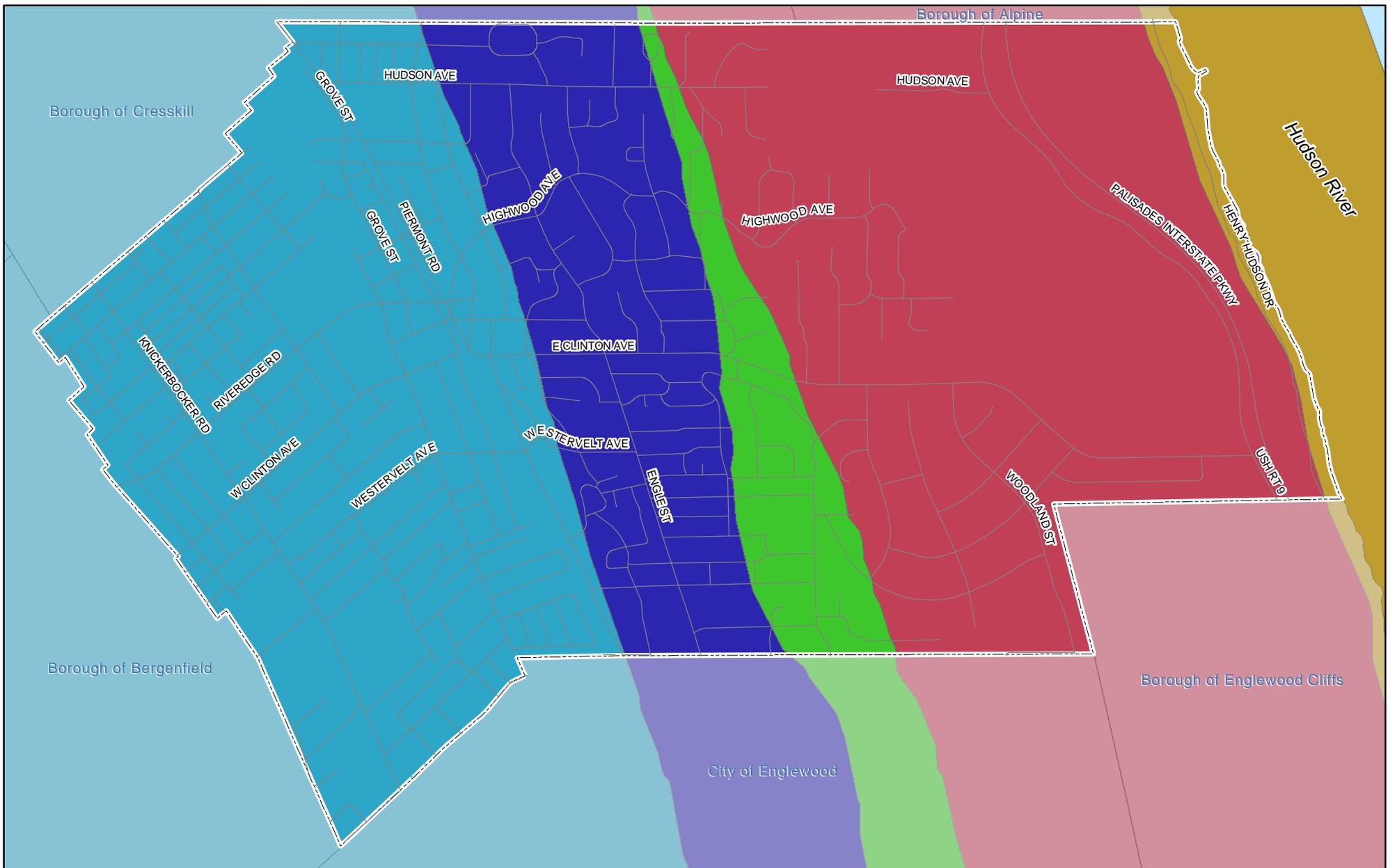
Bergen County
New Jersey



April 2011

1 inch = 1,800 feet





-  Borough Boundary
-  Open Water
- Bedrock Geology**
-  Lockatong Formation
-  Lockatong Formation Arkosic Sandstone facies
-  Passaic Formation Sandstone and Siltstone facies
-  Jurassic Diabase
-  Stockton Formation

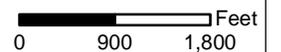
Borough of Tenafly
Environmental Resource Inventory
BEDROCK GEOLOGY

Bergen County
New Jersey



April 2011

1 inch = 1,800 feet



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly



Geology Name	Geology Abbreviation	Area in Acres	Percent of Total	Lithological Description	Depth of Layer
Alluvium	Qal	83	3%	Sand, gravel, silt, minor clay and peat; reddish brown, yellowish brown, brown, gray.	As much as 20 feet thick.
Swamp And Marsh Deposits	Qs	18	1%	Peat and organic clay, silt, and minor sand; gray, brown, black.	As much as 40 feet thick.
Postglacial Stream Terrace Deposits	Qst	159	5%	Sand, silt, pebble-to-cobble gravel; yellowish brown to reddish brown.	As much as 20 feet thick.
Talus	Qta	49	2%	Angular blocks and boulders of gneiss, quartzite, or diabase (depending on location) with little or no matrix material; gray, white, and reddish-purple.	As much as 20 feet thick.
Late Wisconsinan Glacial Delta Deposits	Qwde	220	8%	Sand, pebble-to-cobble gravel, minor silt; yellowish brown, reddish brown, light gray.	As much as 150 feet thick.
Ice-Contact Deposits	Qwic	188	6%	Sand, pebble-to-cobble gravel, few to some boulders, minor silt; yellowish brown to reddish brown.	As much as 150 feet thick.
Rahway Till	Qwtr	2193	75%	Clayey silt to sandy silt with some to many pebbles and cobbles and few boulders; reddish brown, reddish yellow, yellowish brown, brown.	As much as 100 feet thick, generally less

Bedrock Geology

Bedrock formations include sedimentary rocks formed by compaction and cementation of sediments from ancient river, lake and marine deposits; igneous rocks that formed when molten rock cooled and hardened; and lastly, metamorphic rocks formed by intense

heating and compressing of sedimentary, igneous and even other metamorphic rocks. Folding and faulting then deformed the rocks. The bedrock formations, which range in age from 1 billion to 200 million years old, extend to great depths in the Earth's crust. ²

² Stanford, S.D. 1998, NJGS Information Circular: "Geologic Mapping in New Jersey". New Jersey Geological Survey, Trenton, NJ

The underlying rocks of the Piedmont are of late-Triassic to early-Jurassic Age. These rocks include the Passaic, Lockatong and Stockton Formations and the Diabase (Traprock) intrusions that resulted from periods of volcanic activity.

The bedrock geology of Tenafly Borough consists of the Lockatong, Stockton and Passaic Formations in the Piedmont province.

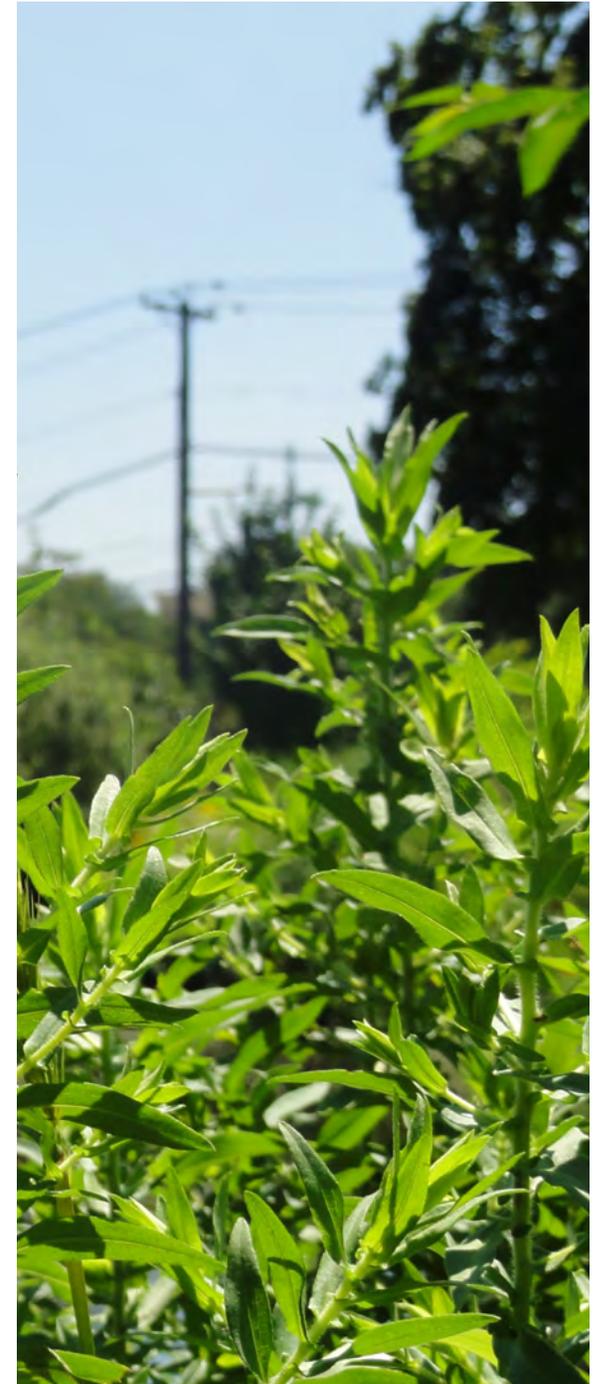
Passaic Formation: The formation consists of interbedded sequence of reddish brown, and less often purple or maroon, sandstone, siltstone, shaly siltstone, silty mudstone and/or mudstone. Shaly siltstone, silty mudstone and mudstone are fine-grained, very thin- to thin-bedded, planar- to ripple cross-laminated, locally fissile, bioturbated,

and contain evaporate minerals.

Stockton Formation: The Stockton Formation is a light-gray to light brown and yellowish medium to coarse grained sandstone and reddish to purplish-brown siltstone and mudstone with shale interbeds; and interbedded argillite. In New Jersey, feldspar pebbly sandstone and conglomerate, and quartz-pebble conglomerate are also mapped.

Lockatong Formation: The Lockatong Formation consists of dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone. The texture is fine grained and it is highly resistant to erosion. The thickness ranges from 1,500 to 3,750 feet.

Geology Name	Geology Abbreviation	Area in Acres	Percent of Total	Lithological Description
Passaic Formation Sandstone and Siltstone facies	JTrps	1,084	37%	sandstone and siltstone
Lockatong Formation Arkosic Sandstone facies	Trla	492	17%	coarse- to fine-grained arkosic sandstone
Jurassic Diabase	Jd	1,118	38%	diabase, medium- to coarse-grained
Stockton Formation	Trs	44	2%	sandstone, mudstone, silty mudstone, argillaceous siltstone, and shale
Lockatong Formation	Trl	178	6%	dolomitic or silty argillite, mudstone, sandstone, siltstone, and minor silty limestone





A community's biological resources provide an insight into the overall environmental health of a community. The quality of the community's environmental resources directly impacts the biodiversity of an area. The Borough's biological resources allow for balance of natural function within the community which impacts the quality of life. It is important to understand the dynamics of Tenafly's biological communities to allow for informed planning in the future.

The New Jersey Department of Fish and Wildlife has documented over 450 species of vertebrate wildlife throughout the state. The extent of the data on biodiversity within a community depends of these field visits to document and verify sightings. The Tenafly Nature Center has compiled a list of species located in Tenafly. Information on the common animals existing within Tenafly comes from the Tenafly Nature Center.

FAUNA

Invertebrates

More than 98% of the animal species in the world are invertebrates. Invertebrates are animals without an internal skeleton made of bone. Instead many of these animals have a hard outer shell, like insects and crustaceans or a fluid-filled, hydrostatic skeleton, like the jelly fish or worm. Some of the most common invertebrates include the protozoa, annelids, echinoderms, mollusks and arthropods (this includes insects, crustaceans and arachnids). The following is a preliminary checklist of the invertebrates found at the Tenafly Nature Center.

Crustacea

(Class Crustacea, Subclass Ostracoda, Order Cladocera)

- Cyclops (a Copepod)

Mollusca

- a small aquatic snail
- a slender yellow-orange slug

Diplopoda

- Millipede - *Underwoodia iuloides*

Chilopoda

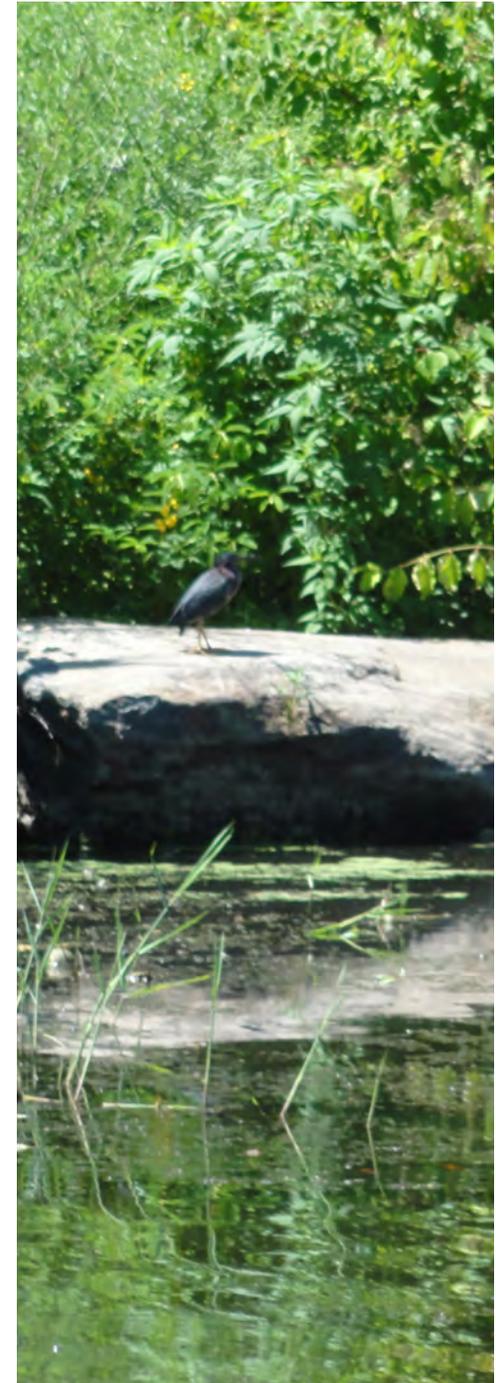
- Red Centipede - *Strigamia*

Annelids

- Earthworm
- Leech
- Rotifers
- Volvox
- Aquatic earthworms
- Protozoans
- Diatoms
- Phylum Coelenterata
 - Hydra sp.
- Phylum Platyhelminthes (flatworms)
 - Planaria sp.

Insects

- Beetles
- Eyed Click Beetle
- Lightning Bug
- Western Firefly - tree trunks in early spring
- Ladybird Beetles
- Stag Beetle
- June Beetle
- Carrion Beetle sp.
- Burying Beetle sp.
- Rove Beetle sp.



- Moths
- Illia Underwing
- Copper Underwing
- Gypsy Moth
- Luna Moth
- White Slant-line Moth (LBP)
- Lesser Maple Spanworm Moth
- Pale Beauty
- Grape Leaf-folder Moth (LBP)
- Two-banded Petrophila Petrophila bifascialis
- Baltimore Bomoloka
- Butterflies
- Monarch Butterfly
- Tiger Swallowtail
- Black Swallowtail
- Pipevine Swallowtail
- Spicebush Swallowtail
- Mourning Cloak Butterfly
- Red Admiral
- Spring Azure
- Eastern Tailed Blue
- Common Sulphur
- Painted Lady
- Cabbage Butterfly
- Northern Hairstreak
- Great Spangled Fritillary
- Hobomok Skipper
- Compton Tortoiseshell (4/13/2003)
- Question Mark (6/15/03)
- Dragonflies & Damselflies
- Eastern Ten-spot Dragonfly (a.k.a. Twelve-spotted Skimmer)
- Common Green Darner
- Swamp Darner (Epiaschna heros)
- Cherry-faced or Ruby Meadowhawk (distinguishable only at 20X)
- Common Whitetail
- Blue Dasher
- Widow Skimmer
- Slaty Skimmer
- Eastern Amberwing (and others as yet unidentified)
- Civil Bluet
- Crickets & Grasshoppers
- Cicada
- Periodical (17-year) Cicada (1996, due next in 2013!)
- Northern Fall Field Cricket
- Grasshopper sp.
- True Northern Katydid
- Mole Cricket
- Snowy Tree Cricket
- Chinese Mantis
- Wood Roach
- Bees, wasps & hornets
- Bald-faced Hornet
- Yellow-jacket
- Cicada Killer
- Mud Dauber Wasp
- Potter Wasp
- Bumblebee
- Carpenter Bee
- Ants
- Large Carpenter Ant
- Small Carpenter Ant
- Other Insects
- Springtail sp.
- European Earwig
- Leafhopper sp.
- Tree Hopper sp.
- Spittlebug
- Stink Bug sp.
- Leaf-footed Bug (Hemiptera, Family Coreidae)
- Woolly Adelgid
- Water Strider
- Backswimmer
- Water Boatman
- Common House Fly
- Deer Fly
- Hover Fly sp.
- Order Diptera (two-winged flies)
 - Genus Chaoborus – Phantom Midges – amphibian pond
 - Mosquito sp.

Arachnids

- Eastern Wood (Dog) Tick
- Deer Tick
- Velvet Mite
- Northern Black Widow
- Common House Spider
- Wolf Spider sp.
- Fishing Spider Sp.
- Orb Weaver sp.
- Several species of crab spiders

Reptiles and Amphibians

The study of amphibians and reptiles is called herpetology, from the Greek word herpes, meaning “creeping thing”. There are about 4,600 species of amphibians and 6,000 species of reptiles in the world. Reptiles and amphibians are typically cold blooded (ectothermic), lay eggs,

and are considered vertebrates. Vertebrates are animals with spines (feel your back, the bone in the middle is your spine). Amphibians consist of three groups of animals: frogs, salamanders and caecilians. Amphibians have smooth skin which is permeable to water. Reptiles have scaly skin and included animals such as turtles, crocodilians, lizards, snakes and tuatara. The following is the list of the twenty-five species of reptiles and amphibians that have been identified in Tenafly:

Common Name	Scientific Name
American Bullfrog	<i>Rana catesbeiana</i>
American Toad	<i>Bufo americanus</i>
DeKay's Brown Snake	<i>Storeria dekayi</i>
Eastern Box Turtle	<i>Terrapene carolina</i>
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
Eastern Milk Snake	<i>Lampropeltis triangulum triangulum</i>
Eastern Rat Snake	<i>Elaphe obsoleta</i>
Eastern Red-backed Salamander	<i>Plethodon cinereus</i>
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>
Gray Treefrog	<i>Hyla versicolor</i>
Green Frog	<i>Rana clamitans</i>
Northern Dusky Salamander	<i>Desmognathus fuscus</i>
Northern Ringneck Snake	<i>Diadophis punctatus edwardsii</i>
Northern Slimy Salamander	<i>Plethodon glutinosus</i>
Northern Two-lined Salamander	<i>Eurycea bislineata</i>

Northern Water Snake	<i>Nerodia sipedon</i>
Painted Turtle	<i>Chrysemys picta</i>
Pickerel Frog	<i>Rana palustris</i>
Racer	<i>Coluber constrictor</i>
Slider (invasive)	<i>Trachemys scripta</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Spotted Turtle	<i>Clemmys guttata</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Wood Frog	<i>Rana sylvatica</i>

Mammals

Mammals are one of the 6 main classes of animals and consist of about 4,000 species in the world. Mammals are typically warm blooded (endothermic), have fur or hair, and are considered vertebrates. Vertebrates are animals with spines (feel your back, the bone in the middle is your spine). Also all mammal babies drink milk.

Common Name	Scientific Name
Big Brown Bat	<i>Eptesicus fuscus</i>
Black Bear	<i>Ursus americanus</i>
Common Muskrat	<i>Ondatra zibethicus</i>
Common Raccoon	<i>Procyon lotor</i>
Coyote	<i>Canis latrans</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Mole	<i>Scalopus aquaticus</i>
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>
Little Brown Bat	<i>Myotis lucifugus</i>
Long-tailed Weasel	<i>Mustela frenata</i>

Meadow Vole	<i>Microtus pennsylvanicus</i>
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>
Norway Rat	<i>Rattus norvegicus</i>
Red Bat	<i>Lasiurus borealis</i>
Red Fox	<i>Vulpes vulpes</i>
Southern Flying Squirrel	<i>Glaucomys volans</i>
Striped Skunk	<i>Mephitis mephitis</i>
Virginia Opossum	<i>Didelphis virginiana</i>
White-footed Mouse	<i>Peromyscus leucopus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Woodchuck (aka Groundhog)	<i>Marmota monax</i>
Woodland Vole	<i>Microtus pinetorum</i>

Flora

The following is a preliminary checklist of the plants found at the Tenafly Nature Center Over 139 species (124 vascular spp.)

Fungi:

Only a few of the probable scores of species have been identified. Mushroom fanciers collect, (legally or otherwise) many bushels of several kinds each year. A few identified species include:

- Giant Puffball
- Honey Mushroom
- Chicken-of-the-woods (*Laetiporus sulphureus*)
- Hen-of-the-woods (*Griffola frondosa*)
- Oyster Mushroom (*Pleurotus ostreatus*)
- Bearded Tooth (*Hericium erinaceus*)
- Laughing Gym (*Gymnopilus spectabilis*)
- Showy Flamecap

- "numerous" *Russula* spp.
- "Ravenel's Stinkhorn, *Phallus ravenelii*

Lichens:

Several species of crustose lichens occur on branches and rocks, not identified.

Mosses:

Probably more than a dozen species are present, but only the following generic identifications have been made:

- Sphagnum sp.
- Hair-cap sp.
- Cushion Moss sp.

Ferns and Fern Allies:

- Broad Beech Fern
- Hay-scented Fern
- Sensitive Fern (*Onoclea sensibilis*)
- Interrupted Fern
- Cinnamon Fern (*Osmunda cinnamomea*)
- Royal Fern
- Christmas Fern
- Bracken Fern
- New York Fern
- Crested Fern (?) - I.D. uncertain
- Marginal Wood Fern (?) - I.D. uncertain
- Tree Club Moss (*Lycopodium obscurum*)
- Ground Pine (*L. complanatum*)

Flowering Plants (not fully grouped or ordered)

- Pink Lady's-Slipper (*Cypripedium acaule*)
- Downy Rattlesnake Plantain
- Trout Lily (*Erythronium americanum*)
- Wood Lily (?)

- Indian Cucumber-root
- Wood-Anemone (*Anemone quinquefolia*)
- Spring Beauty (*Claytonia virginica*)
- Dwarf Ginseng (*Panax trifolium*)
- Spikenard (*Aralia racemosa*)
- May Apple (*Podophyllum peltatum*)
- Celandine (alien)
- Lesser Celandine (alien)
- Day-Lily (alien)
- White Avens (*Geum canadense*)
- Canada May-Flower (*Maianthemum canadense*)
- Downy Solomon's Seal (*Polygonatum pubescens*)
- False Solomon's Seal (*Smilacina racemosa*)
- Garlic-Mustard invasive alien!
- Indian Pipe (*Monotropa uniflora*)
- Squawroot (*Conophilus americana*)
- Beechdrops (*Epifagus virginiana*)
- Common Dodder
- Turtle Head
- Cardinal Flower (*Lobelia cardinalis*)
- False Hellebore
- Carrion-flower
- Jack-in-the-pulpit
- Skunk Cabbage (*Symplocarpus foetidus*)
- Wild Ginger (planted)
- Sharp-lobed Hepatica (planted)
- Red Trillium (planted)
- Jumpseed (*Virginia Knotweed*) (*Tovara virginianum*)
- Arrow-leaved tearthumb (*Polygonum*)
- Mile-a Minute Plant (*Polygonum perfoliatum*) an invasive alien discovered in the LBP 8/2003

- Hog Peanut (*Amphicarpa bracteata*)
- Horse Balm (or Stoneroot) (*Collinsonia canadensis*)
- Great Ragweed (*Ambrosia trifida*)
- Poke Milkweed (*Asclepias exaltata*)
- Trumpetweed (*Eupatorium fistulosum*)
- Spotted Joe-Pye-Weed
- Hollow Joe-Pye-Weed
- Sundrops (*Oenothera fruticosa*)
- Mexican Tea (*Chenopodium ambrosioides*)
- Compositae (Sunflower Family)
- New York Ironweed
- Common Dandelion (*Taraxacum officinale*) (alien)
- Lance-leaved Goldenrod (*Solidago graminifolia*)
- Tall /Canada Goldenrod (*S. canadensis*)
- Rough-stemmed Goldenrod (*S. rugosa*)
- Early Goldenrod (*S. juncea*)
- Gray Goldenrod (*S. caesariensis*)
- White Snakeroot (*Eupatorium racemosa*)
- White Wood Aster (*A. divericatus*)
- Small White Aster (*A. novae-anglia*)
- Arrow-leaved Aster (*A. sagittifolius*)
- Orange Hawkweed (*Hieracium aurantiacum*) (alien)
- Tall White Lettuce (*Prenanthes altissima*)
- Spotted Touch-me-not (*Impatiens capensis*)
- Partridgeberry (*Mitchella repens*)
- Spotted/Striped Wintergreen (*Chimaphila maculata*)
- Teaberry (*Gaultheria procumbens*)
- St.John's Worts (*Hypericum virginicum* &

- mutilum)
- Pokeweed (*Phytolacca americana*)
- White Water Lily (*Nymphaea odorata*)
- Pickerel Weed (*Pontederia cordata*)
- Bullhead Lily, Spatterdock
(*Nuphar luteum*)
- Arrow Arum (*Peltandra virginica*)
- Coontail

Vines:

- Poison Ivy (*Toxicodendron radicans*)
- Virginia Creeper (*Parthenocissus quinquefolia*)
- Common Greenbriar (*Smilax rotundifolia*)
- Riverbank Grape (*Vitis riparia*)
- Japanese Honeysuckle (*Lonicera japonica*) (alien)
- Porcelain-berry (alien—attempting to eliminate)
- Asiatic Bittersweet (*Celastrus orbiculatus*) (alien)

Shrubs & Smaller Trees

- Ironwood (*Carpinus carolinensis*)
- Witch Hazel (*Hamamelis virginiana*)
- Silky Dogwood (*Cornus amomum*)
- Maple-leaved Viburnum (*Viburnum acerifolium*)
- Northern Arrowwood (*Viburnum dentatum*)
- Swamp Azalea (*Rhododendron viscosum*)
- Shadbush (*Amelanchier* sp., probably *arboria*)
- Buttonbush (*Cephalanthus occidentalis*)
- Highbush Blueberry (*Vaccinium*

- *corymbosum*)
- Deerberry (*Vaccinium*)
- Early Low Blueberry (*Vaccinium angustifolium*)
- Mock Orange (*Philadelphicus coronarius*)

Trees:

- Red Oak (*Quercus rubra*)
- White Oak (*Quercus alba*)
- Black Oak (*Quercus velutina*)
- Chestnut Oak (*Quercus prinus*)
- American Chestnut (*Castanea dentata*)
- American Beech (*Fagus grandifolia*)
- Pignut Hickory (*Carya glabra = ovalis*)
- Shagbark Hickory (*Carya ovata*)
- Mockernut Hickory (*Carya tomentosa*)
- White Ash (*Fraxinus* sp.)
- Gray Birch (*Betula populifolia*)
- Black Birch (*Betula lenta*)
- Black Gum (*Nyssa sylvatica*)
- Sweet Gum (*Liquidambar styraciflua*)
- Flowering Dogwood (*Cornus florida*)
- Sassafras (*Sassafras albidum*)
- Black Mulberry (alien-planted?) or perhaps it's *Morus alba* var. *tatarica*
- Ailanthus (*Ailanthus altissima*) (invasive alien)
- Princess Tree (*Paulownia tomentosa*) - alien
- Silk tree or Japanese Cork Tree – alien
- Red Maple (*Acer rubrum*)
- Sugar Maple (*Acer saccharum*)
- Norway Maple (alien, escaped)
- Tulip Tree (*Liriodendron tulipifera*)
- Sycamore (*Platanus occidentalis*)

- Willow (*Salix* sp.)
- Cottonwood (*Populus*)

Below is a list of the rare species that have been identified by the New Jersey Natural Heritage Database. The full report is attached in appendix A.

