

ENVIRONMENTAL RESOURCE INVENTORY

ERI

FEBRUARY 2011

For the Township of:

WESTAMPTON

Burlington County, New Jersey



by:



with:

The Environmental
Advisory Committee of
Westampton Township

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The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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The impetus for the creation of this document, and its guidance and review, came from the Westampton Township Environmental Advisory Committee

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This document is dedicated to Tom DiOrio for his tireless efforts in organizing the Environmental Advisory Committee.

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Executive Summary

Westampton Township is a municipality of about 8,600 people and covers over 11 square miles (7,100 acres). Westampton is home to the historic Rancocas Village, which was first settled in the 1700s. The 1,252 acre Rancocas State Park is situated along the Rancocas Creek and its North Branch, which form the southern border of the township. The Rancocas Nature Center, the Rankokus Indian Reservation, and a wide variety of county facilities and institutions are also found in Westampton Township.

Westampton Township is located entirely in the Inner Coastal Plain, characterized by highly productive prime farmland. These agricultural soils, however, are also highly suitable for development. Westampton's highway accessibility has also attracted much development in recent years. Still, there are over 2,000 acres of farm-assessed land within Westampton.

There are 13 miles of streams in the township, the vast majority of which are headwater streams. Wetlands cover about one-fifth of the township, most of which are wooded wetlands. There are portions of five subwatersheds in Westampton Township, four of which were impaired for one or more designated use in 2008. Causes of impairment included arsenic, PCBs, phosphorus, and unknown causes.

Westampton Township contains a variety of plant and animal life, and well over one-third of the township is covered with natural vegetation. Although not categorized as "natural" vegetation, the abundance of agricultural land in Westampton also provides important habitat, particularly for bird species. A rare Atlantic White Cedar swamp has been identified in the township, and is the only such cedar swamp in New Jersey's Inner Coastal Plain.

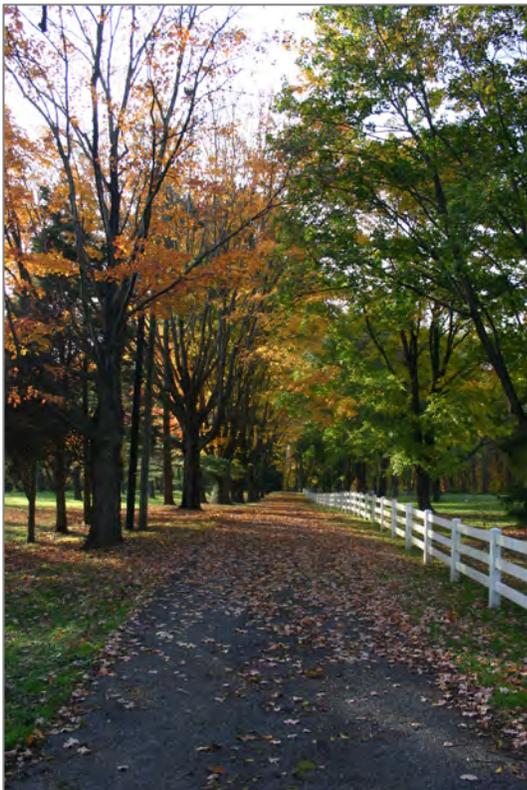
Two endangered plant species--Smooth Beardtongue and Awl-leaf Arrowhead--have been documented in the township along with a freshwater tidal marsh complex, a rare ecological community. Rare animals found in Westampton include the Barred Owl, Cooper's Hawk, Great Blue Heron, Bog Turtle, Eastern Box Turtle, and Wood Turtle.

Public water supply wells and most private wells in the township tap the Potomac-Raritan-Magothy aquifer system. Although vast, this confined aquifer has pumping restrictions due to overuse. Water conservation methods are crucial for maintaining the quantity and quality of Westampton's groundwater resources.

Westampton has experienced tremendous population growth in recent years. Accommodating development sustainably requires an understanding of the critical natural and community resources within the township. This Environmental Resource Inventory is an important step towards that goal.

Introduction

The purpose of an Environmental Resource Inventory (ERI) is to identify and describe the natural resources of a community. A community’s natural resources—its soil, water, air, forests, fields, and waterways—are fundamental to its character. They are the foundation for its economic success and its quality of life. The protection and wise use of those resources is essential to the public health, safety, and welfare of current and future residents. The Environmental Resource Inventory provides the basis for the development of methods and steps to preserve, conserve, and utilize those resources.



Former Henry Rowan Property

Westampton Township’s natural resources have long shaped the lives of its inhabitants. Westampton’s forests, high-quality soil, and accessible waterways played major roles in its early settlement by Europeans. Historic resources like Peachfield, the Hogan Farmstead, and Rancocas Village preserve the colonial past of Westampton. With its position along major north-south corridors and its proximity to major employment centers like Trenton, Philadelphia, and New York, Westampton’s historic character and rural setting have also attracted much residential development in recent years. Increased development, however, may greatly impact the natural and social resources of the township. Documentation of the community’s environmental resources is crucial if Westampton is to support agricultural, commercial, industrial, and residential uses in a sustainable manner.

Westampton’s surface waters and groundwater resources will become increasingly important to its population and to that of neighboring communities. Its wetlands, upland forests, and grasslands, which provide significant habitat for threatened and endangered plants and wildlife, will be vital to the continued health of the community and the enjoyment of its residents. Knowledge of the environmental resources of the township will allow citizens to make informed decisions as they determine Westampton’s future path and forge its identity.

Sources

Preparing an ERI requires gathering all the existing information that can be found about those resources, and presenting it in a form that is usable by a broad audience. The Inventory reflects a particular moment in time, and should be updated as new data becomes available.

Several documents and reports were utilized in preparing the Environmental Resource Inventory for Westampton Township, which are listed at the end of this document. The maps and data relating to natural resources are mainly derived from the New Jersey Department of Environmental Protection's (NJDEP's) Geographic Information System mapping, the Landscape Project produced by the Endangered and Nongame Species Program of the NJDEP Division of Fish and Wildlife, reports by the U.S. Geologic Service (USGS) and the New Jersey Geologic Service, and data and maps compiled by the Delaware Valley Regional Planning Commission (DVRPC). Information from these sources specific to Westampton Township has been included whenever it was available. Information from other reports about specific sites has also been incorporated, along with data provided by the township and county. The ERI has been reviewed and revised by members of the Environmental Commission and other municipal officials.

Descriptive introductions to some topics have been included in the ERI to give readers background on various complex topics. The hope is that this information will also assist the Environmental Commission and other township officials in obtaining additional data from state sources in the future and to determine the types of investigations that still need to be conducted.

Brief History

Long before European settlement, the first people to live in Westampton Township were Native Americans. Recent archaeological findings show that Native Americans lived in the Burlington County region for 8,000-10,000 years before colonial settlement. By the time Europeans arrived, these Native Americans called themselves the Lenni Lenape. Later, they were called the “Delaware” by Europeans. The Lenni Lenape inhabited much of southern New Jersey and their settlements were usually located along stream banks. They farmed, maintained orchards, fished, and hunted. The Lenni Lenape valued the area for its abundance of fish and game, and utilized the regional creeks extensively for transportation. The Rancocas (“many kinsmen”) tribe of Lenape had used the Rancocas Creek seasonally for transportation, food, and water for crops of maize, beans, and squash. Although Native Americans lived in southern New Jersey for thousands of years while leaving a minimal mark on the land, they succumbed to the diseases and encroachment of the newly arrived European settlers. By 1758, all remaining Native Americans south of the Raritan River were encouraged to live in the 3,258-acre reservation called Brotherton in the present Shamong Township, New Jersey; this has been recognized as the first Indian reservation in the country.

The first European settlers in the area were the Swedish, who inhabited the area as early as the 1640s. This is evidenced by a Native American deed from 1649 for an area near Westampton that lists three Swedes as witness, as well as a map of “New Sweden” dating from 1655 that shows the Rancocas Creek. In 1644, King Charles II of England took control of much of America’s eastern seaboard, and deeded most of present-day New Jersey to his brother, the Duke of York, who split it into East and West. The British quickly sought to occupy the land and secure its control, and West Jersey was settled mostly by English Quakers. Throughout the 17th century, sections of New Jersey were acquired from the Lenape tribe, including present-day Westampton Township. Like much of the Delaware Valley, Westampton Township was an attractive area for new Quakers to settle in after arriving in the colonies, as it had mature trees, fertile ground, and freedom from religious persecution.