Natural Heritage Program Database Report					
Animal Species of Concern Reported in the Borough of Tenafly					
Common Name	Scientific Name	Federal Status	State Status	G Rank	S Rank
Allegheny woodrat	Neotoma magister		Endangered	G3,G4	S1
Bald eagle	Haliaeetus leucocephalus		Endangered	G4	S1B, S1N
Coopers hawk	Accipiter cooperii		Threatened/ Stable	G5	S2B, S4N
Eastern box turtle	Terrapene carolina		Special Concern	G5T5	S3
Northern copperhead snake	Agkistrodon contortrix		Special Concern	G5T5	S3
Red-headed woodpecker	Melanerpes erythrocephalus		Threatened	G5	S2B, S2N
Red-shouldered hawk	Buteo lineatus		Endangered/ Threatend	G5	S1B, S2N
Shortnose sturgeon	Acipenser brevirostrum	LE	Endangered	G3	S1
wood turtle	Clemmys insculpta		Threatened	G4	S2

Rare Plant Species and Ecological Communities								
Scientific Name	Common Name	Federal Status	State Status	Regional Status	G Rank	S Rank	Date Observed	Identified
<i>Vascular Plant</i>								
Silene Carolinian var. pensylvanica	Wild-pink			HL	G5T4T5	S3	1999	Y

Wetlands, land which is either submerged or retains water at ground level for a portion of the year, includes marshes, swamps, and bogs. They cover approximately 97.7 acres of land in the Borough as identified in the Wetlands map.

Wetland areas provide natural flood control by storing excess water and releasing it to surface waters over time. Wetlands also serve as filtration systems, removing pollutants from the water table and storing them in biomass; and they also serve as ground water recharge areas. As the total wetland area decreases and their natural functions decrease over a period of years, the overall quality and quantity of the surface water flow within the watershed is altered. Often, expensive man-made utilities are required to make up for the loss of wetlands.

A community that incorporates growth while maintaining or improving wetlands and wetlands function can achieve lower flood peaks, fewer drought periods, more wildlife and wildlife habitat, and better surface water quality than comparable watersheds with fewer wetlands. Wetlands also provide recreational opportunities such as boating, hiking and bird watching.

The NJDEP Land Use Regulation Program manages wetlands permitting in the state, more information, such as that provided below, is available at the programs website:

<http://www.state.nj.us/dep/landuse/fw.html>

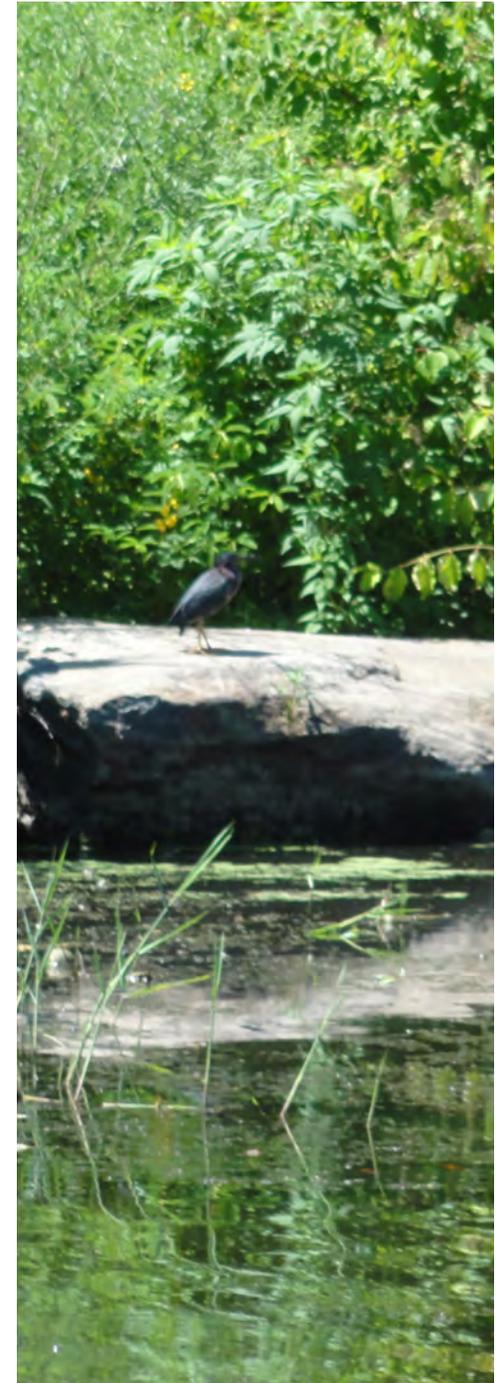
Freshwater wetlands protection is governed

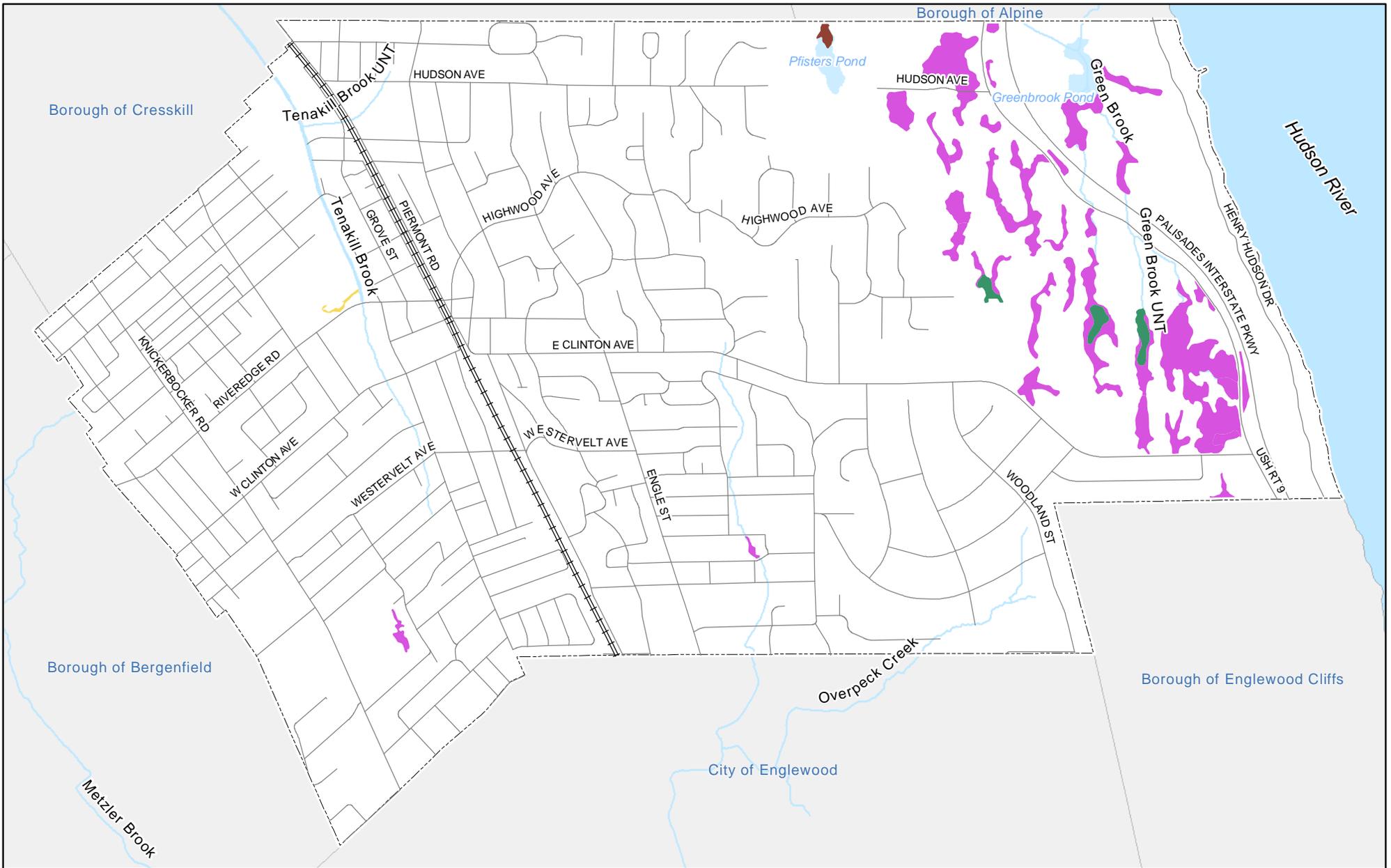
by section 404 of the “Federal Water Pollution Control Act Amendments of 1972” as amended by the Clean Water Act of 1977”. The Freshwater Wetlands Protection Act requires NJDEP to regulate virtually all activities proposed in the wetland, including cutting of vegetation, dredging, excavation or removal of soil, drainage or disturbance of the water level, filling or discharge of any materials, driving of pilings, and placing of obstructions. If you want to pursue activities in an area within 150 feet of a wetland, you may be in a transition area (sometimes called a buffer) and you may need a DEP transition area waiver. A transition area is a strip of land bordering the wetlands. The width of the transition area may vary from 150 feet down to nothing, depending on the value of the particular wetland. For example, a wetland containing endangered species habitat would require a 150-foot wide transition area, whereas a small wetland in a ditch might not require any transition area at all. Most freshwater wetlands require a 50-foot transition area.

NJDEP has developed a system for the classification of freshwater wetlands based upon criteria, which distinguish among wetlands of exceptional resource value, intermediate resource value, and ordinary resource value.

Freshwater wetlands shall be divided into three classifications based on resource value.

The Department shall consider the resource value classification of a wetland in, among other things, evaluating alternatives to the proposed regulated





Borough Boundary	WETLANDS
Streams	Deciduous Scrub/Shrub Wetlands
Open Water	Deciduous Wooded Wetlands
	Herbaceous Wetlands
	Managed Wetland in Built-up Maintained Recreation Area

**Borough of Tenafly
Environmental Resource Inventory
WETLANDS**

Bergen County  April 2011
New Jersey 1 inch = 1,800 feet

activity, in determining the size of the transition area, and in determining the amount and/or type of mitigation required.

A freshwater wetland of exceptional resource value, or exceptional resource value wetland, is a freshwater wetland which:

1. Discharges into FW1 or FW2 trout production waters or their tributaries;
2. Is a present habitat for threatened or endangered species; or
3. Is a documented habitat for threatened or endangered species, and which remains suitable for breeding, resting, or feeding by these species during the normal period these species would use the habitat.

The Department identifies present or documented habitat for threatened or endangered species for purposes of determining exceptional resource value using the Landscape Project method, which focuses on habitat areas required to support local



populations of threatened or endangered wildlife species.

A freshwater wetland of ordinary resource value, or an ordinary resource value wetland, is a freshwater wetland which does not exhibit any of the characteristics in exceptional resource values, and which is:

1. An isolated wetland, as defined at N.J.A.C. 7:7A-1.4, which:
 - a. Is smaller than 5,000 square feet; and
 - b. Has the uses listed below covering more than 50 percent of the area within 50 feet of the wetland boundary. In calculating the area covered by a use, the Department will only consider a use that was legally existing in that location prior to July 1, 1988, or was permitted under this chapter since that date:
 - i. Lawns;
 - ii. Maintained landscaping;
 - iii. Impervious surfaces;
 - iv. Active railroad rights-of-way; and
 - v. Graveled or stoned parking/storage areas and roads;
2. A drainage ditch;
3. A swale; or
4. A detention facility created by humans in an area that was upland at the time the facility was created.

A freshwater wetland of intermediate resource value, or intermediate resource value wetland, is any freshwater wetland not defined as exceptional or ordinary.

There are many small activities that can be pursued in a transition area under general permits, like the general permits discussed above, for activities in freshwater wetlands. In addition, in some cases the transition area's shape may be altered to allow an activity, without diminishing its total size. This is called transition area averaging.

The 100-year floodplain areas almost overlap the wetland boundaries. The wetlands absorb a significant amount of runoff into the ground during overflow and flooding events. So it is important to protect wetlands to prevent flooding and to provide protection of adjacent developed areas. Another important role of wetlands is to allow recharge of ground water aquifers. The wetlands are composed of hydric soils (soils that are saturated with water) that can be of two types - discharge hydric soils, which release ground water to the land surface, or recharge hydric soils, which allow water to percolate to ground water/aquifer. Sometimes the discharge hydric soils may also function as season dependent recharge systems.

At least 3% of land in Tenafly Borough is occupied by wetlands. Within Tenafly Borough, wetlands are predominantly located along the Palisades parkway in the Tenafly Nature Center and Lost Brook Preserve with a few isolated wetlands in the central part of the Borough. Deciduous Wooded

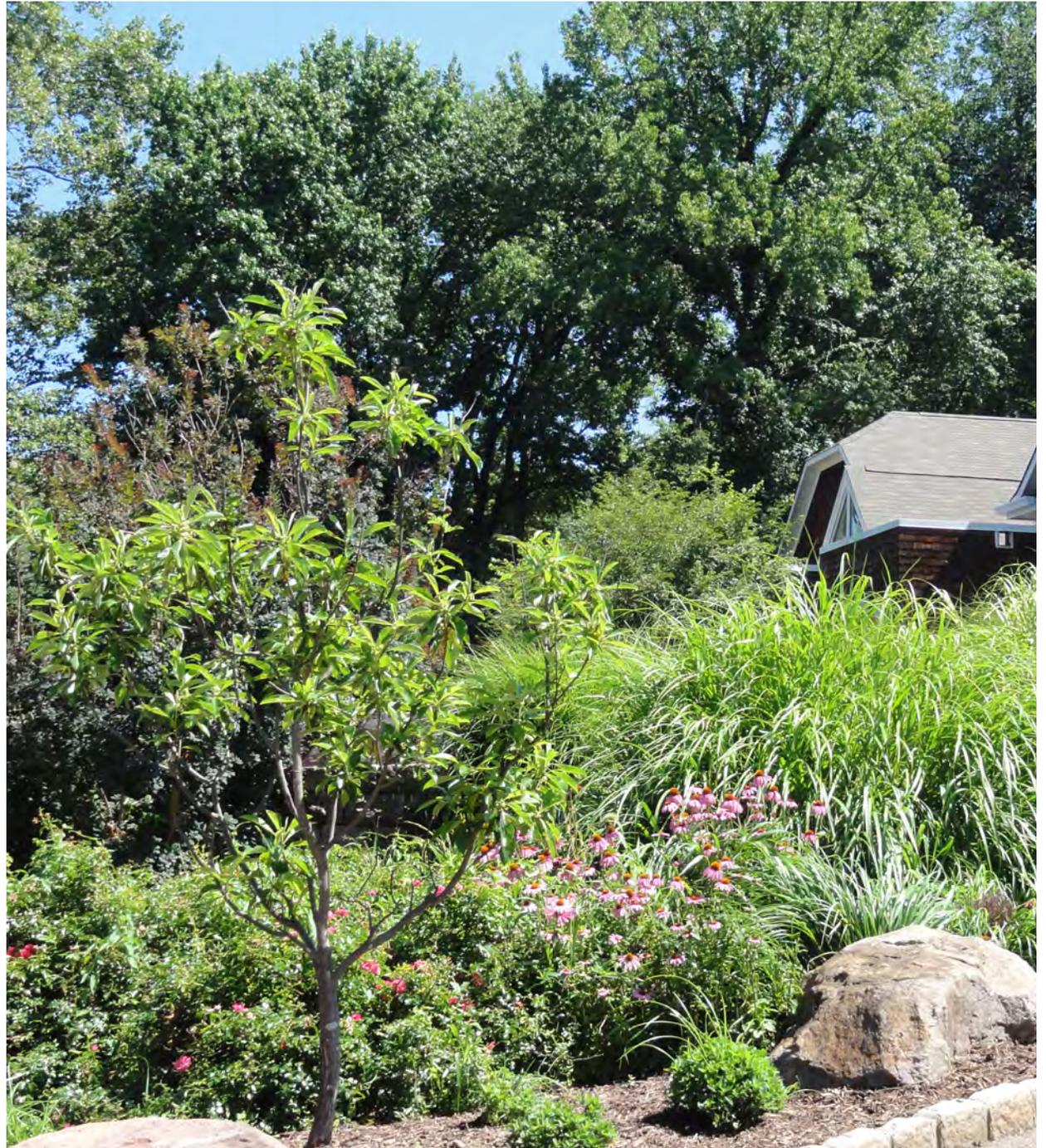


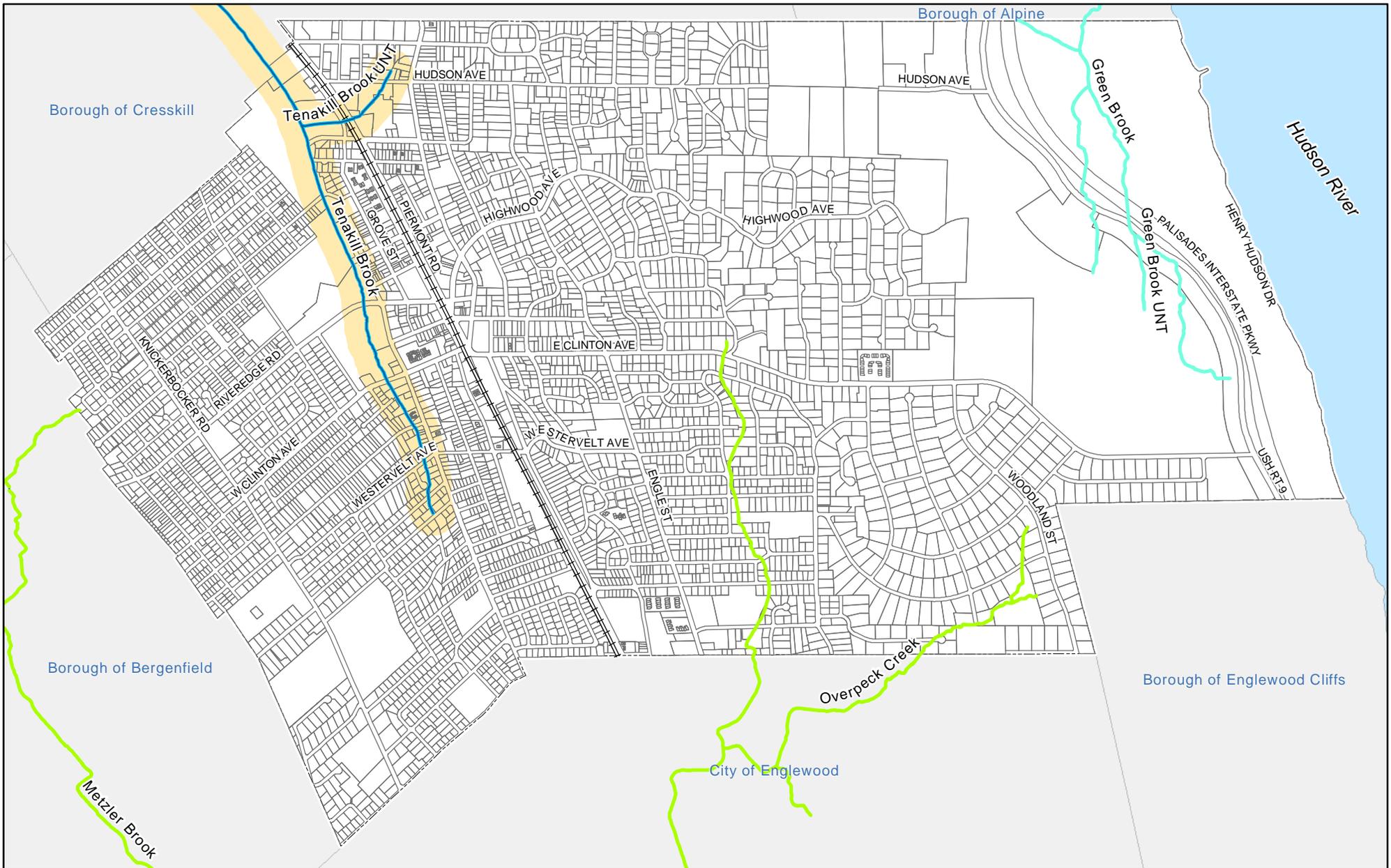
Wetlands (91.1%), Deciduous Scrub/Shrub Wetlands (5.3%), Herbaceous Wetlands (0.9%) and Managed Wetland in Built-up Maintained Recreation Areas (0.5%) are all the categories of wetlands in the Borough.

The following table shows a detailed breakdown of the types of wetlands within the Borough.

Type of Wetlands	Area in Acres	Percent of Total Wetlands
Deciduous Wooded Wetlands	91.1	93.2%
Deciduous Scrub/Shrub Wetlands	5.2	5.3%
Herbaceous Wetlands	0.9	0.9%
Managed Wetland In Built-Up Maintained Recreation Area	0.5	0.5%
Total Wetlands	97.7	100.0%

Note: Areas and percentage rounded to the nearest tenth.



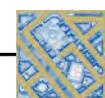


Borough Boundary
 300ft Category 1 Stream Buffer
 Open Water
CATEGORY
 FW2-NTC1
 FW2-NT/SE1
 FW2-NT/SE2

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
SURFACE WATER QUALITY & IMPACT AREAS

Bergen County
New Jersey



April 2011

1 inch = 1,800 feet



The surface water system in Tenafly Borough is characterized by streams, ponds, lakes, and wetlands. These resources provide for:

- Surface water potable supply
- Aquifer recharge for groundwater potable supply
- Wildlife habitat
- Recreation areas
- Scenic value and beauty
- Water supplies for agriculture, commerce, and industry

Surface water quality is determined by seasonal weather conditions and precipitation patterns, the depth, width, and flow rates of streams, soil characteristics, types of vegetation, and impacts of development.

The major surface water courses and impoundments within Tenafly Borough, along with the water quality category, are listed on the next page:





Stream Name	Surface Water Class	Stream Classification	Trout Water Status	Anti-Degradation Status	Designated Uses
Tenakill Brook	FW2-NTC1	FW2 or All Other Freshwater	NT or Non-Trout Producing	C1 or Category One waters	Category One status provides additional protection to waterbodies that helps prevent water quality degradation and discourage development where it would impair or destroy natural resources and water quality. The maintenance of water quality is important to residents, particularly to the many communities that depend on surface waters for drinking water supplies, recreation, fishing, and shellfish harvesting.
Green Brook	FW2-NT-SE1	FW2 or All Other Freshwater	NT or Non-Trout Producing	C2 or Category Two waters	Maintenance, migration and progradation of the natural and established biota; primary and secondary contact recreation; industrial and agricultural water supply; public potable water supply after conventional filtration treatment and disinfection; Shellfish harvesting; and any other reasonable uses.
Metzler Brook	FW2-NT-SE2	FW2 or All Other Freshwater	NT or Non-Trout Producing	C2 or Category Two waters	Maintenance, migration and progradation of the natural and established biota; primary and secondary contact recreation; industrial and agricultural water supply; public potable water supply after conventional filtration treatment and disinfection; migration of diadromous fish; maintenance of wildlife; and any other reasonable uses
Overpeck Creek	FW2-NT/SE2	FW2 or All Other Freshwater	NT or Non-Trout Producing	C2 or Category Two waters	Maintenance, migration and progradation of the natural and established biota; primary and secondary contact recreation; industrial and agricultural water supply; public potable water supply after conventional filtration treatment and disinfection; migration of diadromous fish; maintenance of wildlife; and any other reasonable uses

Note: FW1 is classified as not subject to any man-made wastewater discharges.

Hudson River – Forms the eastern border of the Borough. Tenafly’s jurisdiction extends halfway across the river. The Hudson River is tidally influenced.

Tenakill Brook – Located in the western portion of the Borough in and around the railroad tracks.

This brook traverses from the south near the municipal boundary with Englewood northerly to the boundary shared with Cresskill. The Tenakill Brook is classified as a Category One waterway by the New Jersey Department of Environmental Protection. A Category One designation provides additional protection to water bodies that

help prevent water quality degradation and discourage development where it would impair or destroy natural resources and environmental quality.

Green Brook – Located in the northeastern portion of the Borough in the Green Brook Sanctuary and



the Lost Brook Preserve. Green Brook and the tributaries flow northerly into Green Brook Pond, and from the pond continue into the Borough of Alpine and out to the Hudson River.

Metzler Brook – Located primarily within the Borough of Bergenfield, this brook terminates at the northwest boundary of Tenafly Borough.

Overpeck Creek – Two main tributaries are located near the southeast corner of the Borough, and form the headwaters of the Overpeck Creek. Both tributaries traverse from the north and flow southwesterly into the City of Englewood.

Other Surface Water – Surface water systems also comprise of any vernal ponds, swamps and/or freshwater wetlands that accompany the stream and water impoundments. There are many small ponds throughout Tenafly, probably glacial in origin, since they have no inlets or outlets.