Burlington County was officially founded on May 17, 1694. By that time it was a well-established region, with industries in the county that included a tannery, sawmills, pottery, and brickyards. Thomas Olive’s grist mill named “Wellingborough” (located in present-day Willingboro) was also in operation.

The first settlers in present-day Westampton were English Quakers, who in 1677, settled on the meadow bank of the Rancocas Creek. The first known resident of this, the Rancocas Village, was Bernard Devonish who proclaimed it was the “place I have seen in

my dreams.” Other early settlers included John Skene, Thomas Stokes, Henry Burr, and Samuel Woolman. Samuel Woolman and his wife Elizabeth were parents to John Woolman (1720-1772), the famed Quaker abolitionist and author whose writings are credited with making Quakers the first organization to stand against slavery.

The Rancocas Society of Friends established a cemetery in the 1680s and a meeting house in 1703. The present-day Meeting House was built in 1772. A school was also established by the Quakers in 1773 to educate their children. The school, which was open to all, was also attended by members of the local Indian population who lived among the European settlers. The current brick schoolhouse was constructed in 1822.

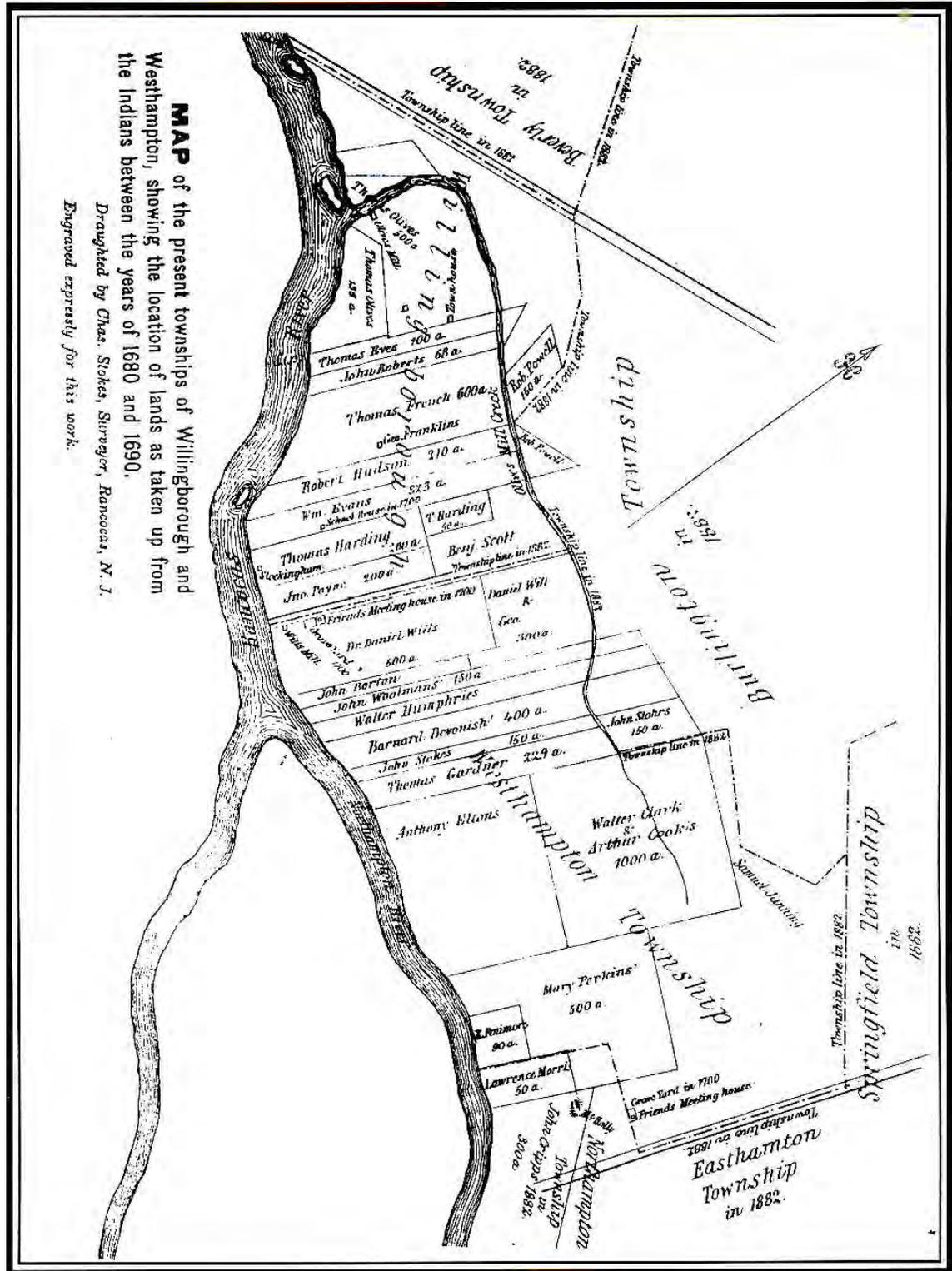
As early as 1820, the area of Timbuctoo (commonly called Bucto or Bucktown) was settled by freed and fugitive slaves. Timbuctoo had one of the first schools in the township as well as an AME Zion Church, and over 125 residents lived in the area at its height in the mid-to-late nineteenth century. Timbuctoo has national significance for being an important stop on the Underground Railroad, active from the 1830s through the Civil War. The Timbuctoo Civil War Memorial Cemetery is the final resting place of African-American soldiers who fought in the Union Army. The Cemetery is maintained by the Westampton American Legion Post 509. Currently, an archeological dig conducted by a professor and students at Temple University is unearthing a 4.5-acre site at Timbuctoo.