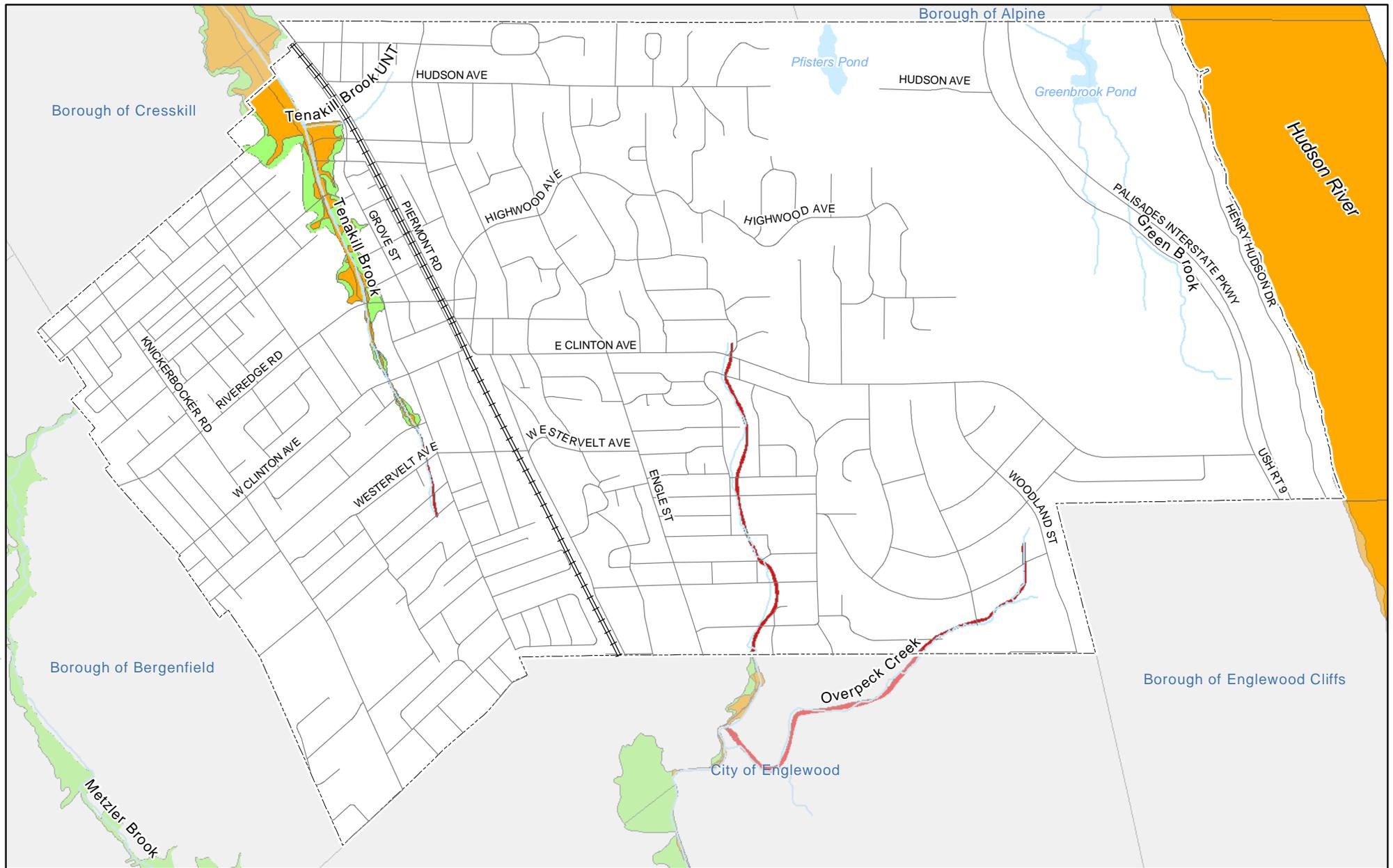
Human effects upon water quality include discharge from point sources and non-point sources and problems resulting from erosion and sedimentation. Point sources of discharge enter surface waters at specific and identifiable locations, such as industrial wastewater effluent discharge pipes, sewage treatment plant effluent pipes, stormwater runoff pipes, illegal dumping of liquids and materials from mobile sources directly into streams, sewage pumping station malfunctions resulting in bypasses, and malfunctioning septic systems flowing or discharging into streams. Their presence in Tenafly Borough is discussed in greater

detail in “NJ Pollutant Discharge Elimination System” section.

Non-point sources enter in a general manner and are difficult to identify; they include stormwater runoff carrying chemicals from agricultural activities, oils and salts from roads and parking lots, and leachate from landfill operations.

Erosion is the wearing away of soil or rock by moving water, and sedimentation is the transportation of these eroded materials in suspension and the deposition of these clays, silts, and sands in other areas. Increased development generally reduces the amount of cover vegetation and increases the amount of impervious surface, therefore lessening the infiltration of precipitation and increasing stormwater runoff and potential erosion, sedimentation, and water quality contamination. Erosion and sedimentation also result in suspended sediment that contributes to a decline in water quality by blocking sunlight, reducing photosynthesis, decreasing plant growth, and destroying bottom dwelling species’ habitat.





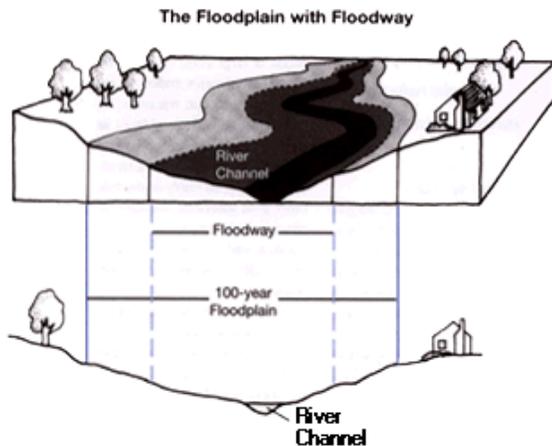
Borough Boundary	FEMA ZONE	X500 - moderate risk
Streams	A - high risk	FWIC - Floodway in Channel
	AE - high risk	X - minimal to no risk

Borough of Tenafly
Environmental Resource Inventory
FLOODPLAIN

Bergen County
New Jersey

April 2011
1 inch = 1,800 feet

Floodplains are a vital part of any river or estuary ecosystem, acting as water filters and wildlife nurseries. They are important for the maintenance of water quality, providing fresh water to wetlands and backwaters while diluting salts and nutrients. Floodplains are major centers of biological life in the river and estuary ecosystem and improve the overall health of the habitat used by many species of birds, fish, and plants. They are important biologically, as they represent areas where many species reproduce and as such are important for breeding and regeneration cycles.



New Jersey regulates construction in the floodplain under the Flood Hazard Area Control Act, N.I.S.A. 58:16A-50 et seq., and its implementing rules at N.J.A.C. 7:13. The NJDEP Land Use Regulation Program manages Stream Encroachment Permitting in the state, more information, such as that provided below, is available at the programs website: <http://www.state.nj.us/dep/landuse/se.html>

The state regulates work in floodplains for two reasons. First, such regulation protects the person who is building from loss of life and property in case of a flood. Flooding causes an estimated \$3 billion of damage in the United States every year. State regulations minimize the damage by ensuring that buildings are placed in safe areas, and are constructed to withstand high water.

The second reason to regulate building in flood plains is to protect other properties along the stream or pond from flood damage. When you build on a flood plain and the waters begin to rise, the buildings on your property displace water thus increasing the height of the rising waters and making the flooding worse everywhere along the banks. In addition, your buildings and pavement cover the natural ground surface that would have helped soak up the water. Therefore, the more buildings and pavement allowed, the higher the flood waters along that water body will rise, and the worse the flooding problems will get. Even if a building is permissible in the flood plain, regulations are necessary to ensure that it is strongly constructed so that it won't wash away in floodwaters, causing danger and damage downstream.

The flood plain is made up of two parts - the floodway and the flood fringe. The floodway is the inner area where floodwaters are deep and move fast. The floodway always includes the streambed or lakebed where the water normally flows, and usually extends to the top of the bank (if there is a defined bank) and sometimes beyond. The flood



fringe is the outer area where floodwaters move more slowly, appearing more still, like a lake or pond.

A building in a floodway will block the water's flow, backing up water and causing flooding upstream to worsen. A building in a flood fringe will prevent floodwaters from spreading out, thus forcing floodwaters downstream faster and increasing downstream flooding.

100-year Floodplain

The 100-year floodplain boundary area has been established by the Federal Emergency Management Administration (FEMA) to denote floodwater impoundment areas. These areas are highly restrictive in order to avoid destruction of flood areas and the destruction of property that has been improperly located and therefore subject to flooding. The 100-year floodplain is known as the Special Flood Hazard Area (SFHA).

According to the FEMA definition, the SFHA is defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent-annual-chance flood is also referred to as the "base flood." FIRMs are maps that show different floodplains with different zone designations. These are primarily for insurance rating purposes, but the zone differentiation can be very helpful for other floodplain management purposes. Note that the Special Flood Hazard Area (SFHA) includes only A and V Zones.

Flood Insurance Zone Designations

Following are the categories and zones designated by FEMA for the purposes of flood planning and insurance:

High Risk – Coastal Areas:

Zone V: Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards associated with storm-induced waves. Because detailed hydraulic analyses have not been performed, no BFEs (Base Flood Elevations) or flood depths are shown. Mandatory flood insurance purchase requirements apply.

Zones VE and V1-V30: Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic analyses are shown within these zones. Mandatory flood insurance purchase requirements apply. (Zone VE is used on new and revised maps in place of Zones V1-V30.)

High Risk Areas:

Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements apply.

Zones AE and A1-A30: Areas subject to inundation by the 1-percent-annual-chance flood event, determined by detailed methods. BFEs are shown within these zones. Mandatory flood insurance

purchase requirements apply. (Zone AE is used on new and revised maps in place of Zones A1-A30.)
Zone AH: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. BFEs derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements apply.

Zone AO: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average flood depths derived from detailed hydraulic analyses are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone A99: Areas subject to inundation by the 1-percent-annual-chance flood event, but which will ultimately be protected upon completion of an under-construction Federal flood protection system. These are areas of special flood hazard where enough progress has been made on the construction of a protection system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes. Zone A99 may only be used when the flood protection system has reached specified statutory progress toward completion. No BFEs or flood depths are shown. Mandatory flood insurance purchase requirements apply.

Zone AR: Areas that result from the decertification of a previously accredited flood protection system that is determined to be in the process of

being restored to provide base flood protection. Mandatory flood insurance purchase requirements apply.

Zones AR/AE, AR/AH, AR/AO, AR/A1-A30, AR/A: Dual flood zones that, because of the risk of flooding from other water sources that the flood protection system does not contain, will continue to be subject to flooding after the flood protection system is adequately restored. Mandatory flood insurance purchase requirements apply.

Moderate to Low Risk Areas:

Zones B, C, and X: Areas of moderate or minimal hazard from the principal source of flood in the area. However, buildings in these zones could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. Local stormwater drainage systems are not normally considered in the community's FIS. The failure of a local drainage system creates areas of high flood risk within these rate zones. Flood insurance is available in participating communities but is not required by regulation in these zones. (Zone X is used on new and revised maps in place of Zones B and C.)

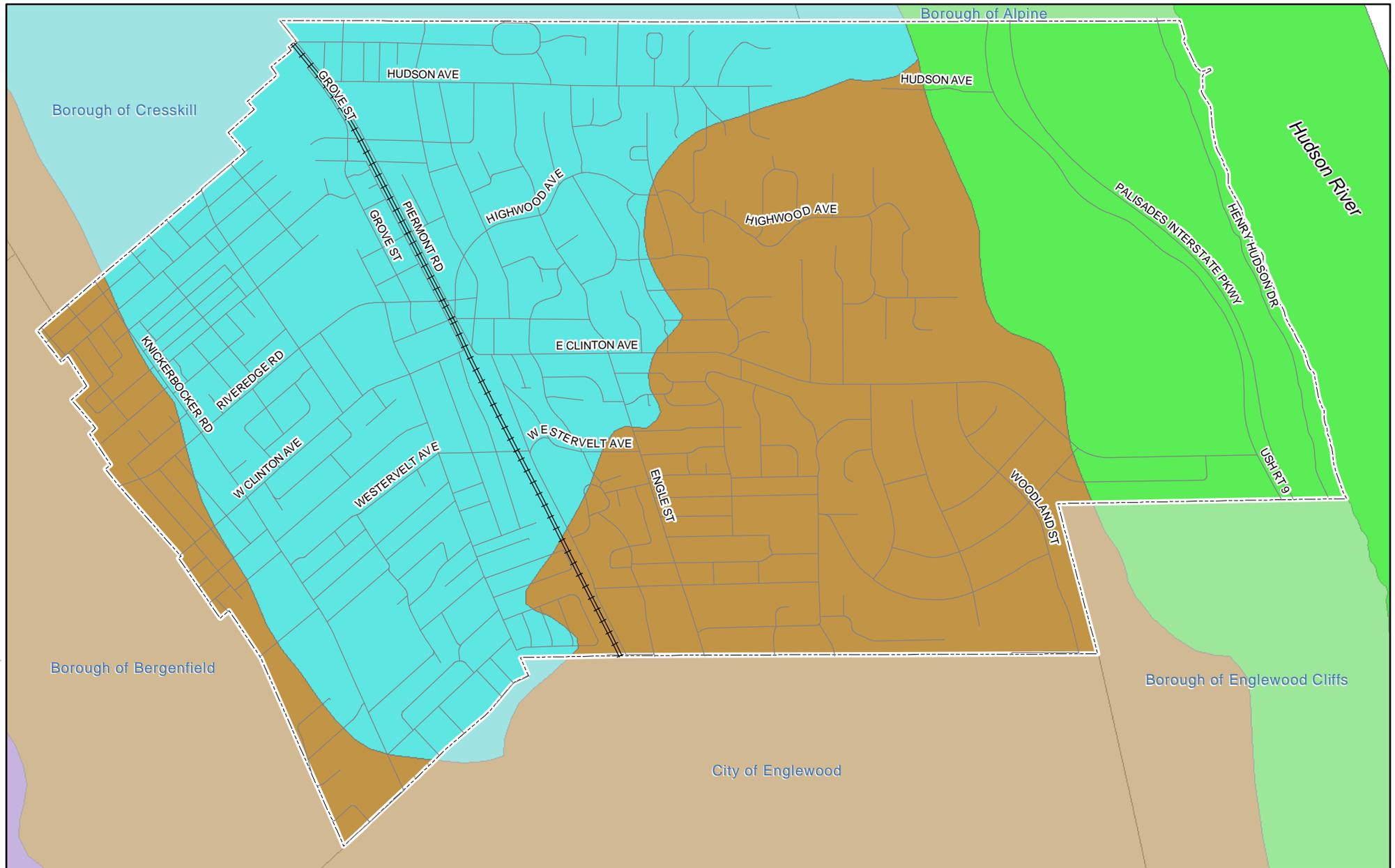
Undetermined Risk Areas:

Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

Several areas of Tenafly Borough are located in what the Federal Emergency Management Agency (FEMA) considers to be a flood hazard area. The floodplain in the Borough has similar locations as wetlands. Thus, the floodplain in combination with the wetlands provides additional open space areas within the Borough.

Location and acreage of various FEMA-designated flood zones within Tenafly Borough:

Location and acreage of various FEMA-designated flood zones within Tenafly Borough				
Zone	Type	Location	Area in Acres	Percent of Total
A	High Risk	Along Overpeck Creek and the southern tip of Tenakill Brook	6.24	0.21%
AE	High Risk	Along Tenakill Brook and Hudson River Waterfront	27.31	0.94%
X500	Moderate Risk	Overpeck Creek	18.75	0.64%
FWIC	Floodway in Channel	Along outer fringes of the AE zone along Tenakill Brook	0.01	0.00%
X	Minimal to No Risk	Remainder of the Borough	2863.49	98.21%
Total Land Area	2915.80	100.00%		



Hackensack, Hudson, Pascack Watershed Management Area, WMA05
WMA05 - Subwatersheds

 Hirshfeld Brook	 Overpeck Creek
 Hudson River	 Tenakill Brook

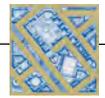
 Borough Boundary

Borough of Tenafly
Environmental Resource Inventory

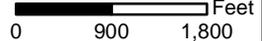
WATERSHED MANAGEMENT AREAS

Bergen County
 New Jersey

April 2011
 1 inch = 1,800 feet





 Feet
 0 900 1,800

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

A watershed is an area that drains into a common waterway, such as a stream, lake, estuary, wetland, or, ultimately, the ocean. The watershed includes both the waterway itself and the entire land area that drains into it. Geographical features such as hills and slopes separate distinct watershed systems. Watershed Management Areas (WMAs) are the regulatory units of NJDEP's Division of Watershed Management for categorizing, managing and protecting watersheds throughout the State. Tenafly Borough is in the Hackensack, Hudson, Pascack Watershed Management Area (WMA 05).

Hackensack, Hudson, Pascack Watershed Management Area

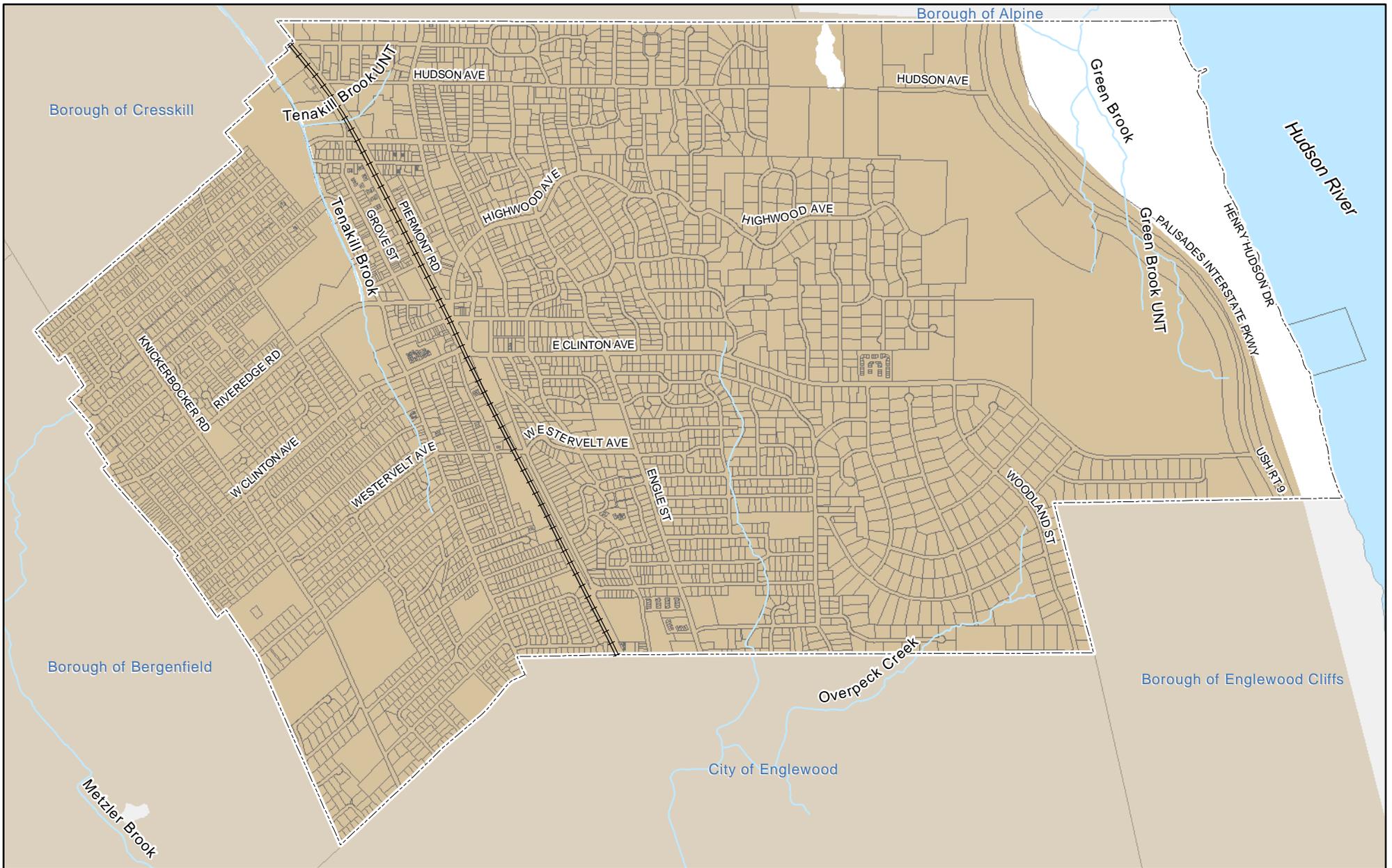
Watershed Management Area 05, about 186 square miles, includes large portions of Bergen and Hudson Counties. The WMA is surrounded by the Hudson River to the east and the Hackensack River to the west.

Each of these watersheds is further divided into sub-watersheds. A sub-watershed is a smaller drainage basin of a local stream that eventually drains to a central point of the larger watershed. The Hackensack, Hudson, Pascack Watershed Management Area has three sub-watersheds within Tenafly Borough. These are:

- Tenakill Brook (43.81% of the Borough)
- Overpeck Creek (37.51%)
- Hudson River (18.68%)

WMA 5: Hackensack, Hudson, Pascack Watershed Management Area			
Watershed	Subwatershed	Area in Acres	Percent Total
Hudson River	Hudson River (Contains Greenbrook Creek)	544.58	18.68%
Hackensack River (Above Hirshfeld Brook)	Tenakill Brook	1277.52	43.81%
Hackensack River (Below/ Including Hirshfeld Brook)	Overpeck Creek	1093.71	37.51%
Total Land Area		2915.80	100.00%



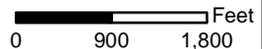


-  Borough Boundary
-  Bergen County Utilities Authority
-  Borough Parcels
-  Streams
-  Open Water

Borough of Tenafly
Environmental Resource Inventory

SEWER SERVICE AREA

Bergen County  April 2011
New Jersey 1 inch = 1,800 feet

Source: NJDEP, NCRS, NJGS, NJDOT and Borough of Tenafly

The existing infrastructure includes the water supply, sewerage and waste treatment, solid waste disposal, and drainage and flood control facilities serving the Borough of Tenafly. The Borough's public water is supplied by United Water, a water utility company. No public wellheads exist within the Borough. The sanitary sewer services is collected in the Borough then directed to the Bergen County Utilities Authority(BCUA) for treatment.

Sewer Service

The Borough sanitary sewer collection system has 310,803 feet of sanitary sewer mains and one sewerage pumping station located on Jewett Court. This feeds the wastewater into the Bergen County Utility Authority's system. The BCUA operates a system of gravity sewer lines, pumping stations and forcemains that receive the discharge of wastewater from the individual municipal collection systems and transports the wastewater to the treatment plant in Little Ferry. The wastewater is treated and discharged into the Hackensack River.

Water Supply

The Borough of Tenafly is wholly within the franchise area of the United Water. Besides Tenafly, the company has historically served 60 communities in Bergen and Hudson counties. Below are some facts and figures about this service area:

Service area population	750,000
Customers served	186,807
Employees	314
Water delivered in 2009	38.5 billion gallons
Average daily demand	105.1 million gallons
Peak demand	138.9 million gallons
Miles of main	2,124 miles
Hydrants	15,328
Operating wells	15
Size of watershed	112 square miles
Hackesack River Reservoir system capacity	14 billion gallons

United Water's Bergen County service areas primary water sources are reservoirs located in Oradell, Woodcliff Lake and Lake Tappan reservoirs in Bergen County, New Jersey, and Lake DeForest Reservoir in Rockland County, New York. United Water also serves their Bergen County customers with treated water from United Water Jersey City, United Water New York, the Park Ridge Water Department, the Passaic Valley Water Commission, the Ridgewood Water Department or the North Jersey District Water Supply Commission.

Solid Waste

Tenafly Borough's solid waste collection is coordinated at the Public Works but is actually hauled by a private company, Waste Industries.



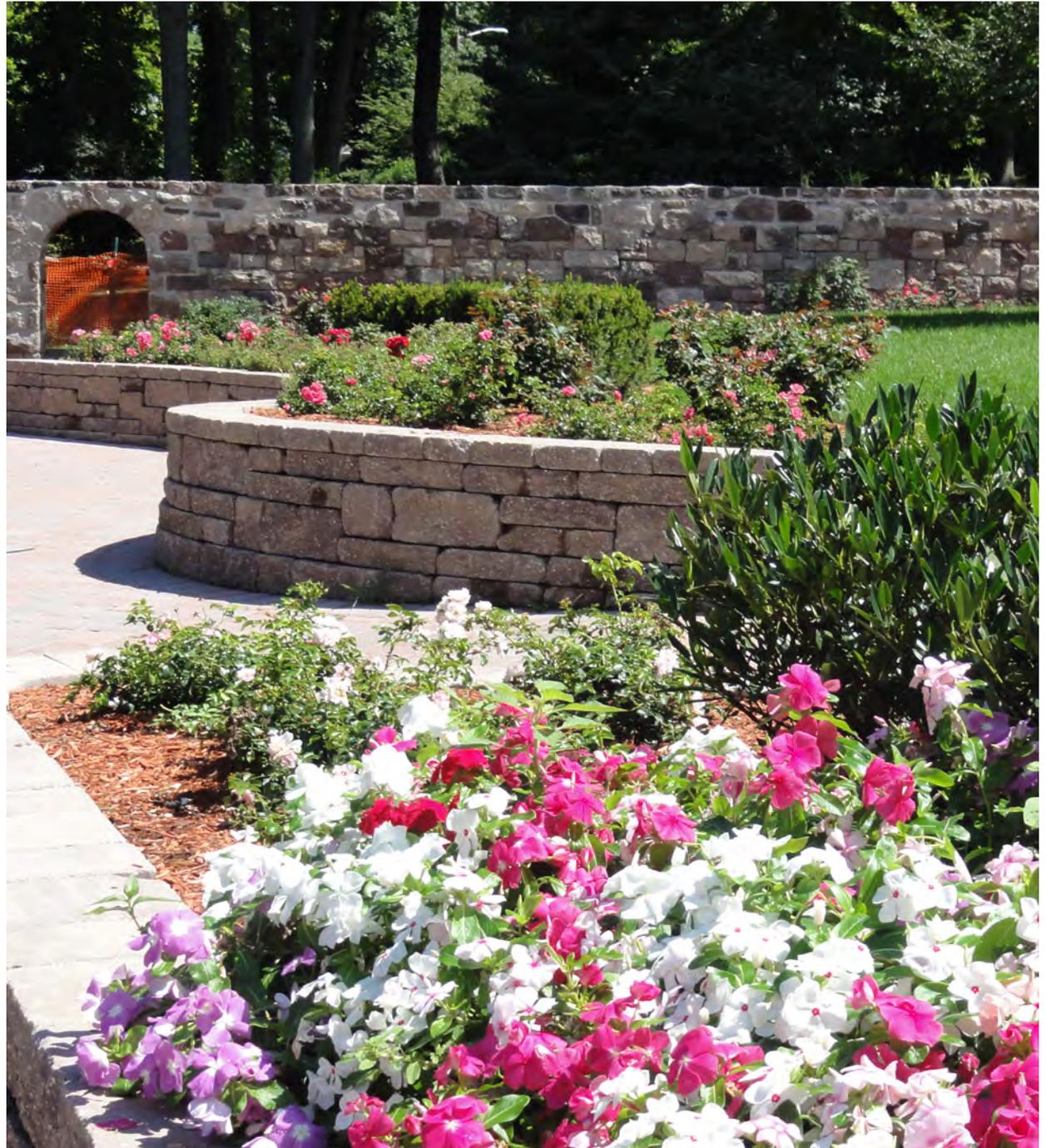


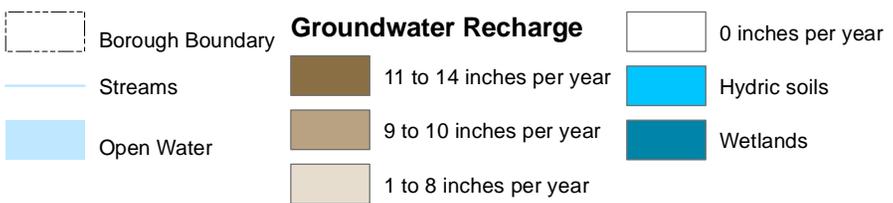
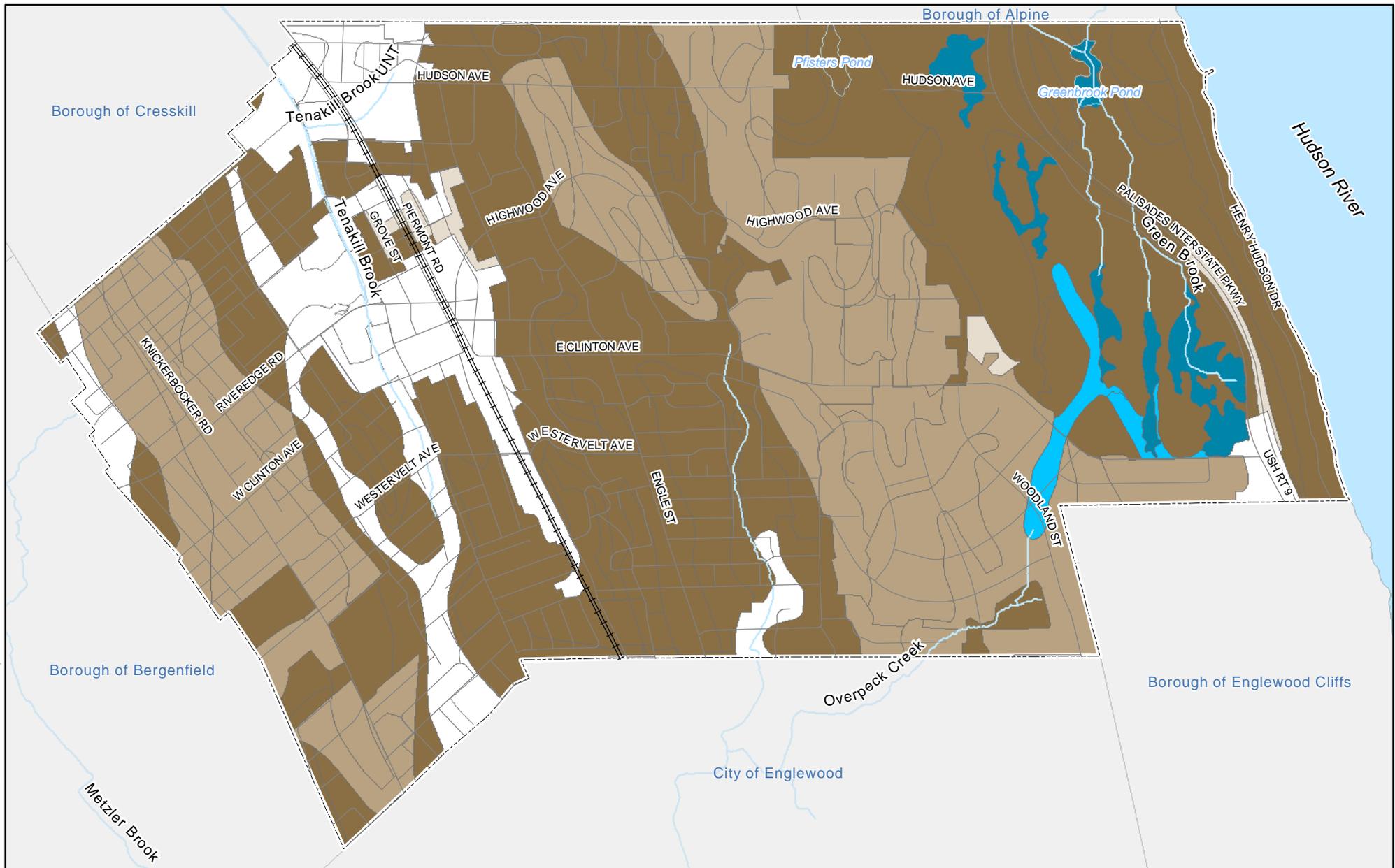
Refuse is collected twice each week in the Borough. The Borough actively participates in recycling and has a recycling center located at 153 Grove Street (formerly the Transfer Station) for use by Tenafly residents only.

The Plan indicates that all of the waterways in the Borough are subject to flooding and bank erosion. As older homes are torn down and larger homes are built, localized flooding may happen and the impacts could eventually become an issue Borough wide.

Storm Drainage/Flood Control

The Borough has an extensive storm sewer and inlet system that has been in place for quite some time. All developments since 2004 have been required to meet the requirements of retrofitting for the existing inlets. The Borough has a Stormwater Management Plan which was prepared in 2005 and revised through May of 2007. The Plan indicates that all of the waterways in the Borough are subject to flooding and bank erosion, however since Tenafly is well established from a development standpoint, no large increases or changes in the amount of runoff entering the Borough's waterways is expected.





Borough of Tenafly
Environmental Resource Inventory

GROUNDWATER RECHARGE

Bergen County
New Jersey

April 2011
1 inch = 1,800 feet

Ground water recharge is defined as the natural process of infiltration and percolation of rainwater from land areas or streams through permeable soils into water-holding rocks or unconsolidated materials (such as sands and gravels) that provide underground storage in saturated zones known as ground water; where the ground water can yield good water supplies to wells it is known as an aquifer.

The Ground Water Recharge Map in this ERI is an estimation of ground water recharge for Bergen County using the NJGS methodology from NJ Geological Survey Report GSR-32 “A Method for Evaluation of Ground-Water-Recharge Areas in New Jersey.” Land-use/land-cover, soil and municipality-based climatic data were combined and used to produce an estimate of ground-water recharge in inches/year, using average annual precipitation values. Recharge was then ranked by volume (billions of gallons/year) using natural breaks in the percentage of total volume.

Most areas, unless composed of solid rock or covered by development, allow a certain percentage of total precipitation to reach the water table (the upper layer of a ground water unit or aquifer). Tenafly Borough is generally blessed with good recharge potential, in the sense that at least 83% of the land in the Borough has 9 to 14 inches per year of recharge potential. Within this proportion, at least 52% of land has a recharge potential of 11 to 14 inches per year (County Rank B), and around 31% of the Borough is composed of land with a recharge potential of

9 to 10 inches per year (County Rank C). Only 12.7% of Borough land has 0 inches per year of recharge, and a very less percentage of land in the Borough (3.1%) is composed of wetlands or hydric soils that generally have very limited recharge, if any. The following table shows the area of land in each recharge range and soils that contribute to:

County Rank	Range of Recharge Rate	Area in Acres	Percent of Total
B	11 to 14 Inches/year	1,523.97	52.3%
C	9 to 10 Inches/year	900.35	30.9%
D	1 to 8 Inches/year	29.04	1.0%
E	0 Inches/year	371.18	12.7%
L	Hydric Soils	29.31	1.0%
W	Wetlands and open water	61.95	2.1%
Total Land Area	2,915.81	100.0%	

A major contributing factor in the amount of ground water recharge is the type of soils found in the area. The following table shows the series of soils found in Tenafly Borough:





County Rank	Range of Recharge Rate	Soils Series' Included
B	11 to 14 Inches/year	Boonton, Dunellen and Haledon
C	9 to 10 Inches/year	Boonton and Haledon
D	1 to 8 Inches/year	Boonton, Dunellen and Haledon
E	0 Inches/year	Udorthents and Urban Land
L	Hydric Soils	Hasbrouck
W	Wetlands and open water	Boonton, Fluvaquents, Haledon, Hasbrouck and Water

The quality of ground water recharged to the water table depends largely on the nature of the overlying land use. Areas with significant concentrations of septic systems, urban land or active agriculture are known to be more prone to contamination of ground water recharge, as are those Known Contaminated Sites or sites on the Site Remediation Program (SRP) Comprehensive Site List where ground water contamination has been identified. Where ground water contamination has been verified, New Jersey has a system for designating Classification Exception Areas (CEA), as institutional controls in geographically defined areas within which the New Jersey Ground Water Quality Standards (GWQS) for specific contaminants have been exceeded.

Ground water is water below land surface that is stored in the cracks and spaces in rock, sand and gravel formations. Precipitation to the land surface can become ground water if it infiltrates through the soils to the saturated area, a process called ground water recharge. Ground water eventually makes its way back to the surface and provides water to springs, streams, ponds and lakes – in natural areas this ground water is the only flow in a stream during dry periods.

An aquifer is a ground water formation that can provide economically useful quantities of water to a pumping well – whether for a single home, a business, a farm or a municipality. Note that all aquifers contain ground water, but not all ground water is in aquifers! For this reason, it is important to know what portion of total ground water recharge reaches aquifers and is available for human use. The rate of recharge is not the same for all aquifers, though, and that must be considered when pumping water from a well. Pumping too much water too fast draws down the water in the aquifer and causes a well to yield less and less water and eventually run dry. In addition, excessive human uses can damage the surface waters to which the ground water naturally flows, drying up streams during droughts.

The aquifers of New Jersey are classified as either consolidated (rock formations, also known as bedrock) or unconsolidated (sand and gravel) aquifers. Consolidated aquifers contain ground water in fractures and sometimes in pore spaces, while unconsolidated aquifers contain ground

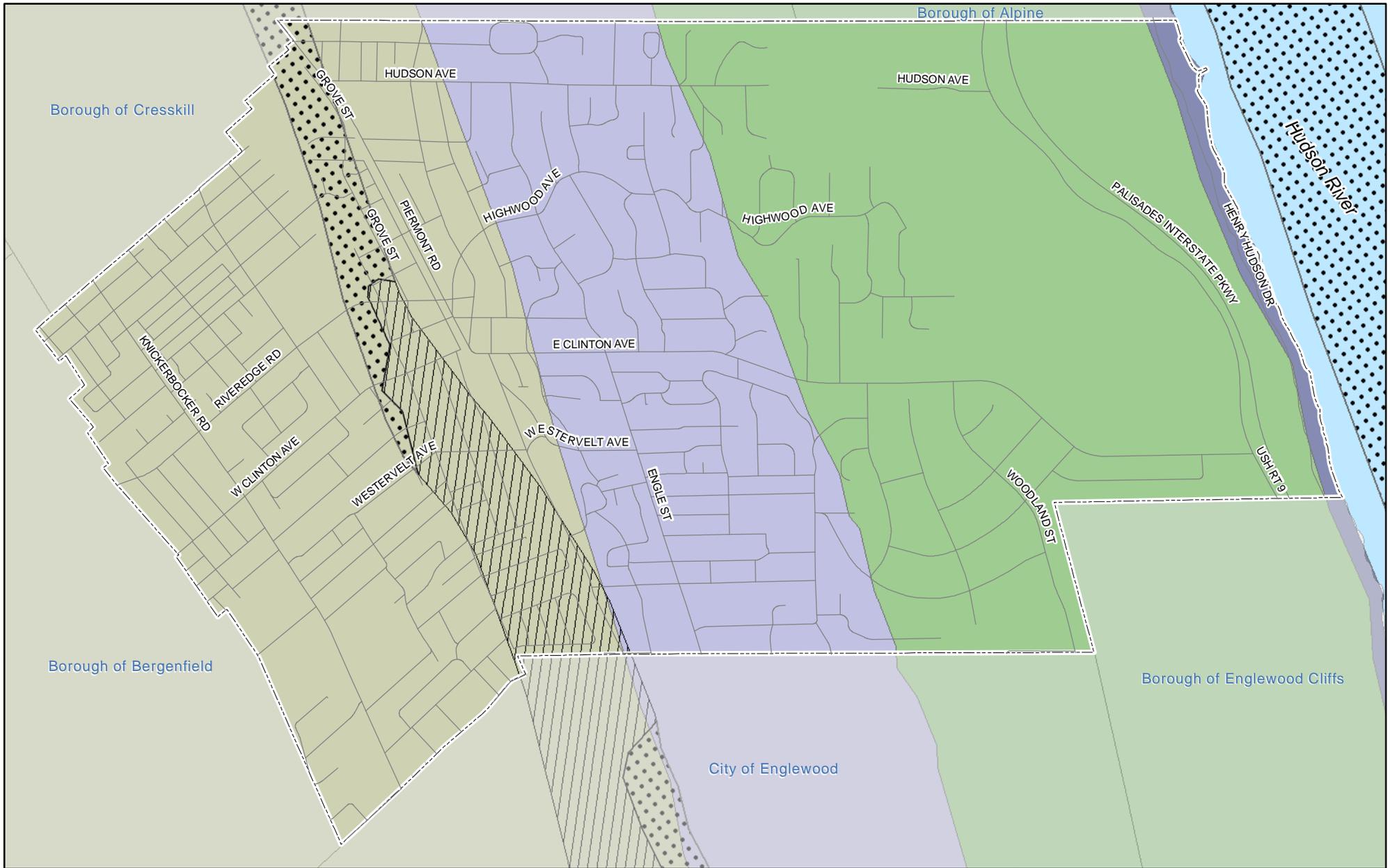
water primarily in the pore spaces between sand and gravel particles. The bedrock aquifers in New Jersey include fractured-rock aquifers of the Valley and Ridge, Highlands, and Piedmont physiographic provinces. The Piedmont province included several types of rock formations, including shale, sandstone, basalt and diabase such as the Sourland Mountains. Unconsolidated aquifers include the sand aquifers of the Coastal Plain physiographic province and the aquifers of glacial sediment exceeding 50 ft. thickness in northern New Jersey. Where aquifer formations are at the land surface with no confining layer over them, they are known as surficial aquifers. Where an aquifer is overlain by a confining layer, it is known as a confined aquifer, and the water in it may be under pressure and could rise up through a well all the way above the land surface (an artesian well). For instance, the Potomac-Raritan-Magothy Aquifers are a series of Coastal Plain aquifers with confining layers in between.

The aquifers are also ranked by their yield rates or the gallons for minute that can be expected from wells in each aquifer. The ranking consists of a scale from A through E, as follows: A - greater than 500 gallons per minute, B - 251 to 500 gallons per minute, C - 101 to 250 gallons per minute, D - 25 to 100 gallons per minute, E – less than 25 gallons per minute.

Bedrock Aquifers

The aquifers in Tenafly Borough are all part of the Piedmont Plain province. The aquifers are distinguished by the types of materials, porosity,





Borough Boundary	Surface Aquifer	Bedrock Aquifer
Open Water	Lake-bottom Sediment	Brunswick aquifer
	Sand and Gravel	Diabase
		Lockatong Formation
		Stockton Formation

**Borough of Tenafly
Environmental Resource Inventory
AQUIFERS**

Bergen County  April 2011
New Jersey 1 inch = 1,800 feet

Feet
0 900 1,800



Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

chemical and physical composition, and as a result, the quantity and quality of water they yield. The physical and chemical descriptions and yield rates of the different aquifers systems, and their component formations, found in Tenafly Borough are as below:

Aquifer Name	Aquifer Rank	Well yield (gallons/minute)	Area in Acres	Percent Total
Stockton Formation	C	>101 to 250	43.19	1.48%
Brunswick Aquifer	D	>25 to 100	1084.92	37.23%
Lokatong Formation	D	>25 to 100	669.13	22.96%
Diabase	E	<25	1117.21	38.33%
		Totals	2914.45	100.00%

Stockton Formation: With an aquifer rank of “C” and an average yield of 101 to 250 gallons per minute, this aquifer is composed of arkosic sandstone. Water is fresh, slightly acidic, corrosive and moderately hard. Calcium-bicarbonate type waters dominate. This system covers about 1.48% of the Borough.

Brunswick Aquifer: With an aquifer rank of “D” and an average yield of 25 to 100 gallons per minute, this aquifer is composed of sandstone, siltstone, and shale. The water from this aquifer is normally fresh, slightly alkaline, non-corrosive and hard, containing calcium-bicarbonate and sub-ordinate calcium-sulfate waters that are associated with high total dissolved solids. This system covers about 37% of the Borough.

Lokatong Formation: This “D” ranked aquifer, with an average yield of 25 to 100 gallons per minute, is composed of silty argillite, mudstone and fine-grained sandstone, and siltstone with minor limestone. The ground water is stored and

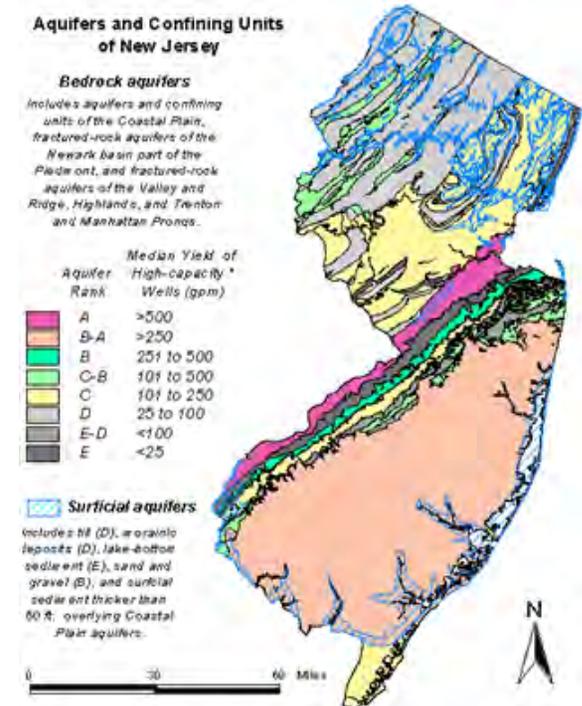
transferred in fractures. Wells completed in the conglomerate facies generally show increased capacities of ground water yield. Water is normally fresh, slightly alkaline, non-corrosive, and hard. Calcium-bicarbonate type waters dominate. The Lokatong formation covers about 23% of the Borough.

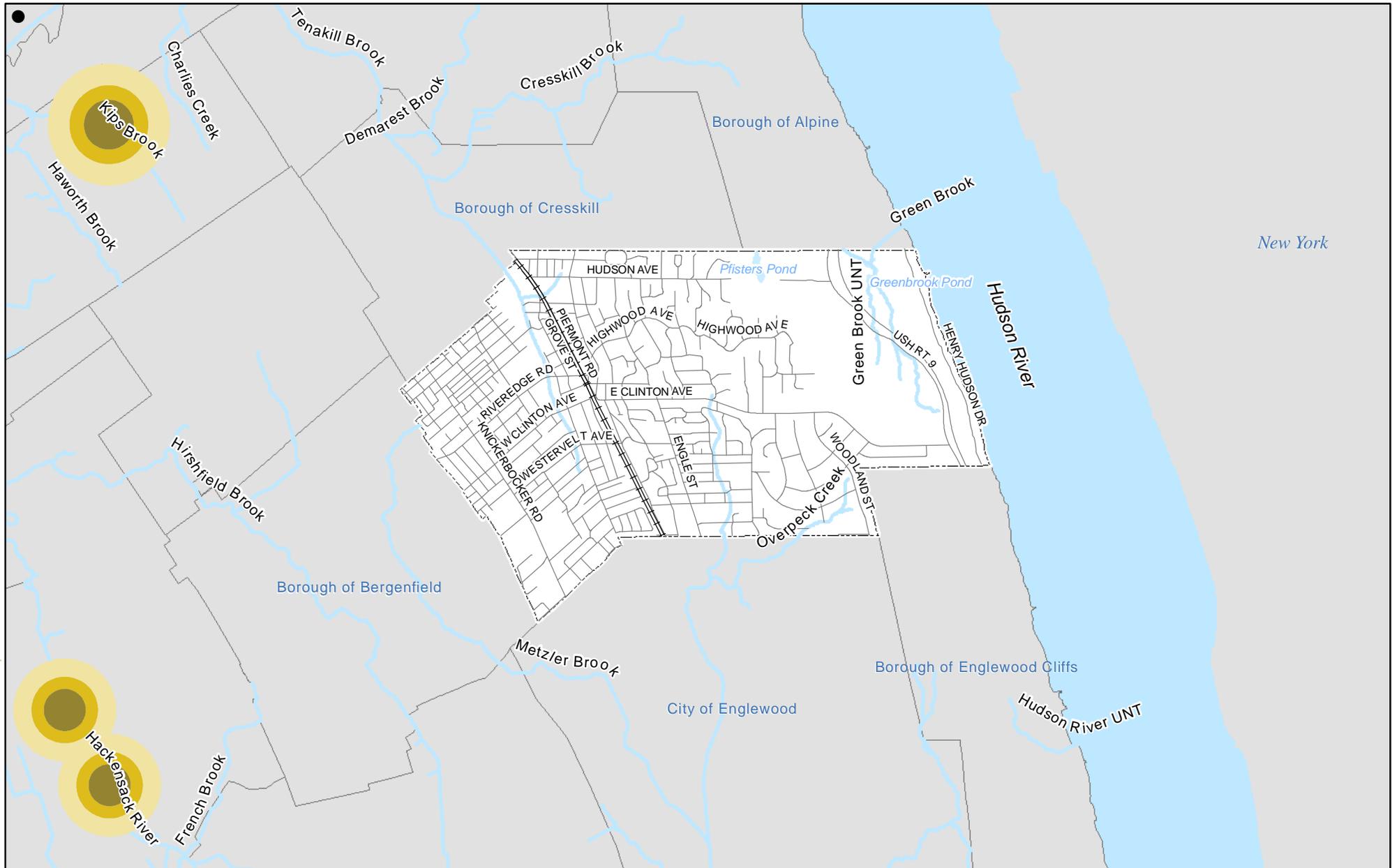
Diabase: With an aquifer rank of “E” and an average yield of less than 25 gallons per minute, is composed of hard and dense igneous rocks. Ground water stored and transmitted in fractures. Few high capacity wells. Water is normally fresh, slightly - highly alkaline, moderately hard and of the calcium-bicarbonate type. This system covers about 38% of the Borough.

Surficial Aquifers

Surficial Aquifers include glacial sediment exceeding 50 ft. thickness in northern New Jersey, and surficial sediment thicker than 50 ft. overlying Piedmont Plain aquifers and confining units.

Aquifer Name	Aquifer Rank	Well yield (gallons /minute)	Area in Acres	Percent Total
Lake-bottom Sediment	E	<25	68.12	32.58%
Sand and Gravel	B	>250 - 500	140.96	67.42%
		Totals	209.08	100.00%





- Borough Boundary
- Streams
- Open Water
- Public Community Water Supply Wells

Public Community WPAs		Public Non-Community WPAs	
TIER		TIER	
	1 (2-year)		1 (2-year)
	2 (5-year)		2 (5-year)
	3 (12-year)		3 (12-year)

Borough of Tenafly
Environmental Resource Inventory
WELLHEAD PROTECTION AREAS

Bergen County
New Jersey

April 2011
1 inch = 4,000 feet

According to the NJDEP, “A Well Head Protection Area (WHPA) in New Jersey is a map area calculated around a Public Community Water Supply (PCWS) well that delineates the horizontal extent of ground water captured by a well pumping at a specific rate over a two, five, and twelve-year tiers for unconfined wells. The tiers are defined as the travel time taken for water to reach the well that the protection area marks, and are classified into 2-year, 5-year and 12-year boundaries demarcated around the well.

Confined wells have a fifty foot radius delineated around each well serving as the wellhead protection area to be controlled by the water purveyor in accordance with Safe Drinking Water Regulations” (see NJAC 7:10-11.7(b) 1). Confined wells are sunk through an impermeable stratum down into an aquifer, which is sandwiched between two impermeable strata. The majority of confined aquifers are classified as artesian because the hydraulic head in a confined well is higher than the level of the top of the aquifer. If the hydraulic head in a confined well is higher than the land surface it is a “flowing” artesian well. Unconfined wells are completed in the uppermost-saturated aquifer at that location

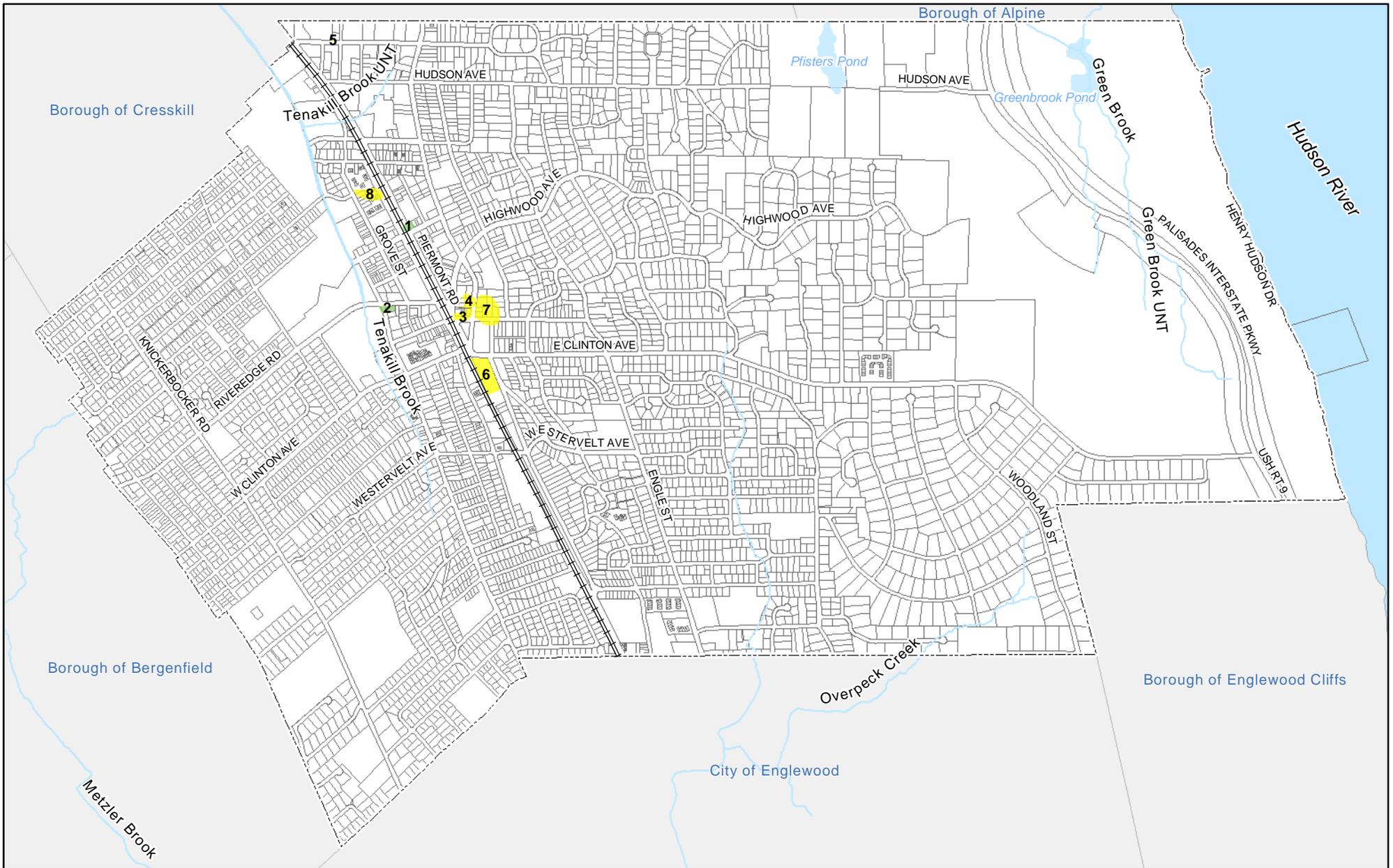
A wellhead protection area (WHPA) is the portion of an aquifer through which groundwater moves to a well. Well Head Protection Area delineations are conducted in response to the Safe Drinking Water Act Amendments of 1986 and 1996 as part of the Source Water Area Protection Program (SWAP). The delineations are the first step in

defining the sources of water to a public supply well. Within these areas, potential contamination will be assessed and appropriate monitoring will be undertaken as subsequent phases of the NJDEP SWAP program.

The Wellhead Protection Areas include the two, five, and twelve-year tiers for public community wellheads and public non-community wellheads. There are no public non-community wellhead protection areas in the Borough. However, the DEP also does not have GIS data currently available for public non-community well locations.

There are no Public Community Water Supply wells in Tenafly Borough (as of 7/31/2006). Tenafly Borough’s nearest public community water supply well is in Harrington Park Borough and owned by United Water of New Jersey.

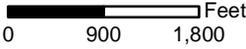




	Borough Boundary	CEA/WRA
	Borough Parcels	LEAD AGENCY
	Streams	BOMM - Bureau of Operation, Maintenance and Monitoring
	Open Water	BUST - Bureau of Underground Storage Tanks

**Borough of Tenafly
Environmental Resource Inventory
CEA & WRA**

Bergen County  April 2011
New Jersey 1 inch = 1,800 feet

The quality of ground water recharged to the water table depends on the presence of Known Contaminated Sites or sites on the Site Remediation Program (SRP) Comprehensive Site List where groundwater contamination has been identified. Such areas, known as Classification Exception Area (CEA) and Well Restriction Areas (WRAs), are institutional controls in geographically defined areas within which the New Jersey Ground Water Quality Standards (NJGWQS) for specific contaminants have been exceeded. The CEA list is compiled by New Jersey Department of Environmental Protection (NJDEP), Site Remediation Program (SRP), Division of Remediation Support (DRS), Information Services Element (ISE), Bureau of Information Services and Program Support (BISPS).

When a CEA is designated for an area, the constituent standards and designated aquifer uses are suspended for the term of the CEA. A public understanding of where groundwater is known to be contaminated can help prevent inappropriate well placement, preventing potential health risks and can minimize unintended contaminant plume migration. There are eight (8) CEAs/WRAs located within Tenafly Borough. There are no Currently Known Extents of Groundwater Contamination (CKEs) within the Borough.



GROUNDWATER CONTAMINATION CLASSIFICATION
EXCEPTION AREAS / WELL RESTRICTION AREAS (CEA/
WRA)

Map ID	KCSL#	Name	Address	Block-Lot	Area in Acres	Depth in Feet	Lead Agency	Contaminants
1	NJX000289231	Getty Service Station #56032	25 Central Ave.	156-26	0.33	18	BOMM - Bureau of Operation, Maintenance and Monitoring	Benzene, Lead (PB)
2	NJL600258909	Super Value Citgo	34 River Edge Rd.	1009-1;1008-1	0.38	50	BOMM - Bureau of Operation, Maintenance and Monitoring	Benzene, t-Butyl Alcohol
3	NJD000693895	Marcos Tenafly Pyramid (Sunoco)	21 County Rd.	1012-3,4,5,6,7	0.59	50	BUST - Bureau of Underground Storage Tanks	Benzene, Tentatively Identified Compounds (TICs), Xylenes and Gasoline
4	NJD986572014	Exxon Service Station #3-2156	29 County Rd.	130-2	0.71	50	BUST - Bureau of Underground Storage Tanks	Benzene, Methyl Tertiary Butyl, t-Butyl Alcohol
5	NJL80031225	Rocco Caruso, Inc.	111 N. Summit St.	1301-4	0.02	18	BUST - Bureau of Underground Storage Tanks	Benzene
6	NJL800364861	Clinton Inn Hotel	145 Dean Dr.	906-1	2.22	50	BUST - Bureau of Underground Storage Tanks	Benzene, Lead (PB), Tentatively Identified Compounds, Toluene, Ethylbenzene, Xylenes
7	NJL800260119	Amoco Service Station #930	20 County Rd.	1701-13	2.62	50	BUST - Bureau of Underground Storage Tanks	Benzene, Methyl Tertiary Butyl, t-Butyl Alcohol, Toluene, Ethylbenzene and Xylenes
8	NJL800473555	Vmi Inc.	80 W. Railroad Ave.	1104-1,1.602,1.604,1.606,1.608,1.610,1.701,1.703,1.705,1.707,1.709,13,14,15	1.12	50	BUST - Bureau of Underground Storage Tanks	Trichlorethylene

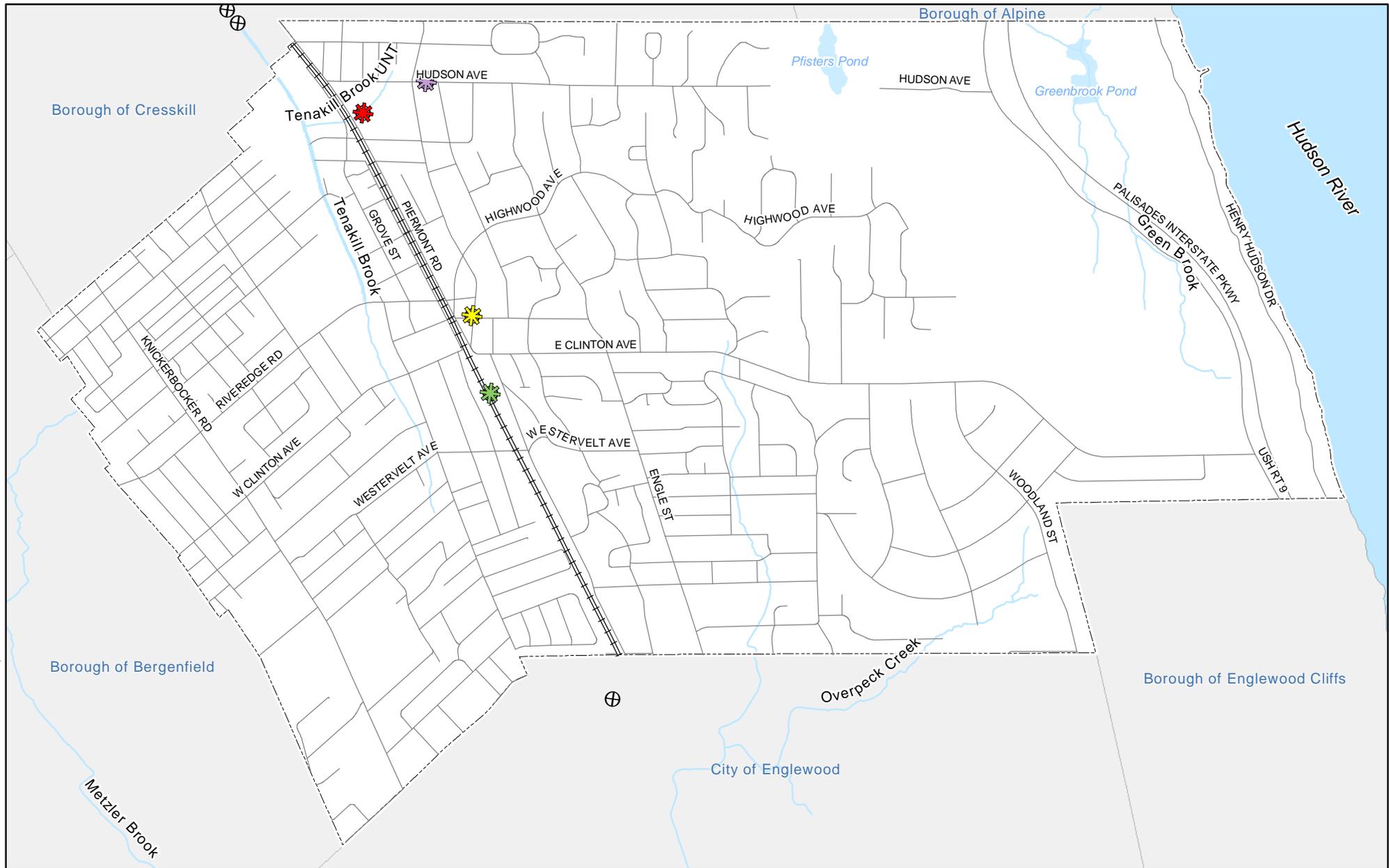
The NJPDES Program protects New Jersey's ground and surface water quality by assuring the proper treatment and discharge of wastewater (and its residuals) and storm water from various types of facilities and activities. To accomplish this, permits are issued limiting the mass and/or concentration of pollutants, which may be discharged into ground water, streams, rivers, and the ocean. The types of regulated facilities can range from very small users such as campgrounds, schools, and shopping centers to larger industrial and municipal wastewater dischargers.

Surface Water Discharge

This regulated activity involves the discharge of treated effluent from various municipal and industrial facilities directly into a river, stream, or the ocean. These facilities operate under the authority of a NJPDES permit that limits the mass and/or concentration of pollutants discharged.

The following table lists the surface water discharge points (compiled from GPS locations, NJPDES databases, and permit applications), the receiving waters, discharge type, type of discharge pipe and permit status of all locations within the Borough of Tenafly:





	Borough Boundary		Surface Water Discharge Outside Municipal Boundary
	Streams	STATUS OF SURFACE WATER DISCHARGE	
	Open Water		1) R - Revoked/Terminated
			2) R - Revoked/Terminated
			3) R - Revoked/Terminated
			4) E - Existing

**Borough of Tenafly
Environmental Resource Inventory**

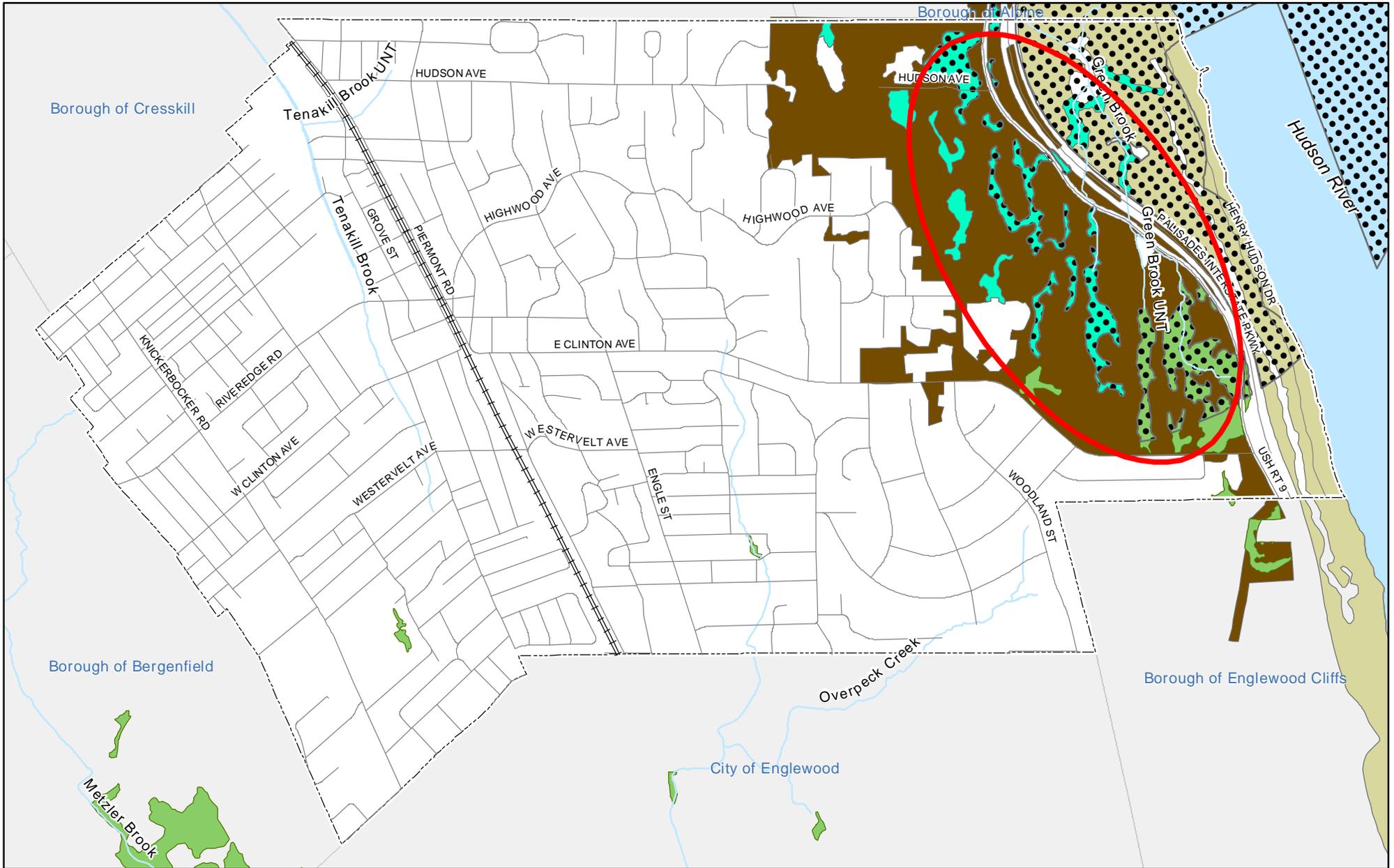
NJPDES

Bergen County April 2011
New Jersey 1 inch = 1,800 feet

Feet

0 900 1,800

Map ID	NJPDES Permit#	Facility name	Receiving Waters	Discharge Type	Pipe Category	Status
1	NJG0105597.001A	Clinton Inn Hotel Ent	Tenakill Brook via unnamed tributary and storm sewer	CG - Non-contact Cooling Water	001A	R- Revoked/Terminated - Pipe no longer permitted for discharge
2	NJ0070297.001A	Sunoco S/S 6-6365	Tenakill Brook via storm sewer	B4B - Petroleum hydrocarbon remediation	001A	R- Revoked/Terminated - Pipe no longer permitted for discharge
3	NJ0072770.001A	Mobil S/S 15-KLE	Tenakill Brook via storm sewer	B4B - Petroleum hydrocarbon remediation	001A	R- Revoked/Terminated - Pipe no longer permitted for discharge
4	NJ0109878.001A	Penetone Corporation	Tenakill Brook via Northern Brook	IMI - Industrial Minor - based on the amount of pollutant(s) in the effluent	001A	E - Existing in the Point Source Permitting Regions



- Borough Boundary
- Streams
- Open Water

Woodturtle

RANK

- 3 - State Threatened

Forested Wetlands

RANK

- 1 - Suitable Habitat
- 3 - State Threatened

Forest

RANK

- 3 - State Threatened
- 4 - State Endangered
- Location of Vernal Pool Habitat

Borough of Tenafly
Environmental Resource Inventory
CRITICAL HABITATS

Bergen County
New Jersey

April 2011
1 inch = 1,800 feet

The NJDEP Endangered and Non-Game Species Program created the Landscape Project as an ecosystem level approach to identifying and protecting species habitat in the state. The program identifies critical habitat areas and ranks them by the presence or absence of priority, threatened or endangered species. The habitat areas are divided into five broad habitat types – grasslands, forested wetlands, forest, emergent wetlands and beach. These five habitat types are then mapped into habitat blocks and the habitat blocks are ranked based on the presence or absence of priority, threatened or endangered species. Specific habitat areas for bald eagle foraging areas, urban peregrine falcon nests, and wood turtles have further augmented the information gathered for the different habitat types.

The Forested Wetlands and Forest habitat types are all part of the Piedmont Plains landscape.

This landscape encompasses all or parts of Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Morris, Passaic, Somerset and Union counties. It is dominated by the Delaware, Hudson, Rahway, Hackensack and Raritan rivers, and is characterized by farmed areas, extensive grasslands, fragmented woodlands and tidal freshwater marshes that are among the most productive in the world. Imperiled species within this landscape include grassland birds such as the endangered upland sandpiper, and woodland raptors such as the barred owl and Cooper’s hawk. The importance of these habitat areas and ranking is to preserve not just specific threatened locations of imperiled species, but also all the critical wildlife areas that must be preserved to protect those species.

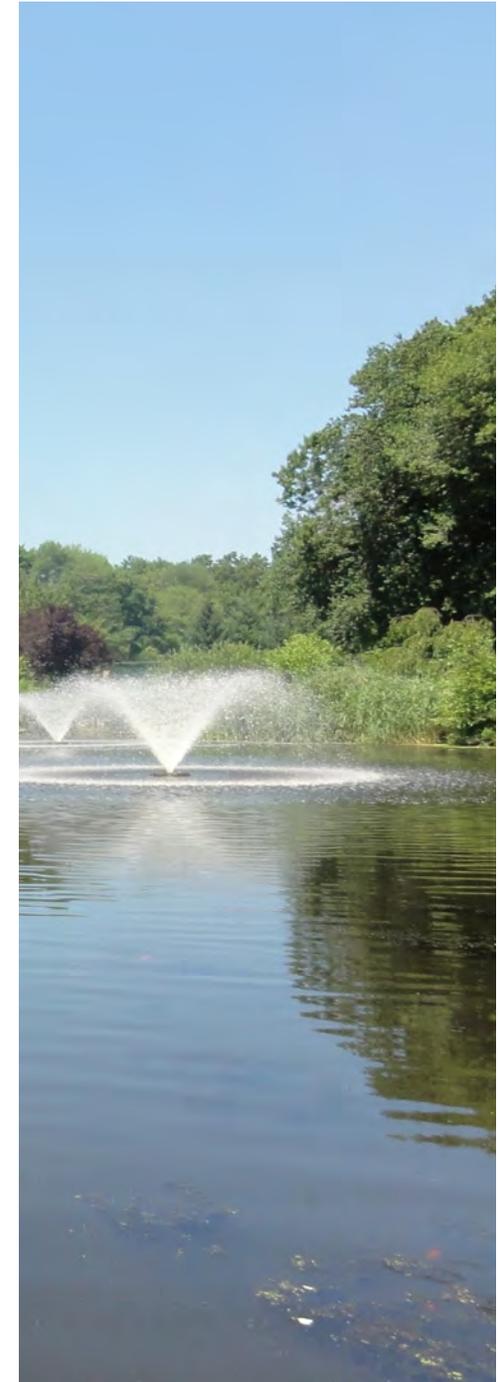
Areas of each type and rank of landscape habitats:

Habitat Type	Suitable Habitat	Priority Habitat	State Threatened Habitat	State Endangered Habitat	Total
Forest	0	0	436	163	599
Forested Wetlands	39	0	57	0	96
Wood Turtle	0	0	206	0	206

Note: area in acres, rounded to nearest whole number. The total areas do not add up to the area of the Borough since many habitat types overlap each other, resulting in one or more types in a particular area.

Forest – The critical area maps for forest dependent species were generated by selecting specific land-use classes from NJDEP’s Land Use/

Land Cover data set, aggregating the various, contiguous habitat patches into single forest habitat patched and then ranking each patch for



the presence or absence of Federal and State priority, threatened or endangered species.

- Forest Coniferous Brush/Shrubland
- Forest Coniferous Forest (>50% Crown Closure)
- Forest Coniferous Forest (10-50% Crown Closure)
- Forest Deciduous Brush/Shrubland
- Forest Deciduous Forest (>50% Crown Closure)
- Forest Deciduous Forest (10-50% Crown Closure)
- Forest Mixed Deciduous/Coniferous Brush/Shrubland
- Forest Mixed Forest (>50% Coniferous With >50% Crown Closure)
- Forest Mixed Forest (>50% Coniferous With 10%-50% Crown Closure)
- Forest Mixed Forest (>50% Deciduous With >50% Crown Closure)
- Forest Mixed Forest (>50% Deciduous With 10-50% Crown Closure)
- Forest Old Field (< 25% Brush Covered)
- Forest Plantation
- Forest Severe Burned Upland Vegetation

Tenafly has only two of the distinct forest habitat patches that either lie entirely within or that cross over into adjacent municipalities that total approximately 599 acres. Of these, 436 acres are state threatened habitat and 163 acres are state endangered habitat. The state threatened habitat is found in large contiguous patches in the eastern side of the Borough, west of the Palisade Parkway. State endangered habitat areas are

located in large patches, east of the Palisade Parkway along its boundary with the Hudson River.

Forested Wetland – The critical area maps for forested wetland dependent species were generated by selecting specific land-use classes from NJDEP’s Land Use/Land Cover data set, aggregating the various, contiguous habitat patches into single forested wetland habitat patched and then ranking each patch for the presence or absence of Federal and State priority, threatened or endangered species.

- Wetlands Atlantic White Cedar Swamp
- Wetlands Coniferous Scrub/Shrub Wetlands
- Wetlands Coniferous Wooded Wetlands
- Wetlands Deciduous Scrub/Shrub Wetlands
- Wetlands Deciduous Wooded Wetlands
- Wetlands Mixed Forested Wetlands (Coniferous Dominant)
- Wetlands Mixed Forested Wetlands (Deciduous Dominant)
- Wetlands Mixed Scrub/Shrub Wetlands (Coniferous Dominant)
- Wetlands Mixed Scrub/Shrub Wetlands (Deciduous Dominant)

Tenafly has all of or portions of 233 distinct forested wetland habitat patches that either lie entirely within or that cross over into adjacent municipalities that total approximately 96 acres. Of these, 39 acres are suitable forested wetland habitat, and 57 acres are state threatened. The suitable habitat is mostly in the Lost Brook Preserve. All patches of the state threatened habitat are north and west of the suitable habitat

– in and around the Tenafly Nature Center and Greenbrook Sanctuary.

Wood Turtle – Critical Areas for wood turtles are designated using a four-step process. First, a 0.2 mile (1,056 ft) buffer is applied to all streams within a one mile radius of each wood turtle sighting. Second, the NJDEP land use/land cover GIS layer is overlaid on the buffered areas. Third, all areas classified as wetlands with the exception of cemetery on wetlands, and saline marshes, are overlaid on the stream buffers. All wetlands that are contiguous with the buffered areas are selected and clipped to only include wetlands within one mile of a sighting. Those wetlands are then merged into the stream buffers. Fourth and last, a staff turtle biologist conducts a detailed inspection and revision of each identified habitat to ensure biological accuracy. The wood turtle model is a stand-alone GIS layer that is not used to value habitat patches.

Tenafly Borough has 206 acres of Wood Turtle area habitats, which includes many small and large habitat patches that cross over into the Hudson River. The habitat patches are located in the northeastern part of the Borough, in and around Lost Brook Preserve, Greenbrook Sanctuary and Tenafly Nature Center. Wood turtle habitats are ranked three, indicating the patches are ranked as state threatened.

Vernal Pools

Vernal pools are confined depressions, either natural or man-made, that maintain ponded water

for part of the year and are devoid of breeding fish populations. These temporary wetlands provide habitat to many species of amphibians—several of which breed exclusively in vernal pools—as well as a multitude of insects, reptiles, plants, and other wildlife. These areas contain very sensitive endangered species.

The approval of the Freshwater Wetlands Protection Act Rules in 2001 specified that vernal habitats would be protected. Any draining, filling, altering of the vernal pool habitats is subject to NJDEP review and standards.

The NJDEP classifies vernal habitats utilizing the following factors:

- Standing water must be present in the pool for at least two continuous months between March and September in a year of normal rainfall.
- Having documented obligate or facultative vernal habitat species such as frogs and salamanders as listed by NJDEP, and be free of fish populations
- Having characteristic obligate species include amphibians such as the mole salamanders, and wood frog, but are equally important to facultative wildlife such as state threatened Wood turtle.

Together with the NJDEP, the Rutgers Center for Remote Sensing and Spatial Analysis have mapped potential and certified vernal pool locations throughout the State. This project has identified twenty vernal pools within the Borough, of which 7 have been certified. The general

locations of these pools are shown on the Critical Habitats Map.

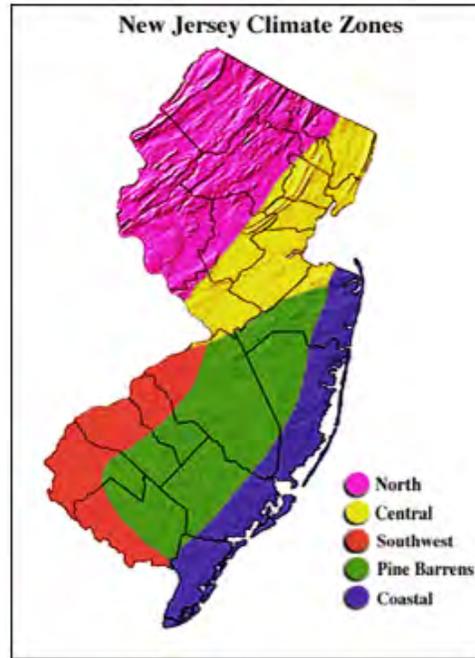
Vernal pools receive the same regulatory buffers as other delineated freshwater wetlands, depending on the determined resource value. The NJDEP Division of Land Use Regulation (LUR) extends an effort to verify that freshwater wetlands permit applications do not infringe on certified vernal pool habitat areas. When a permit application comes in, the LUR will check the location against the list of certified pools. The New Jersey Freshwater Wetlands Protection rules restrict the activities allowed in vernal pools and their regulated transition areas.





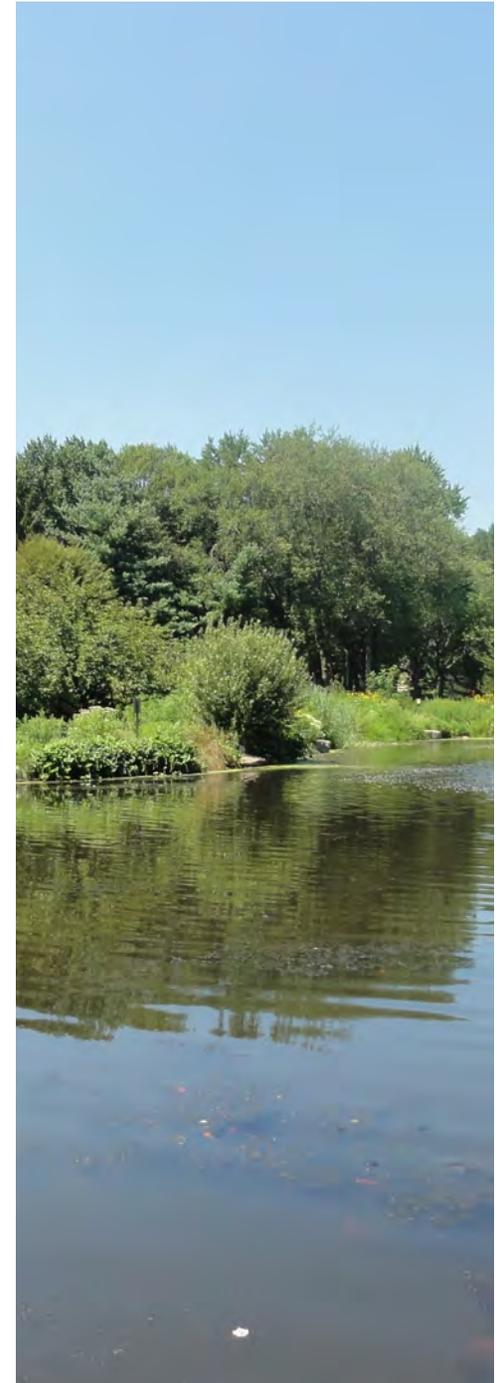
Climate serves as catalysis for the natural environmental conditions of an area and directly impacts habitat and flora and fauna within that habitat. A substantial amount of research regarding climate change and the potential impacts it will have on New Jersey has been completed of recent. The report titled, *NEW JERSEY Assessing the Costs of Climate Change* prepared by the National Conference of State Legislatures and the University of Maryland's Center for Integrative Environmental Research in 2008, suggests that that the annual average temperatures in the state have increased by 4° since 1970 and that parts of New Jersey have seen an increase in precipitation of between 5 percent and 10 percent since major weather events have become more frequent in the Mid-Atlantic region during the last century.

The report also indicated that that the sea levels along the New Jersey coastline have risen at a rate of about 1.5 inches every 10 years during the past 100 years, which is nearly twice the global average. A 2007 report, entitled *Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions*, prepared by the Union of Concerned Scientists, projected that temperatures across most of New Jersey could rise 7°F to 12°F above historic levels in winter and 6°F to 14°F in summer by late century and that the Northeast region as a whole is projected to see an increase in winter precipitation on the order of 20 to 30 percent. Other research by the NPIRG suggest that as ocean temperatures rise causing thermal expansion of water—and ice melts at the poles,



coastal sea levels will rise by 2 to 4 feet during the 21st century.

The New Jersey Office of the State Climatologist at Rutgers University, suggest that climate in the state is changing. Climate changes will certainly impact the future development of the state and should be planned for accordingly. Dr. Robinson, the State Climatologist, indicates that the changes in New Jersey's climate may impact natural flora and fauna, agricultural productivity, fresh-water resources, tourism, transportation business and commerce, and human health and safety. It is important to proactively plan for these changes. Halfway between the Equator and the North Pole, New Jersey experiences high variability in climate patterns as they traverse the continental





U.S. and the Atlantic Ocean. New Jersey's climate is considered "continental" due to the significant difference in seasonal temperatures and fluctuation in daily temperatures. The constant circulation of airflow from west to east across the nation heavily influences the state's weather patterns. Even within the small state of New Jersey observations notice distinctions between climate patterns in the southern coast and the highlands regions. New Jersey encompasses five distinct climate zones: the North, the Central, the Pine Barrens, the Southwest, and the Coastal zones.

Tenaflly is located in Central Zone. The Central Zone has a northeast to southwest orientation, running from New York Harbor and the Lower Hudson River to the great bend of the Delaware River in the vicinity of Trenton. This region has many urban locations with large amounts of pollutants produced by the high volume of automobile traffic and industrial processes. The concentration of buildings and paved surfaces serve to retain more heat, thereby affecting the local temperatures. Because of the asphalt, brick, and concrete, the observed nighttime temperatures in heavily developed parts of the zone are regularly warmer than surrounding suburban and rural areas. This phenomenon is often referred to as a "heat island".

Tenaflly is located along the eastern edge of the Central Zone closer toward the highly urbanized areas in New York. Areas in the southern or eastern portions of the Central Zone tend to have nearly twice as many days with temperatures above 90

degrees F than the 15-20 commonly observed in the central portion of the state.

Tenaflly has a weather station located in the Roosevelt Common. The chart below shows the details of the station.

City	Tenaflly
State	NJ
Alt. name	
County	Bergen
Elevation	25 m
Latitude	40.9147
Longitude	-73.9775
Type	Davis Vantage Pro2
Network	APRSWXNET/CWOP
Data last received	2011-03-21 17:00:08
Activation	
Inactive	2011-03-21

The station recorded that Tenaflly received 15.78 inches of precipitation since the beginning of this year. In 2010 Tenaflly had an average temperature of 55.5 degrees and a total of 33.78 inches of precipitation. This is slightly below the States average in both categories.

Air Quality

The quality of the air is an indicator of the quality of life in an area. There is a correlation between the local dynamics of land uses and the quality of air in close proximity. The quality of air, because of its dynamic nature can really only be assessed at a more regional level. 1970 Clean

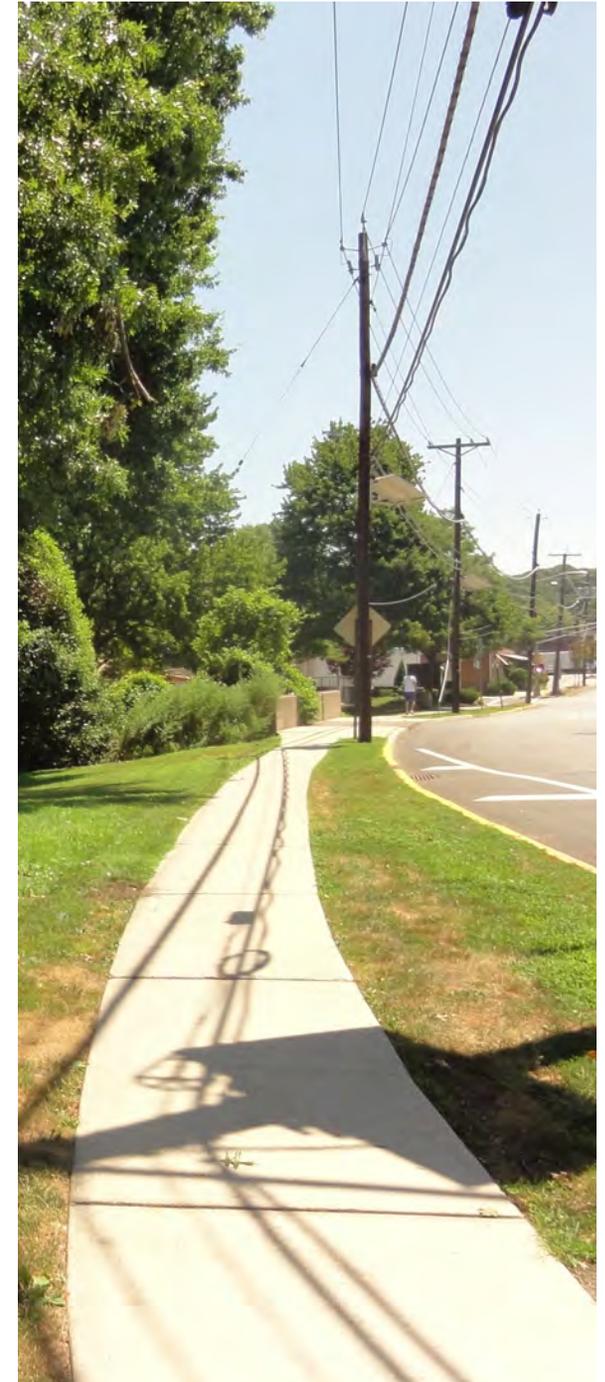
Air Act (CAA) authorized the EPA to regulate air pollutants under the CAA delineated pollutants, particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead, which have common and potentially severe health and environmental implications. The EPA utilizes environmental and human health criterion to determine the acceptable levels of these pollutants which then result in standards that first address human welfare and secondly the environmental impacts.

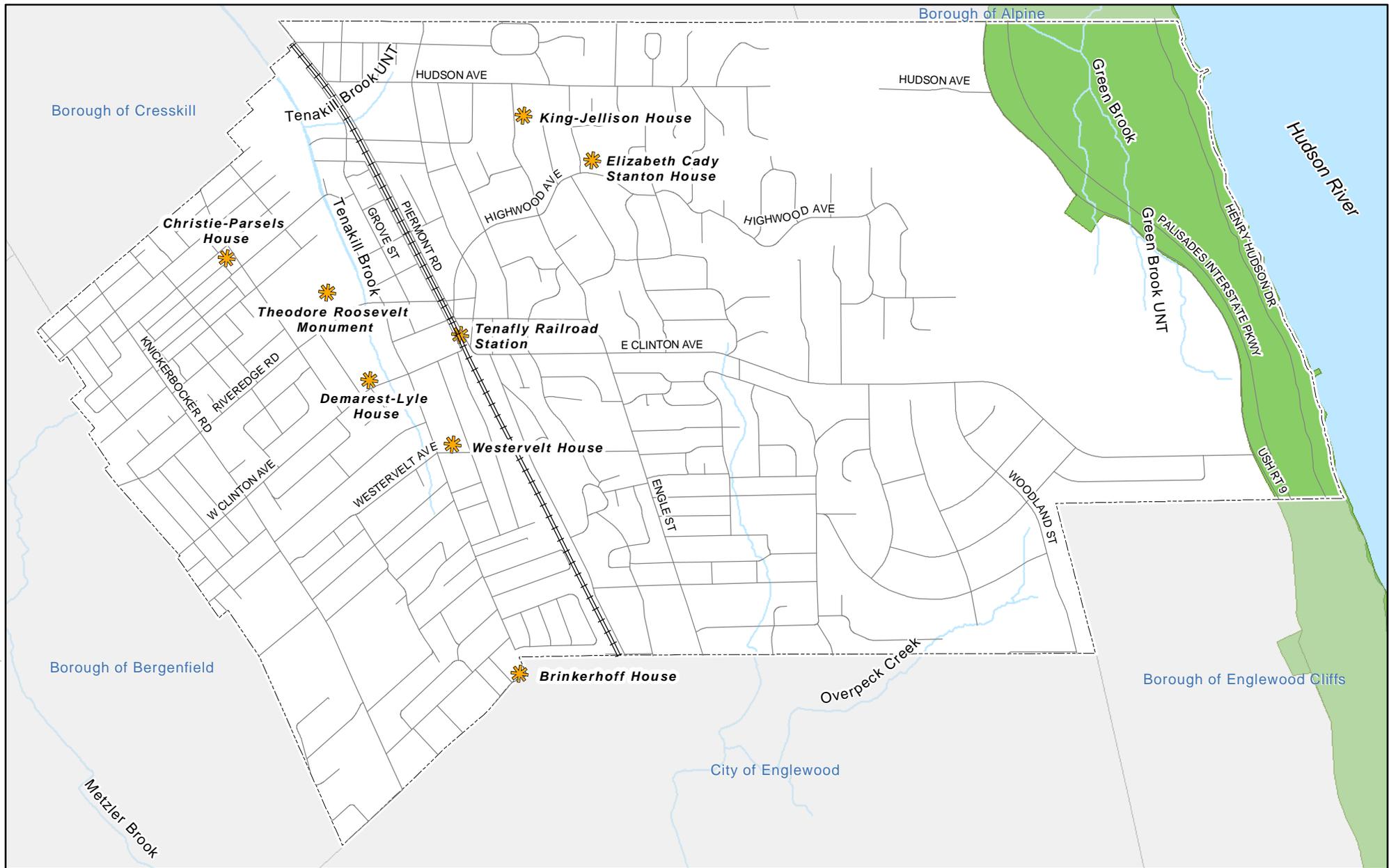
The NJDEP's Bureau of Air Monitoring utilizes the state air quality monitoring to satisfy the CAA, for New Jersey. New Jersey has a network of monitoring stations which monitor various parameters including: carbon monoxide, nitrogen oxides, ozone, sulfur dioxide, smoke shade, particulate matter, and meteorological data. The Bureau Air Monitoring includes and analysis of networks readings in an annual Air Quality Report.

Compared to the majority of other States New Jersey ranks low as far as air quality. According to the American Lung Association's 2011 State of the Air report the majority of New Jersey County's got a grade of F. Air quality in Bergen County is also assessed based upon historical air quality monitoring data available from the NJDEP's air quality monitoring network and has been designated by the EPA as non-attainment area for ground-level ozone. The EPA's Air Quality Index was developed to uniformly assess air quality throughout the Country. AQI is measured by the following parameters:

- Carbon monoxide, nitrogen dioxide, ground level ozone, particulates, and sulfur dioxide are monitored hourly at sites throughout the state
- The levels of each contaminant are rated from 0-500, broken into six ranges to indicate the implications for human health
- Each range is associated with a color to make the information accessible to a broad audience.

New Jersey has nine regions which monitoring the AQI. Bergen County is located within the North Metropolitan or Region 1. In 2009 the AQI ratings for New Jersey included 229 "Good" days, 127 were "Moderate", 9 were rated "Unhealthy for Sensitive Groups", zero were considered "Unhealthy", and zero were rated "Very Unhealthy".



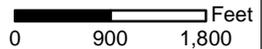


-  Borough Boundary
-  Historic Sites
-  Streams
-  Palisades Parkway Historic District
-  Open Water

Borough of Tenafly
Environmental Resource Inventory
HISTORIC RESOURCES

Bergen County
New Jersey

April 2011
1 inch = 1,800 feet

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

History of Tenafly Borough

(source: Virginia T. Mosley, *Borough Historian*)

Prior to the arrival of Europeans, the Leni Lenape Indians of the Delaware nation hunted and fished on the land west of the Hudson River in an area protected by the Palisades. In the 17th century, land grants were made to the Dutch and French Huguenots. Indians and wild animals challenged the newcomers, but by 1745 settlers had built several houses along Tenafly Road.

During the American Revolution, Bergen County had mixed loyalties. Families and friends were divided in their allegiance and armies from both sides foraged locally for firewood, food and stock. Few records remain between the Revolutionary and the Civil War. Although a majority of citizens did not vote for Abraham Lincoln in 1860, many served in the Union Army.

In 1846 the first public school opened. A County Superintendent was appointed by the State Board of Education in 1866 to supervise the local schools and in 1868 Tenafly elected three trustees to run the district school system.

Tenafly joined with six neighboring villages to form Palisade Borough in 1872 and the first combined school was built on West Clinton Avenue and Tenafly Road, serving 100 pupils in grades one through eight. School terms were determined by planting and harvest times.

Life in Tenafly was rather typical of that in most rural communities – no electricity, no gas nor indoor plumbing. Most families produced their own food. After the Northern Railroad came to Tenafly in 1859, life centered around the water well located near the railroad tracks. In 1872, a new railroad station was built; operations began in 1874 and together with the nearby post office it became a gathering place for socializing. By now citizens had begun commuting to New York by train and ferry across the Hudson River.

By 1880 the village had grown to 1019 inhabitants with stores, mills, a carriage shop, a rubber factory, blacksmith shops, and saloons to serve the populace. Roads had been built to connect Tenafly with nearby Englewood, Cresskill, Bergenfield and elsewhere. Residents and summer visitors became increasingly unhappy that Tenafly was a part of Palisade Borough because they found they were responsible for the school debts of other villages.

On Jan. 24 1894, Tenafly was incorporated as an independent borough with a population of 1532. Much of local activity was centered on the three churches – Presbyterian, established in 1866; Episcopal, in 1869; and Roman Catholic, in 1873. Tenafly Hall was erected for social activities in 1893; here the Mayor and Council held their meetings. Leaders organized a volunteer fire department, a Board of Health and Borough marshalls, Water mains were installed which allowed for indoor plumbing.





Historic Sites and Districts

The historic sites and districts Tenafly Borough on the New Jersey, National and Bergen County Registers are listed below, with the last update from July 2008.

In 1900 electricity came, gas lines followed; telephones appeared in 1909. Trolley cars came shortly thereafter as the population had reached 2,200. Because of the population growth, a new school, the J. Hull Browning School, was built for eight grades in 1904. With the population just under 2,800 in 1910, a new Borough Hall was erected on Washington Street to house the Police Department, the Volunteer Fire Department, and several offices. With the start of World War I, Camp Merrit, an embarkation point, opened its south gate, just north of Hickory Avenue along Knickerbocker Road. The camp extended into Cresskill and Dumont.

With a population of 3,585 in 1920, the town's Board of Education tore down the first school and started to build another elementary school next to the Browning School. Because Englewood stopped accepting any more Tenafly students in its high school, the new building was altered to become the first high school in Tenafly; it accepted pupils from seven other communities. However Tenafly needed another elementary school, thus Ralph S. Maugham School was built on Magnolia Avenue. The Malcolm Mackay family donated land for the Roosevelt Common and Sunnyside Park; sewers were constructed. A Tenafly Taxpayers' Association elected its first candidates to the Council.

As a result of the stock market crash of 1929, many taxpayers were delinquent. In an effort to keep the schools open, teachers contributed part of their salaries to cover expenses. Larger estates had to be broken up. With the opening of the George Washington Bridge, Tenafly became more accessible contribution to growth in the population. Plans to build an elementary school in the southwest quadrant were cancelled but the Malcolm S. Mackay School was built in the northwest sector during 1938 and 1939. It opened for students in 1940.

Trolley cars disappeared in 1937; citizens' protests, however, saved the trains. In 1940 300 out of 7,413 residents jammed a public hearing on a proposal for a dog and cat ordinance. The Borough authorized the collection of trash. During World War II, a Civil Defense Council was set up to fingerprint all residents (including children), to ration gasoline and sugar, and to salvage fat, paper and metals for the war effort. By 1943 there were 600 names on the military Honor Roll, four of whom had been awarded Gold Stars.

Tenafly observed its 50th anniversary in 1944. The League of Women Voters urged construction of a playground; that sparked an interest in recreation and led to the establishment of a Recreation Commission. The Borough acquired part of the Lyle estate for municipal purposes, however the Board of Education refused to buy any land on which to build a new high school.

With the postwar influx, Tenafly's population

reached 9,651 in 1950. Two more elementary schools were required the Walter Stillman School in the southwest and later the J. Spencer Smith School in the southeast. Two Rockefeller tracts a strip along Route 9W rd 10 acres on Hudson Avenue- were given to Tenafly for parkland. Residents lobbied for municipal swimming pools.

In 1952, more that 90 percent of registered voters cast their votes in the general election. The Board of Education appointed a committee to evaluate school needs. As a result, a 1957 referendum passed to construct a new high school on Sunset Lane; it opened in 1958. Tenafly received an anonymous gift (later it was known to come from Charles McCandless) of \$20,000 to build a new library, but building of a library as part of a new municipal center was deferred because of the greater need for the new high school.

Finally in 1960 plans to build the new municipal center including a public library were approved. The Nature Center and two swim clubs were organized. The old Borough Hall on Washington Street was demolished and the old high school converted to the Middle School that also housed the Board of Education. A referendum to build a high school on Knickerbocker Country Club land was defeated in favor of building on Columbus Drive. A year later, in 1969, the Borough celebrated its 75th anniversary.

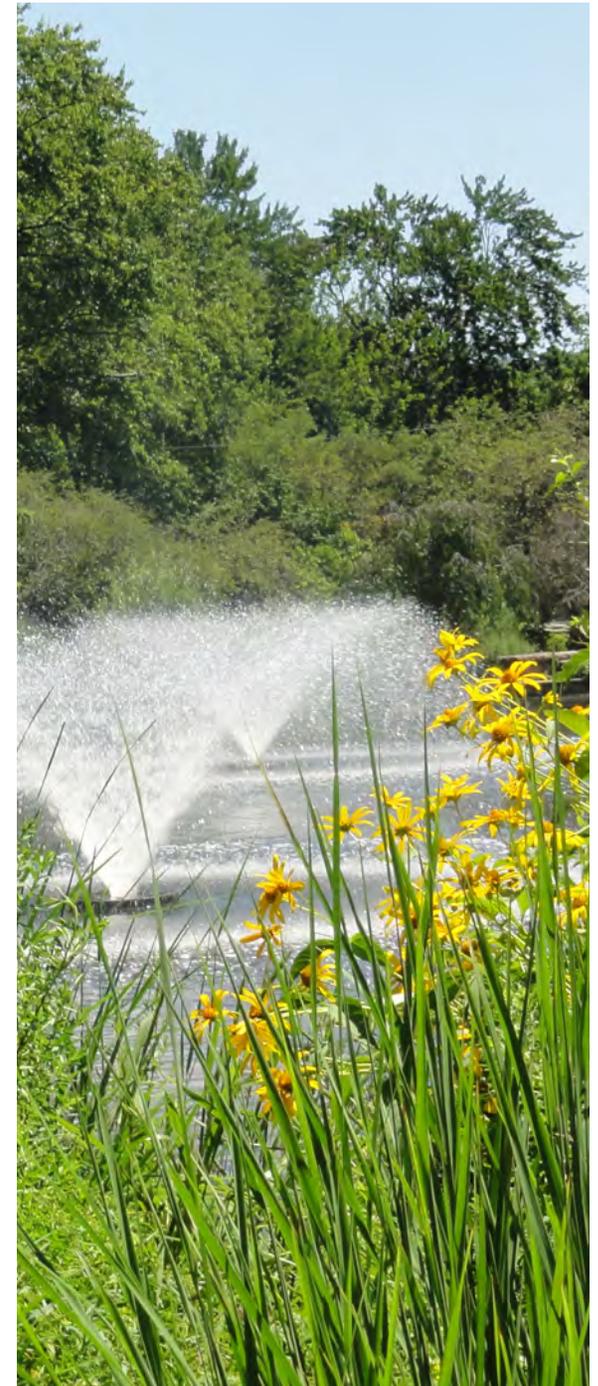
The first woman was elected to the council in the 1970s as the population reached 14,827. A land exchange with Cresskill provided more acreage

for the new high school that opened in 1972. In 1971, after matching funds were raised by the community, a referendum was passed accepting Green Acres funds for the purchase of a large East Hill tract to be kept as open space. The Middle School moved to the old high school quarters on Sunset Lane. Years later the Board of Education and administrative offices were moved to a new building on Tenafly Road, built with revenue-sharing funds.

Rather than demolish the old Browning School building on West Clinton Avenue after the title reverted to the Borough, a developer purchased the facilities to remodel them into apartments. The land for Davis-Johnson Park was given to Tenafly by private bequest. A Senior Citizens' Center was built.

In 1980 the population declined to 13,552. The Jewish Community Center on the Palisades was built and the adjacent Green Acres parkland named Lost Brook Preserve. A plaque honoring Vietnam veterans was placed on Roosevelt Common; later it was moved to Huyler Park. The Elizabeth Cady Stanton House on Highwood Avenue was designated a National Historic Landmark because the first three volumes of the history of the Woman Suffrage Movement were written there.

During the 1990s several large estates were subdivided and their buildings demolished. As a result, wind patterns changed and drainage problems surfaced. (As current examples, two houses were torn down on Serpentine Road and





replaced with eleven new houses and a new street; on Hudson Avenue a plot with a house and barn have been replaced with five new homes.) Small houses have been enlarged or replaced with, in some cases, much larger structures. These changes have exacerbated drainage problems.

In 1997 the Great Atlantic & Pacific Tea Company (A&P) purchases the Penetone Corporation property on Hudson Avenue intending to use it for a modern supermarket after cleaning-up several pockets of toxic material. The Planning Board and the Council turned down the plan. While clean-up continues, the future disposition of the property is unsettled. In 1998 the substantial renovation and additions of the municipal complex began with a \$200,000 bequest to the library from John Wilcox to expand and upgrade the children's section. The project expanded in 2000 with a 1,940 sq. ft. addition to the library resulting from a \$600,000 bequest from the estate of Edna Kawulitzki. Completed in 2001, the Kawulitzki room is now flanked by an audio-visual sector on the north and non-fiction to the south. The Borough Municipal Center renovation including the addition of space for the Volunteer Ambulance Corps and new offices, were constructed. The expansion of the McCandless room was completed in 2001.

During 2000, the refurbishment of the downtown area began. Sidewalks and curbs on Washington Street were replaced with attractive stone facings, more-traditional lighting fixtures were erected, railroad crossings were repaved, and new traffic lights installed. These changes gave the Borough

a welcome face-lift. The rebuilding of Sunnyside Park began that same year causing an uproar as other recreational facilities were overburdened with use. Also that year, with the permission of the Bergen County Executive but not that of the Council, the Orthodox Jewish Community created an ERUV in Tenafly by installing a series of wires hung from utility poles circling the Borough. Public meetings were held and the matter taken to the courts. As this is written, the issue has been appealed to the Third District Court of Appeals after the lower court found it was the Council's responsibility to uphold its 1954 ordinance prohibiting placing anything on utility poles.

In September 2001, the Peace Plaza in front of the entrance to the library was dedicated to the memory of Borough Administrator Robert Miller and his wife Betty who died in the 1998 crash of TWA flight 800 shortly after takeoff from Kennedy Airport. As a result of the September 11, 2001 disaster at the World Trade Center, four citizens of the Borough lost their lives in this tragic event.

In 2001 additions were made to the four elementary schools in town after the town approved a school bond, adding approximately six classrooms to each school. Subsequent additions were made in 2008, creating 42,758 square feet of additional space at the Middle School and 39,215 square feet of new space at the High School, including science labs, classrooms and improved gymnasium space. The Middle School is built on Roosevelt Common land that was originally donated by the

Mackay family and set aside in the 1920s.

After an environmental controversy, the open land at the former Penetone site was turned into four-story condominium buildings.

Historic Districts, Sites and Streetscapes					
Historic Districts on National and State Registries					
District Number	Site	Location	Historic Preservation ID	State/National Eligibility	Additional Notes
D1	Palisades Interstate Parkway Historic District	Palisades Interstate Parkway from Fort Lee, NJ northward to Bear Mountain, NY	102	NR 8/2/1999 (#99000940), SR 1/3/1999	Boundaries of linear historic district extend into New York. For main entry see Fort Lee Borough.
D1	Palisades Interstate park	West bank of Hudson River	490	NR 10/15/1966 (#66000890), SR 5/27/1971	NHL boundaries differ from the Historic District boundaries. See nomination form for additional information. Main entry filed under Fort Lee Borough

Locally Designated Historic Districts		
District Number	Name	Location
D2	Atwood's Highwood Park District*	Davis-Johnson Park; 153 Engle St; 2-4, 7, 8 & 20 Huyler Av; 20 Linden St; 165-203 Serpentine Rd; 166-172 Serpentine Rd; 12 Valley Pl; 4-24 Westervelt Av; 2 E Hill Ct; 3 E Hill Ct
D3	Knickerbocker Rd District*	29-68 Knickerbocker Rd; 40-50 Malcolm Ct
D4	North Brae Court District	North Brae Ct
D5	Old Smith Village District*	Birchwood Pl; Depeyster Av; E Clinton Av; Forest Rd; Mountain Rd; Old Smith Rd
D6	Magnolia Avenue Historic District*	74, 80 Highwood Av; 33, 34, 37, 40, 42, 44, 45, 50, 54, 55, 56, 62, 66, 72, 73, 74, 76, 78 Magnolia Av; 5 Ravine Rd

*Sites considered to be of particular Historic or Architectural Interest

Sites on National and/or State Historical Registries

Map ID	Name	Location	Historic Preservation ID	State/National Eligibility	Additional Notes
1	Brinkerhoff House	1 Tenafly Road	703	SR 10/3/1980	#179 - Thematic Nomination of Early Stone House of Bergen County
2	Christie-Parsels House	195 Jefferson Avenue	704	NR 1/10/1983 (#83001482),	
SR 10/3/1980	#177 - Thematic Nomination of Early Stone House of Bergen County				
3	Demarest-Lyle House	91 West Clinton Avenue	705	NR 1/10/1983 (#83001494),	
SR 10/3/1980	#178 - Thematic Nomination of Early Stone House of Bergen County				
4	King-Jellison House	330 Engle Street	4143	SHPO Opinion 3/31/2003	
5	Theodore Rossevelt Monument	Roosevelt Common	76	NR 9/20/2006 (#06000870),	
SR 8/3/2006,					
COE 6/9/1997					
6	Elizabeth Cady Stanton House	135 Highwood Avenue	706	NR 5/15/1975 (#75001122),	
SR 5/15/1975					
7	Tenafly Railroad Station	Hillside Avenue	707	NR 1/15/1979 (#79001476),	
SR 11/27/1978					
8	Westervelt House	81 Westervelt Avenue	708	NR 8/15/1983 (#83001586),	
SR 10/3/1980	#176 - Thematic Nomination of Early Stone House of Bergen County				

*Sites considered to be of particular Historic or Architectural Interest

Locally Designated Historic Districts

Map ID	Name	Location	Additional Notes
9	Herbert Coppell Estate (Cotswold)*	1 Byrne Ln - 118 Inness Rd., rear yard of 40 Inness rd, and gate at junction of Inness rd and Engle Street	
10	Everett - Dunn House*	20 Forest Rd and 41 Depeyster av	
11	Sisson House A*	89 Highwood av	
12	Sisson House B*	93 Highwood av	
13	Anthony House*	177 Hudson Av	
14	"Hilltop" William Laimbeer, Jr. Estate*	North side of Hudson Av west of Route 9W	
15	George O. & Emma B. Muhlfield House	500 highview Rd, 2 Illingworth Av	Partly in Englewood
16	Ernest G. Ranges House*	153-183 Knickerbocker Rd	Knickerbocker Country Club Golfhouse
17	Knickerbocker Country Club*	188 Knickerbocker Road	
18	Sickles-Melbourne House*	48 Knoll Rd	
19	Presbyterian Manse*	50 Magnolia Av	
20	Frekerick B Colver House*	54 Magnolia Av	
21	Banta-Durie House*	132 Tenaflly Rd	
22	Cottage of J. Hull Browing Estate*	178 Thatcher Rd	
23	J. Hull Browing School-Tenaflly High School*	27 W Clinton Av	also called the Browing House
24	Carriage House of General Thomas L. James Estate*	23 Bliss Av	on property of society of African Missions
25	Alfred Anrold House*	27 Brook Rd	
26	63 County Road	63 County rd	
27	Valley Hotel*	87 County Rd	Charlie Brown's
28	65 E. Clinton Ave.	65 E Clinton Av	
29	2 Engle Street	2 Engle St	
30	33 Engle Street	33 Engle St	
31	Louis Stair, Jr. House	11 Engle St	
32	185 Engle St.*	185 Engle St, NW corner E Clinton Av	
33	Herman D. Hensel House	259 Engle St	
34	Bentley House	315 Engle St	
35	Henry W. Redfield House	25 Grandview Terr	
36	Chruch of the Atonement (Episcopal)*	NW corner Highwood Av and Engle st	

37	40 Hillside Ave.*	40 Hillside Av, Opposite magnolia Av	
38	"Montamoris"	119 Hudson Av, Opposite Prospect Terr	A.T.V. Brennan Sr., House
39	P.M. Meade House*	158 Hudson Av	
40	Tenaflly Hall	10 Jay St, SE corner Highwood Av	
41	Ralph Brinkerhoff House*	NW corner Ivy Ln	
42	"Cobble Crest"	465 Knickerbocker Rd	
43	Joseph J. Strachan House	11 Knoll Rd	
44	Henry Collins House	35 Knoll Rd	
45	Presbyterian Chapel at Tenaflly*	55 Magnolia Av	
46	MeLeod-Coddington House	6 Marcotte Ln	
47	21 Oak Ave.	21 Oak Ln	
48	Barn (converted to house)*	19 Peter Lynas Ct	
49	John H. Demott House	51 Tenaflly rd, NW corner of Oak Av	
50	Chase House	198 Tenaflly Rd, 13 Tenaflly Ct	
51	J.P. Westervelt House	265 Tenaflly Rd	
52	John Westervelt House*	289 Tenaflly Rd, NW corner Norman Pl	
53	Frothingham House	306 Tenaflly Rd	
54	Tenaflly Methodist Church	34 W Clinton Av	
55	The J. and R. Lamb Studios Building	46 W Clinton Av	
56	Demarest-Buckley House*	253 W Clinton Av	
57	J. Westervelt House*	103 Westervelt Av	

*Sites considered to be of particular Historic or Architectural Interest

Locally Recognized Streetscapes or Historical or Architectural Interest		
Map ID	Name	Location
A	Hillside Av Streetscape*	Both Sides of Hillside Av East of Serpentine Rd/Ravine Rd through 86 Hillside on South side and through 75 Hillside on North side.
B	Knickerbocker Road Streetscape*	511, 529, 533 & 539 Knickerbocker rd
C	Park St Streetscape*	Both sides of Park St between Forest Rd and Highwood Av

*Sites considered to be of particular Historic or Architectural Interest

Descriptions of Historic Districts, Sites and Streetscapes

There are currently 3 fully designated landmark districts: the Atwood's Highwood Park Historic District, the Magnolia Avenue Historic District, and the Tenafly portion of the Palisades Interstate Park, in addition to some fully designated individual properties, and noteworthy locations.

Historic Districts

- The Atwood's Highwood Park Historic District includes: Serpentine Road between Westervelt Avenue and East Clinton Avenue, Valley Place, Linden Street, Huyler Avenue, Westervelt Avenue between Huyler Avenue and Engle Street, Engle Street between Westervelt Avenue and Lawrence Parkway, and the eastern portion of Lawrence Parkway adjacent to the Davis-Johnson Park Annex.
- The Magnolia Avenue District includes: Magnolia Avenue between Hillside and Highwood Avenues, Hillside Avenue between Magnolia Avenue and the southern portion of Ravine Road on which the 3 properties closest to Hillside Avenue abut.
- The Palisades Interstate Park Historic District includes: the portion of Rte. 9W (Sylvan Avenue) in Tenafly, the portion of the Greenbrook Sanctuary in Tenafly and the portion of the road below it running along the cliffs in Tenafly.

Fully Landmarked Buildings

- Fully designated landmark buildings include: the Tenafly Railroad Station abutting West Railroad Avenue between West Clinton Avenue and Washington Street, Hillside Avenue between Washington Street and County Road, and County Road between Hillside Avenue and the merger of East Clinton and West Clinton Avenues.
- Also fully landmarked is 81 Westervelt Avenue abutting the portion of Westervelt Avenue between Tenafly Road and George Street, and the intersection of Westervelt Avenue with Tenafly Road.
- Also fully landmarked is 195 Jefferson Avenue abutting the intersection of Jefferson Avenue and Newcomb Road.
- Also fully landmarked is 48 Knoll Road abutting the portion of Knoll Road comprising the southern half of an oval.
- Also fully landmarked is 91 West Clinton Avenue abutting the portion of West Clinton Avenue between Foster Road and Tenafly Road, and Cameron Road.
- Also fully landmarked is 177 Hudson Avenue abutting the portion of Hudson Avenue between Knoll Road and Peter Lynas Court.
- Also fully landmarked is 330 Engle Street abutting the portion of Engle Street between Highwood Avenue and Hudson Avenue.
- Also fully landmarked is 60 Elm Street

abutting the portion of Elm Street between Engle Street and Serpentine Road.

- Also fully landmarked is 1 Byrne Lane abutting Byrne Lane, the portion of Inness Road facing its property, and the portion of Serpentine Road facing its property.
- Also fully landmarked are the gates at the junction of Inness Road and Engle Street.
- Also fully landmarked is 135 Highwood Avenue abutting the intersection of Highwood Avenue and the northern and southern portions of Park Street.

Pending Landmark Designation

- Already processed for landmark designation is 170 Thatcher Road abutting the portion of Thatcher Road between Briarcliff Road and Stonehurst Drive, and the portion of Stonehurst Drive between Lawrence Parkway and Edgewood Street.
- All of the above properties were identified in the Bergen County Historic Sites Survey of 1982-1983, except for 60 Elm Street which was fully designated by ordinance upon the study and recommendation of an architectural-historian.

Historically Significant Areas/Potential Landmarks

There are also various districts and properties which were identified in the aforementioned



survey and may in the future be fully designated including, among others: West Railroad Avenue between West Clinton Avenue and Washington Street; the portion of Knickerbocker Road between Erledon Road and Ivy Lane, plus Malcolm Court; the portion of Knickerbocker Road between Buff and Newcomb Roads; the Old Smith Village District comprising Old Smith Road, Birchwood Place, Forest Road, Mountain Road, DePeyster Avenue, and East Clinton Avenue between DePeyster Avenue and Old Smith Road; Hillside Avenue between Magnolia Avenue and Engle Street; 46 Park Street abutting the portion of Park Street between Highwood Avenue and Forest Road; the intersection of West Clinton Avenue and Engle Street; 89 and 93 Highwood Avenue; the portion of Hudson Avenue between Rte. 9W and Stanton Road; North Brae Court; Surrey Lane; 20 Forest Road and 41 DePeyster Avenue; 1 Tenafly Road; 87 County Road; 11 and 35 Knoll Road; 19 Peter Lynas Court; 6 Marcotte Lane; and 51 Tenafly Road.

Parks and recreation facilities play a central role in maintaining a Borough's quality of life and contribute to a community's reputation as a desirable place to live and work. Such facilities provide an essential counterbalance for fully developed municipalities, providing residents with recreational opportunities, open space, social outlets and a refuge from the urban environment. Well-designed parks and recreation facilities also have the potential to function as a public common where residents may gather for civic and recreational purposes.

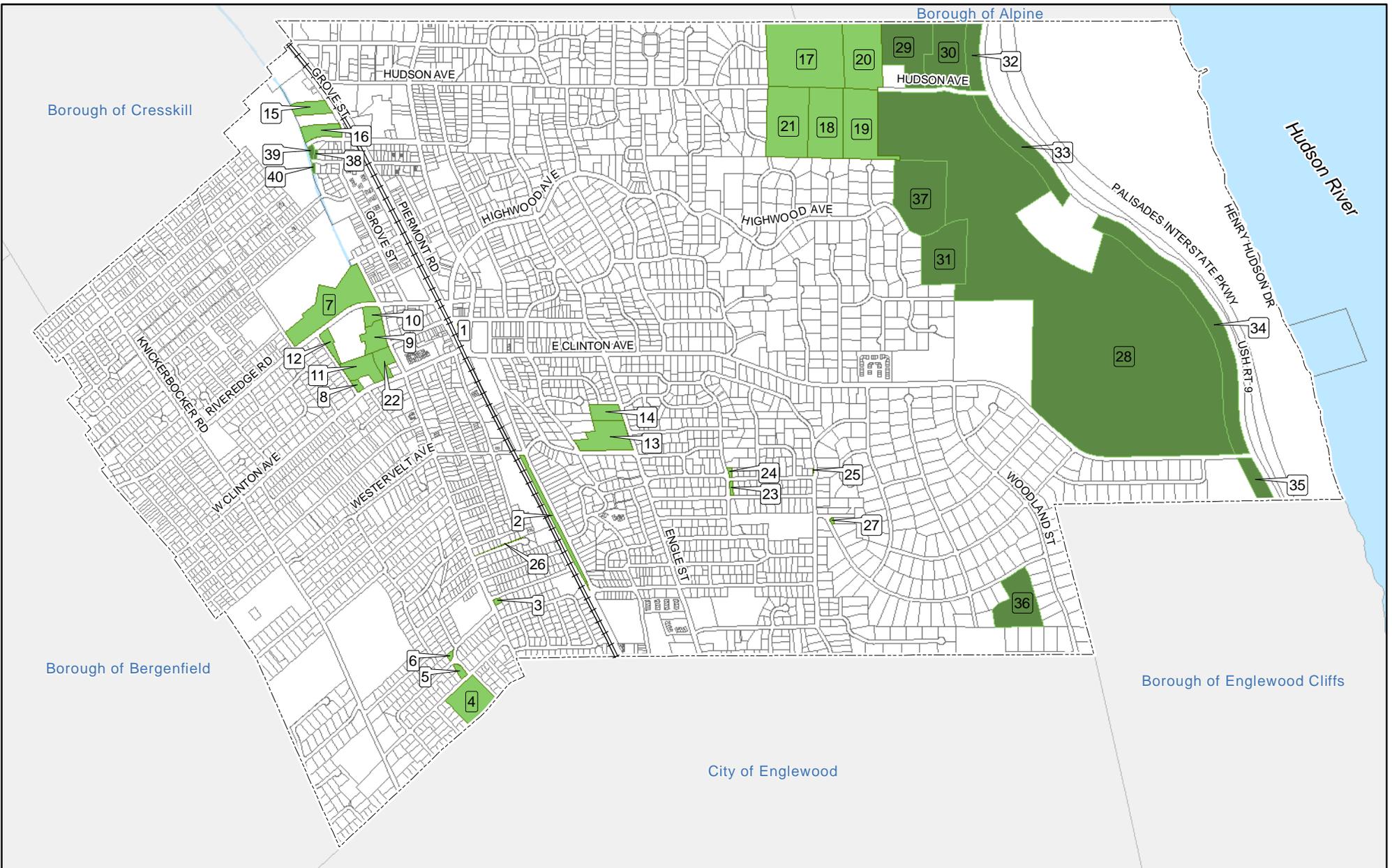
There are countless types of open space. Everyone has their own notion of what open space is and often times, many seemingly different types of open space occupy the same site. But open space generally falls into three categories that play individual roles within a community: active recreation (soccer fields, football fields, baseball and softball diamonds, running tracts, tennis courts, basketball courts, exercise trails, etc.); passive recreation (hiking trails, picnic areas, quiet places, etc.) and natural resources protection (forest lands, wetlands, floodplains, steep slopes, stream corridors, etc.).

Green Acres Program - Recreation and Open Space Inventory (ROSI)

The Green Acres Program is a state-run program acting under NJDEP. With the help of public and private partners, Green Acres has protected almost 640,000 acres of open space and recreation areas throughout the State. The program's mission is "To achieve, in partnership

with others, a system of interconnected open spaces, whose protection will preserve and enhance New Jersey's natural environment and its historic, scenic, and recreational resources for public use and enjoyment." With the help of the Green Acres Program, as of March 2011 the Borough of Tenafly has preserved approximately 413 acres of open space, passive and active recreational areas, and environmentally sensitive areas. Below is a list of all the parcels that are preserved under the Green Acres Program.





-  Borough Boundary
-  Tenafly Parcels

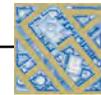
ROSI Parcels

-  Developed and Partially Developed Lands held for Recreation and Conservation Purposes
-  Wholly Undeveloped Lands Held for Recreation and Conservation Purposes

Source: NJDEP, NJGS, NJDOT and Borough of Tenafly

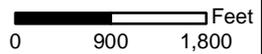
Borough of Tenafly
Environmental Resource Inventory
OPEN SPACE INVENTORY

Bergen County
 New Jersey



April 2011

1 inch = 1,800 feet



Map ID	Block	Lot	Location	Name	Funded	Acreage
Developed and Partially Developed Lands held for Recreation and Conservation Purposes						
1	1013	1	Piermont Road	Huyler Park	Unfunded	0.42
2	811	1	Dean Drive	Dean Park	Unfunded	2.07
3	704	1	Walnut Drive	Walnut Park	Unfunded	0.19
4	607	8	Oak Avenue	Sunnyside Park	Unfunded	5.41
5	604	12	Oak Avenue	Tenakill Park	Unfunded	0.41
6	603	28	Windsor Road	Tenakill Park	Unfunded	0.18
7	1102	23	Riveredge Road	Roosevelt Common	Unfunded	10.45
8	1008	1	West Clinton Avenue	Froggy Park	Unfunded	0.41
9	1008	1	Tenaflly Road	Municipal Oval	Unfunded	2.40
10	1008	1	Tenaflly Road	Basketball Courts	Unfunded	1.21
11	1008	1	Riveredge Road	Municipal Fields	Unfunded	2.69
12	1008	1	Riveredge Road	Foster Road Green Buffer	Unfunded	1.24
13	1804	14	Engle Street	Davis-Johnson Park	Unfunded	5.32
14	1804	13	Engle Street	D-J Park Annex	Funded	2.02
15	1210	5	Grove Street	Tenakill Swim Club	Unfunded	1.96
16	1210	7	Grove Street	Tenaflly Swim Club	Unfunded	2.00
17	2603	17	Hudson Avenue	Tenaflly Nature Center	Unfunded	20.87
18	2701	1	Hudson Avenue	Tenaflly Nature Center	Unfunded	10.18
19	2701	2	Hudson Avenue	Tenaflly Nature Center	Unfunded	10.44
20	2701	3	Hudson Avenue	Tenaflly Nature Center	Unfunded	10.64
21	2606	5	Hudson Avenue	Tenaflly Nature Center	Unfunded	12.22
22	1008	2	Tenaflly Road	Tenaflly Senior Housing	Unfunded	1.82
23	2201	1	Thatcher Rd/Howard Park Dr	Brook Spillway	Unfunded	0.19
24	2301	18	Thatcher Rd/Howard Park Dr	Brook Spillway	Unfunded	0.14
25	2302	11	Leroy St/Howark Park Dr	Strip along Leroy St	Unfunded	0.02
26	810	18	Roberts Court	Strip along North Side	Unfunded	0.13
27	2203	19	Victoria Ln/Churchill Rd	Brook Spillway	Unfunded	0.09
	Total	105.12				

Map ID	Block	Lot	Location	Name	Funded	Acreage
Wholly Undeveloped Lands Held for Recreation and Conservation Purposes						
28	2702	1	Hudson Avenue/9W	Lost Brook Preserve	Funded	218.61
29	2701	5	Hudson Avenue/9W	Lost Brook Preserve	Funded	10.66
30	2701	6	Hudson Avenue/9W	Lost Brook Preserve	Funded	10.52
31	2806	1	Hudson Avenue/9W	Lost Brook Preserve	Funded	10.84
32	2701	7	Strip Along Rte 9W	Tenaflly Preserve	Unfunded	4.21
33	2702	2	Strip Along Rte 9W	Tenaflly Preserve	Unfunded	8.03
34	3301	1	Strip Along Rte 9W	Tenaflly Preserve	Unfunded	19.04
35	3302	2	Strip Along Rte 9W	Tenaflly Preserve	Unfunded	2.90
36	3102	4	Churchill Road	Churchill Nature Preserve	Unfunded	8.40
37	2802	5	Highwood Avenue	East Hill Playground	Funded	14.76
38	1211	6	Mahan Street	Tenakill Floodway	Unfunded	0.16
39	1211	7	Mahan Street	Tenakill Floodway	Unfunded	0.30
40	1214	1	Mahan Street	Tenakill Floodway	Unfunded	0.15
	Total	308.57				
	Gross Total	413.69				

Existing Parks, Recreation And Open Space

To fully understand the nature of parks and open space in Tenaflly Borough, it is important to inventory the 424 acres of existing park, recreation and open space facilities in the Borough (424 acres includes preserved and non-preserved open space). The following is a list of existing open space from the 2008 Open Space and Recreation Plan.

Existing Parks, Recreation and Open-Space

- a. Palisades Interstate Park (Greenbrook Sanctuary)
- b. Lost Brook Preserve
- c. Tenaflly Nature Center

- d. Churchill Nature Preserve
- e. Davis-Johnson Park & Gardens
- f. Huyler Park
- g. Dean Park
- h. Walnut Park
- i. Tenakill Park
- j. Sunnyside Park
- k. Swim Clubs
- l. Municipal Center Athletic Fields & Basketball Courts
- m. Roosevelt Common
- n. Neighborhood Parks & Playgrounds
- o. East Hill Playground

Existing Board Of Education Recreational Facilities

- a. Tenaflly High School
- b. Tenaflly Middle School
- c. Stillman School
- d. Smith School
- e. Mackay School
- f. Maugham School

Current Facilities

Planned Facility Improvements

The Borough has strove to improve both Tenaflly's recreation facilities as well as its offerings. In recent years

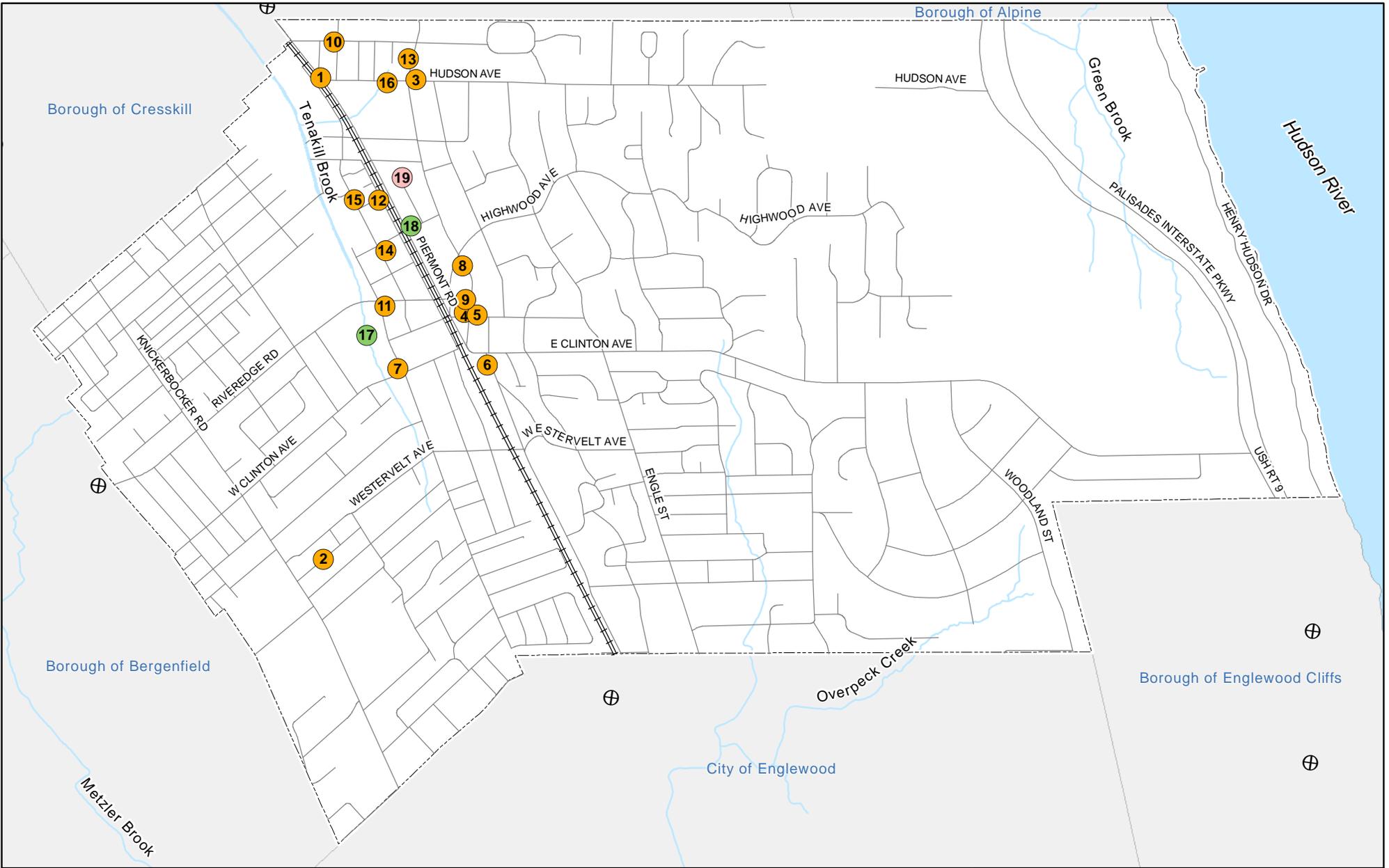
In 1995 the Recreation Department sought to

further improve the range of Borough recreational activities, increasing offerings for the physically and mentally challenged. Out of the recognition that the Borough needed to provide more specialized recreational activities, several “buddy ball” youth sports including baseball, bowling, soccer, hockey, basketball, and swimming. Building on the success of “buddy ball” adult special recreation leagues for softball, volleyball and basketball were formed.

The Recreation Department and the Borough have sought to improve the selection of age-specific recreation offerings. To this end, the Borough has added the variety of adult recreational leagues, including the Tenafly Borough Softball League, which is among the largest in the state, using six fields and a computerized scheduling system. The recent improvements to Roosevelt Common are also endemic of the Borough’s focus on creating activity opportunities for residents of all ages. T add to the diversity of recreational opportunities a new skate board park was built at Roosevelt Common replacing two of the existing tennis courts. To this end, the Borough has added the variety of adult recreational leagues, including the Tenafly Borough Softball League, which is among the largest in the state, using six fields and a computerized scheduling system. The recent improvements to Roosevelt Common are also endemic of the Borough’s focus on creating activity opportunities for residents of all ages. The new Stake board park at Roosevelt Common replaced the existing two tennis courts.

To build on improvements in the recent past, the Borough has identified prospective projects to improve the quality of the parks and recreation facilities in Tenafly. Many of these proposed improvements are in a similar vein to the past focus on improving the usability of parks for all age groups. The Borough is currently working with the Board of Education to create a “Boundless Playground.” Such a facility would be a completely ADA compliant playground. The Borough is also working to add a pocket park adjacent to the Tenafly Community Center. The additional parkland would both serve to meet the stated concern about a lack of outdoor recreation space connected to the Community Center in addition to providing additional space to assist the Borough’s Summer Day Camp held at the Community Center.





Known Contaminated Sites

STATUS

- Active
- NFA-A (Limited Restricted Use)
- NFA-A (Restricted Use)

- ⊗ Known Contaminates Site Beyond Municipal Boundary selection
- Borough Boundary
- Streams
- Open Water

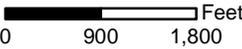
Source: NJDEP, NJGS, NJDOT, Landscape Project and Borough of Tenafly

Borough of Tenafly
Environmental Resource Inventory
KNOWN CONTAMINATED SITES

Bergen County
New Jersey

April 2011
1 inch = 1,800 feet





A brownfield is defined under NJ state law (N.J.S.A. 58:10B-23.d) as "any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant." While this is the definition recognized in state legislation, there are many variations on this definition. Generally, brownfields are properties that are abandoned or underutilized because of either real or perceived contamination.

Brownfields can be a mixed blessing. At best, they are an opportunity to turn blighted areas into community assets with much of the cost coming from state funds for brownfields' reclamation. At worst, they are contaminated sites without sponsors that hamper efforts for redevelopment, especially for any land use such as housing, schools or parks that would lead to human contact with the contaminants.

The NJDEP Site Remediation Program has an excellent website with information on brownfields (<http://www.state.NJ.us/dep/srp/brownfields/>).

The NJDEP oversees some 23,000 contaminated sites. An estimated 10,000 of these are potential brownfield sites. Many more potential brownfields that may exist in the State are not yet before the Department for review. The NJDEP Known Contaminated Site List for 2009 listed 19 contaminated sites in Tenafly Borough. Following the statewide estimate, those 19 sites could produce about 8 to 9 brownfield sites appropriate

for redevelopment or recreation development in Tenafly Borough.

NJDEP launched the "Brownfields to Greenfields" initiative in November 2002. That initiative encourages the restoration of Brownfield sites into recreational or natural areas. If a municipality, county or partnership wants to turn a Brownfield into a Greenfield; experienced NJDEP case managers can oversee remediation and revitalization efforts to help the locality comply with the Technical Requirements for Site Remediation. Assurance that the public is protected from any exposure is a key concern addressed by long-term monitoring and maintenance of engineering and institutional controls when required. Funding for remediation and acquisition may be available from other parts of NJDEP, such as the Green Acres Program.

The NJDEP works with the NJ Economic Development Authority (EDA) in the implementation of the Hazardous Discharge Site Remediation Fund (HDSRF). The legislature created the HDSRF in 1993 to provide loans and grants to municipal governmental entities, the New Jersey Redevelopment Authority (NJRA), and private parties. HDSRF funding is devoted to remediating discharges of hazardous substances. Over the past ten years, the HDSRF provided over \$100,000,000 for remediation of over 1,000 sites. Municipalities may apply for grants and loans of up to \$2 million per year for investigation and cleanup activities from the Hazardous Discharge Site Remediation Fund.





The New Jersey EDA plays a key role in financing these grants and loans, working with DEP to cover eligible costs and provide loan servicing. Grants are specifically provided to municipalities for a preliminary assessment (PA) and site investigation (SI) when a municipality holds the tax sales certificate or has foreclosed or has voluntarily acquired a property for redevelopment. Municipalities may obtain money to proceed with the remedial investigation (RI) if they own the property. (If, after conducting the PA/SI/RI, a municipality wants to conduct the cleanup, low interest loans are available).

Tenafly Borough could benefit from this program by identifying contaminated sites, notifying NJDEP case managers and coming up with a plan for remediation. Often, sites can be cleaned and capped, and new surfacing for recreation areas can effectively “seal” the area. Recreation uses are also desirable for brownfields because one of the main concerns over re-use of sites is exposure. Recreation uses are almost by definition short-term exposures, a couple of hours at most for any activity, whereas residential development on re-use sites is more problematic due to prolonged exposure times on remediated sites.

United States Environmental Protection Agency (USEPA) Contaminated Sites Inventory

The EPA uses a wide variety of data to support environmental analysis and decision making. In Region 2 (New York, New Jersey, Puerto Rico and the United States Virgin Islands), GIS staff have worked closely with other organizations at the local, state and federal levels to share or jointly develop critical data sets for environmental analysis.

The Environmental Protection Agency (EPA) is responsible for environmental oversight over a variety of industrial activities under many federal statutes including the Clean Air Act (CAA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and Emergency Planning and Community Right-to-Know Act (EPCRA). These facility layers include the best available locations from EPA's Envirofacts, EPA's Facility Registry System (FRS), other EPA data systems, or enhanced points determined by EPA Region 2 staff.

- Aerometric Information Retrieval System/ AIRS Facility Subsystem (AIRS/AFS) Permits in EPA Region 2 (Clean Air Act)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Facilities in EPA Region 2 (Comprehensive Environmental Response, Compensation, and Liability Act)
- CERCLIS National Priority List (NPL) sites in EPA Region 2

- Permit Compliance System (PCS) Pipes in EPA Region 2 (Clean Water Act)
- Permit Compliance System (PCS) Facilities in EPA Region 2
- Resource Conservation and Recovery Act (RCRA) Permits in EPA Region 2: All Facilities
- RCRA Permits in EPA Region 2: Hazardous Waste Generators
- RCRA Permits in EPA Region 2: Hazardous Waste Transporters
- RCRA Permits in EPA Region 2: Treatment, Storage and/or Disposal Facilities
- Toxic Release Inventory (TRI) Reporting in EPA Region 2 (Emergency Planning and Community Right-to-Know Act)
- EPA Region 2 Surrounding Six States Regulated Facility GIS Information layer: All facilities

New Jersey DEP Known Contaminated Sites List 2009 (KCS-NJ)

The KCS-NJ report is a list of sites where contamination of soil and/or ground water is confirmed at levels greater than applicable cleanup criteria or environmental standards. The data included in the KCS-NJ report are as of December 11, 2009. The KCS-NJ report is produced by the New Jersey Department of Environmental Protection (NJDEP) Site Remediation and Waste Management Program (SRWM) in response to state law N.J.S.A. 58:10-23.16-17, which requires the SRWM to prepare a list of sites that have been contaminated by hazardous





substances. The report also satisfies obligations under the New Jersey New Residential Construction Off-Site Conditions Disclosure Act (N.J.S.A 46:3C1 et seq.).

Sites included in the KCS-NJ report can undergo a wide variety of remedial activities, ranging from relatively simple "cut and scrape" cleanups to highly complex cleanups. The sites with complex contamination issues can have several sources of contamination, which can affect both soil and ground water at the same time. Several groups or remedial bureaus within the Site Remediation and Waste Management (SRWM) Program manage these cleanups. It is possible for more than one bureau to be involved at one site at the same time. A site being regulated under more than one statute or regulation often drives this scenario. However, this report lists only the main contact bureau for the site. The link available within this web site, titled "What Contact Bureaus Do," explains what types of sites each bureau manages and lists phone numbers for each bureau. Or, go to the section in the ERI titled Directory of Lead Agencies. For further information contact NJDEP's Site Remediation and Waste Management (SRWM) Program lead units, which are identified with each site listed in this database. Contact information for SRWM's lead program can be acquired at <http://www.state.NJ.us/dep/srp>. Cases range in classification from B (single media contaminated, usually soils, and no ground water contamination) to D (multiple media contaminated, including ground water, with significant complexity and potential off-site contamination).

Additionally, there are several status definitions. They are: Active - This status is designated when a contaminated site is assigned to a remedial program and remediation such as a preliminary assessment, site investigation, remedial investigation or remedial action activities are underway. Limited Restricted Use - Any remedial action for soil that requires the continued use of institutional controls but does not require the use of an engineering control in order to meet the established health risk or environmental standards. (N.J.A.C. 7:26E -1.8) NFA-A - An acronym for a no further action letter, which was issued after January 1, 1997 and covers only an area of concern at the site. NFA-E - An acronym for a no further action letter, which was issued after January 1, 1997 and covers the entire site. Restricted Use - Any remedial action for soil that requires the continued use of engineering and institutional controls in order to meet the established health risk or environmental standards. (N.J.A.C. 7:26E -1.8) Unrestricted Use - Any remedial action for soil that does not require the continued use of either engineering or institutional controls to meet the established health risk or environmental standards.

Known Contaminated Sites Table, 2009 - Tenafly Borough

Map ID	PI Number	PI Name	Address	Lead Agency	Status	Remediation Level
Category A: Sites with On-Site Sources of Contamination						
1	33351	125 PIERMONT ROAD LLC	125 PIERMONT RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
2	G000044432	59 BURLINGTON ROAD	59 BURLINGTON RD	CEHA	Active	C1: No Formal Design - Source Known or Identified-Potential GW Contamination
3	6299	LUKOIL #57319	268 COUNTY RD	BOMM	Active	C2: Formal Design - Known Source or Release with GW Contamination
4	12304	MARCOS TENAFLY SERVICE STATION I	21 COUNTY RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
5	892	NISSANS AMOCO SERVICE	20 COUNTY RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
6	32072	CLINTON INN HOTEL	145 DEAN DR	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
7	7200	MOBIL STATION 15LE6	343 TENAFLY RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
8	8565	SEOUL AUTO SERVICE - FORMER	71 COUNTY RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
9	8009	EXXON R/S 32156	29 COUNTY RD	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
10	14147	HILLCORP INC	111 N SUMMIT ST	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
11	11325	SUPER VALUE SERVICE STATION	34 RIVEREDGE RD	BOMM	Active	C2: Formal Design - Known Source or Release with GW Contamination
12	2767	GROVE STREET @ TENAFLY LLC	80 W RAILROAD AVE	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
13	26222	COUNTY RD SERVICE CENTER	269 COUNTY RD	BUST	Active	C1: No Formal Design - Source Known or Identified-Potential GW Contamination
14	2635	C&E SERVICE STATION INC	36 CENTRAL AVE	BUST	Active	C2: Formal Design - Known Source or Release with GW Contamination
15	223924	HARRY C FICHTER TRUST	100 GROVE ST	BFO-N	Active	C1: No Formal Design - Source Known or Identified-Potential GW Contamination
16	9704	PENETONE CORP	74 HUDSON AVE	BISR	Active	D: Multi-Phased RA - Multiple Source/Release to Multi-Media Including GW

Category C: Closed Sites with Restrictions						
17	10602	MUNICIPAL CENTER	401 TENAFLY RD	BUST	NFA-A (Limited Restricted Use)	C2: Formal Design - Known Source or Release with GW Contamination
18	1656	56032 GETTY PETROLEUM CORP	25 CENTRAL AVE	BOMM	NFA-A (Limited Restricted Use)	C2: Formal Design - Known Source or Release with GW Contamination
19	280361	BEUCLER TREE EXPERT COMPANY INC	48 HAROLD ST	BUST	NFA-A (Restricted Use)	C1: No Formal Design - Source Known or Identified-Potential GW Contamination

Directory of Lead Agencies

Bureau of Industrial Site Remediation (BISR) oversees primarily active contaminated “Industrial Site Recovery Act” (ISRA) cases until a No Further Action (NFA) or a Remedial Action Workplan (RAW) is approved and oversees the implementation of approved RAW’s. BISR is located within the Responsible Party Remediation Element.

Bureau of Southern Case Management (BSCM – formerly BUST) primarily oversees environmental cleanups at sites subject to the Underground Storage of Hazardous Substances Act where remediation may involve soil and/or ground water. Sites under this program are also subject to the state's Brownfield and Contaminated Site Remediation Act, the Spill Compensation and Control Act, the Solid Waste Management Act and the Water Pollution Control Act.

Bureau of Operation, Maintenance & Monitoring (BOMM) oversees the long-term operations and maintenance of remedial actions such as ground water pump and treatment systems. BOMM also reviews biennial certification reports to ensure institutional controls, such as a Deed Notice and Classification Exception Area, remain effective.

Bureau of Field Operations – Northern (BFO-N) is responsible for overseeing the remediation of sites located in counties of southern New Jersey, including Middlesex. The types of cleanups handled by BFO-N are considered moderate in remedial complexity, ranging from the remediation of a single source of contamination to several sources. The cleanup may include ground water contamination. Remediation are conducted, by responsible parties, under the state's Brownfield and Contaminated Site Remediation Act, the Spill

Compensation and Control Act, the Solid Waste Management Act, the Water Pollution Control Act, the Industrial Site Recovery Act and the Underground Storage of Hazardous Substances Act.

County Environmental Health Agency (CEHA) NJDEP has authorized certain county health departments to oversee remedial activities that involve residential home heating oil tanks that have not impacted ground water. However, No Further Action letters are still issued by the Department. The participating counties are Bergen, Camden and Hudson, but not Middlesex. In addition, all 21 counties are approved to receive certain low environmental concern cases for review and possible investigation when appropriate.









State of New Jersey

CHRIS CHRISTIE
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Parks and Forestry

Office of Natural Lands Management

Natural Heritage Program

P. O. Box 404

Trenton, NJ 08625-0404

Tel. #609-984-1339

Fax. #609-984-1427

BOB MARTIN
Commissioner

KIM GUADAGNO
Lt. Governor

Ryan P. Conklin, P.P., A.I.C.P.
Heyer, Gruel & Associates
236 Broad Street
Red Bank, NJ 07701

May 16, 2010

Re: Tenafly Borough ERI

Dear Mr. Conklin:

Thank you for your data request regarding rare species information for Tenafly Borough, Bergen County.

We have checked the Natural Heritage Database and the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat in Tenafly Borough. Please see Table 1 for species list and conservation status.

Table 1 (on referenced site).

Common Name	Scientific Name	Federal Status	State Status	Grank	Strank
Allegheny woodrat	<i>Neotoma magister</i>		E	G3G4	S1
bald eagle	<i>Haliaeetus leucocephalus</i>		E	G4	S1B,S1N
Cooper's hawk	<i>Accipiter cooperi</i>		T/S	G5	S2B,S4N
eastern box turtle	<i>Terrapene carolina carolina</i>		SC	G5T5	S3
northern copperhead snake	<i>Agkistrodon contortrix contortrix</i>		SC	G5T5	S3
red-headed woodpecker	<i>Melanerpes erythrocephalus</i>		T/T	G5	S2B,S2N
red-shouldered hawk	<i>Buteo lineatus</i>		E/T	G5	S1B,S2N
shortnose sturgeon	<i>Acipenser brevirostrum</i>	LE	E	G3	S1
wood turtle	<i>Glyptemys insculpta</i>		T	G4	S2

We have also checked the Natural Heritage Database for occurrences of rare plant species or ecological communities. The Natural Heritage Database has a record for an occurrence of *Silene caroliniana* var. *pensylvanica* that may be in Tenafly Borough. The attached list provides more information about this occurrence.

A list of rare plant species and ecological communities that have been documented from Bergen County can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html>. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2008.pdf.

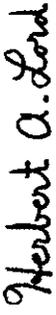
In order to red flag the general locations of occurrences of rare and endangered plant species and ecological communities, we have prepared computer generated Natural Heritage Index Maps. Enclosed please find the map for the Yonkers USGS quadrangle. If individual projects are to be located in the areas of the map that contain letter codes, the Natural Heritage Program can be contacted for additional information.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive I-Map-NJ website at the following URL, <http://www.state.nj.us/dep/gis/dep splash.htm> or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292 9400.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,



Herbert A. Lord
Data Request Specialist

cc: Robert J. Cartica
NHP File No. 11-4007388-7299

May 16, 2011

Page: 1

Tenafly Borough
Rare Plant Species and Ecological Communities Presently Recorded in
the New Jersey Natural Heritage Database

Scientific Name	Common Name	Federal Status	State Status	Regional Status	G Rank	S Rank	Last Observed	Ident
Vascular Plant <i>Silene caroliniana var. pennsylvanica</i>	Wild-pink			HL	G5T4T5	S3	199 - -	Y

1 Records Selected

NATURAL HERITAGE GRID MAPS

The Natural Heritage Database documents rare species and natural community habitat to inform decision-makers who need to address the conservation of natural resources. Requests can be made for custom searches of the Natural Heritage Database to identify species and natural communities documented to occur in localized areas. Because illegal collection and vandalism threaten many rare species, release of sensitive information is restricted to limited areas and interested parties.

The Natural Heritage Grid Map is produced using geographic information system (GIS) software to provide a general portrayal of the locations of rare plant species and natural communities for the entire state without providing sensitive detailed information. It does not contain data for animal species. By consulting the map, users can do broad scale analysis of potentially sensitive areas, and learn of specific areas where a custom search of the Natural Heritage Database is needed for land use decision-making. A custom search can then be initiated by submitting a Natural Heritage Data Request Form for the specific parcels in question.

The Natural Heritage Grid Map uses a computer-generated grid that divides each USGS 1:24,000 scale topographic map into 100 cells, each cell being between 358 and 372 acres in size. If a rare plant species or natural community has been documented from anywhere within a cell, the entire cell will be coded as containing an occurrence of a rare plant species/natural community. To use these maps, locate the area of interest on the USGS topographic quadrangle base map. Determine if the cells in this area contain a letter code. There are three possible codes:

- S – The location of an occurrence of a rare plant species or natural community is precisely known and falls somewhere within the cell.
- M – The location of the rare plant species or natural community occurrence is not precisely known; the documented location is only known to within 1.5 miles.
- B – Both precisely known (S) and less precise (M) occurrences for rare plant species or natural communities are found within the same cell.

This map is not a complete record of rare and endangered species habitat for this area. **It does not contain data for animal species.** It reflects data on known occurrences compiled as of the date printed in the lower right corner of each map. It includes both historically and recently documented habitat. Uncoded cells may also contain unsurveyed habitat that is occupied by imperiled plant species and natural communities. This product will be updated on a periodic basis. For more information, contact the Office of Natural Lands Management, PO Box 404, Trenton, NJ 08625.

The Natural Heritage Grid Map is available as an ArcView GIS shape file. The zipped version of the file is under 1 MB in size, and will be sent as an email attachment. Contact the Office of Natural Lands Management to obtain a copy of the file via email.



NJ Department of Environmental Protection
Division of Parks and Forestry

Natural Lands Management

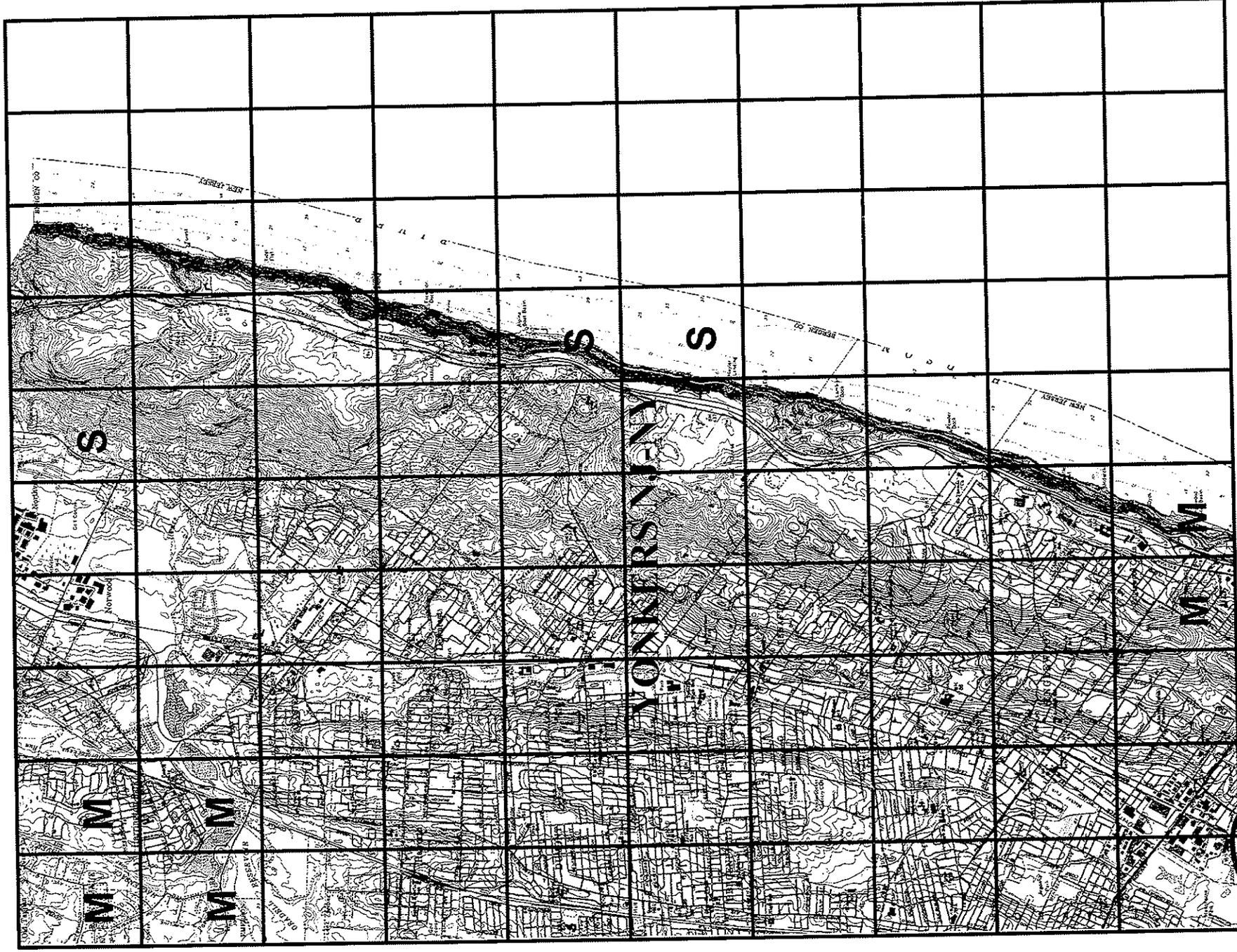
Natural Heritage Grid Map

Rare Plant Species and Natural Communities

S - Documented Location
Known Precisely

M - Documented Location
Known Within 1.5 Miles

B - Both 'M' and 'S'
occurrences



EXPLANATIONS OF CODES USED IN NATURAL HERITAGE REPORTS

FEDERAL STATUS CODES

The following U.S. Fish and Wildlife Service categories and their definitions of endangered and threatened plants and animals have been modified from the U.S. Fish and Wildlife Service (F.R. Vol. 50 No. 188; Vol. 61, No. 40; F.R. 50 CFR Part 17). Federal Status codes reported for species follow the most recent listing.

LE Taxa formally listed as endangered.

LT Taxa formally listed as threatened.

PE Taxa already proposed to be formally listed as endangered.

PT Taxa already proposed to be formally listed as threatened.

C Candidate taxa for which the Service currently has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.

S/A Similarity of appearance species.

STATE STATUS CODES

Two animal lists provide state status codes after the Endangered and Nongame Species Conservation Act of 1973 (NSSA 23:2A-13 et. seq.): the list of endangered species (N.J.A.C. 7:25-4.13) and the list defining status of indigenous, nongame wildlife species of New Jersey (N.J.A.C. 7:25-4.17(a)). The status of animal species is determined by the Nongame and Endangered Species Program (ENSP). The state status codes and definitions provided reflect the most recent lists that were revised in the New Jersey Register, Monday, June 3, 1991.

D Declining species--a species which has exhibited a continued decline in population numbers over the years.

E Endangered species--an endangered species is one whose prospects for survival within the state are in immediate danger due to one or many factors -- a loss of habitat, over exploitation, predation, competition, disease. An endangered species requires immediate assistance or extinction will probably follow.

EX Extirpated species--a species that formerly occurred in New Jersey, but is not now known to exist within the state.

I Introduced species--a species not native to New Jersey that could not have established itself here without the assistance of man.

INC Increasing species--a species whose population has exhibited a significant increase, beyond the normal range of its life cycle, over a long term period.

T Threatened species--a species that may become endangered if conditions surrounding the species begin to or continue to deteriorate.

P Peripheral species--a species whose occurrence in New Jersey is at the extreme edge of its present natural range.

S Stable species--a species whose population is not undergoing any long-term increase/decrease within its natural cycle.

U Undetermined species--a species about which there is not enough information available to determine the status.

Status for animals separated by a slash(/) indicate a dual status. First status refers to the state breeding population, and the second status refers to the migratory or winter population.

SC Special Concern – applies to animal species that warrant special attention because of some evidence of decline, inherent vulnerability to environmental deterioration, or habitat modification that would result in their becoming a Threatened species. This category would also be applied to species that meet the foregoing criteria and for which there is little understanding of their current population status in the state.

Plant taxa listed as endangered are from New Jersey's official Endangered Plant Species List N.J.S.A. 131B-15.151 et seq.

E Native New Jersey plant species whose survival in the State or nation is in jeopardy.

REGIONAL STATUS CODES FOR PLANTS AND ECOLOGICAL COMMUNITIES

LP Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction. Not all species currently tracked by the Pinelands Commission are tracked by the Natural Heritage Program. A complete list of endangered and threatened Pineland species is included in the New Jersey Pinelands Comprehensive Management Plan.

HL Indicates taxa or ecological communities protected by the Highlands Water Protection and Planning Act within the jurisdiction of the Highlands Preservation Area.

EXPLANATION OF GLOBAL AND STATE ELEMENT RANKS

The Nature Conservancy developed a ranking system for use in identifying elements (rare species and ecological communities) of natural diversity most endangered with extinction. Each element is ranked according to its global, national, and state (or subnational in other countries) rarity. These ranks are used to prioritize conservation work so that the most endangered elements receive attention first. Definitions for element ranks are after The Nature Conservancy (1982: Chapter 4, 4.1-1 through 4.4.1.3-3).

GLOBAL ELEMENT RANKS

G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; with the number of occurrences in the range of 21 to 100.

G4 Apparently secure globally; although it may be quite rare in parts of its range, especially at the periphery.

G5 Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.

GH Of historical occurrence throughout its range i.e., formerly part of the established biota, with the expectation that it may be rediscovered.

GU Possibly in peril range-wide but status uncertain; more information needed.

GX Believed to be extinct throughout range (e.g., passenger pigeon) with virtually no likelihood that it will be rediscovered.

G? Species has not yet been ranked.

GNR Species has not yet been ranked.

STATE ELEMENT RANKS

- S1** Critically imperiled in New Jersey because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres). Elements so ranked are often restricted to very specialized conditions or habitats and/or restricted to an extremely small geographical area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor of its biology, they have been demonstrably reduced in abundance. In essence, these are elements for which, even with intensive searching, sizable additional occurrences are unlikely to be discovered.
- S2** Imperiled in New Jersey because of rarity (6 to 20 occurrences). Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.
- S3** Rare in state with 21 to 100 occurrences (plant species and ecological communities in this category have only 21 to 50 occurrences). Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.
- S4** Apparently secure in state, with many occurrences.
- S5** Demonstrably secure in state and essentially ineradicable under present conditions.
- SA** Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded; examples include European strays or western birds on the East Coast and vice-versa.
- SE** Elements that are clearly exotic in New Jersey including those taxa not native to North America (introduced taxa) or taxa deliberately or accidentally introduced into the State from other parts of North America (adventive taxa). Taxa ranked SE are not a conservation priority (viable introduced occurrences of G1 or G2 elements may be exceptions).
- SH** Elements of historical occurrence in New Jersey. Despite some searching of historical occurrences and/or potential habitat, no extant occurrences are known. Since not all of the historical occurrences have been field surveyed, and unsearched potential habitat remains, historically ranked taxa are considered possibly extant, and remain a conservation priority for continued field work with the expectation they may be rediscovered.
- SP** Element has potential to occur in New Jersey, but no occurrences have been reported.
- SR** Elements reported from New Jersey, but without persuasive documentation which would provide a basis for either accepting or rejecting the report. In some instances documentation may exist, but as of yet, its source or location has not been determined.
- SRF** Elements erroneously reported from New Jersey, but this error persists in the literature.
- SU** Elements believed to be in peril but the degree of rarity uncertain. Also included are rare taxa of uncertain taxonomical standing. More information is needed to resolve rank.
- SX** Elements that have been determined or are presumed to be extirpated from New Jersey. All historical occurrences have been searched and a reasonable search of potential habitat has been completed. Extirpated taxa are not a current conservation priority.

- SXC** Elements presumed extirpated from New Jersey, but native populations collected from the wild exist in cultivation.
- SZ** Not of practical conservation concern in New Jersey, because there are no definable occurrences, although the taxon is native and appears regularly in the state. An SZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped and protected. In other words, the migrant regularly passes through the state, but enduring, mappable element occurrences cannot be defined.
- Typically, the SZ rank applies to a non-breeding population (N) in the state – for example, birds on migration. An SZ rank may in a few instances also apply to a breeding population (B), for example certain lepidoptera which regularly die out every year with no significant return migration.
- Although the SZ rank typically applies to migrants, it should not be used indiscriminately. Just because a species is on migration does not mean it receives an SZ rank. SZ will only apply when the migrants occur in an irregular, transitory and dispersed manner.
- B** Refers to the breeding population of the element in the state.
- N** Refers to the non-breeding population of the element in the state.
- T** Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species. For example *Stachys palustris* var. *homotricha* is ranked "G5T? SH" meaning the full species is globally secure but the global rarity of the var. *homotricha* has not been determined; in New Jersey the variety is ranked historic.
- Q** Elements containing a "Q" in the global portion of its rank indicates that the taxon is of questionable, or uncertain taxonomical standing, e.g., some authors regard it as a full species, while others treat it at the subspecific level.
- .1** Elements only, ever documented from a single location.
- Note: To express uncertainty, the most likely rank is assigned and a question mark added (e.g., G2?). A range is indicated by combining two ranks (e.g., G1G2, S1S3).

IDENTIFICATION CODES

These codes refer to whether the identification of the species or community has been checked by a reliable individual and is indicative of significant habitat. These codes are not included on all Natural Heritage Reports.

- Y** Identification has been verified and is indicative of significant habitat.
- BLANK** Identification has not been verified but there is no reason to believe it is not indicative of significant habitat.
- ?** Either it has not been determined if the record is indicative of significant habitat or the identification of the species or community may be confusing or disputed.