Westampton Township was officially incorporated by an Act of the New Jersey Legislature on March 5, 1850 using portions of Northampton Township. Westampton increased in size in 1854 with the addition of an area of Pemberton Township. On February 11, 1880 parts of Westampton Township were taken to incorporate Eastampton Township. In the mid-1950's, Westampton again increased in size with the inclusion of Rancocas Village west of Bridge Street, which had until then been part of Willingboro.

With the completion of the Centerton Bridge in 1832, Rancocas Village experienced a great deal of growth. Large tracts were subdivided for residential lots along Main Street, Bridge Street, and surrounding streets. A post office, two general stores, a farm machinery shop, butcher, barbershop, blacksmith shop, wheelwright shop, stagecoach service, gristmill, and other shops and services followed in the 1830s to 1850s. The Rancocas Methodist Church, established in 1845, built a church in 1847 on Second Street. The Rancocas Library, founded in 1859, was originally located in a small store building near the corner of Main and Bridge Streets. The Rancocas Lyceum Association, organized in 1860, offered recitals, dramatic interpretations, poetry readings, and theater performances in the Rancocas Schoolhouse, and later in a newly constructed town hall. The town hall, built in 1877, was later used as the Rancocas Firehouse from 1925 until the mid-1990s. The Westampton Historical Society currently holds a 25-year lease from Westampton Township for the former firehouse and is working to preserve and maintain this historic building.

Westampton experienced rapid development in 1875 when a major planning redevelopment took place. Many of the larger lots were subdivided and sold to new residents. Samuel Wills, George Borton, and Charles Stokes Jr., all descendants of 17th-century settlers, are credited with envisioning the development of the town. Their plan arranged parcels along broad streets with 12-foot alleyways.

Figure 1: Map of Westampton Township, 1883



Source: Robertson, Mark, "Westampton Township, 1850--2000." Originally published in 1883 in "History of Burlington County" by E.M. Woodward.

Two schools, Bunker Hill School on Rancocas Road and Union School on Burrs Road, opened around the time of the Civil War. These schools, along with the already established Rancocas Friends School, educated the children of Westampton Township through the early 20th century. Both the Bunker Hill and Union Schools eventually closed and students were sent to the Mount Holly school district. This agreement was in place until 1955 when the Westampton Township school system was created. Today, students attend the Holly Hills Elementary School, Westampton Township Middle School, and the consolidated Rancocas Valley Regional High School.

The earliest roads in Westampton were trails used by the Lenni Lenape, which tended to follow the banks of streams, including the Rancocas Creek. Settlers expanded these roads, which initially led between households and mills rather than between towns. The roads often were impassible by anything more than a pedestrian or horse as they were originally approximately 18 inches wide. Excavations along these early roads have discovered that homes often faced the creeks instead of the roads, since early travel was primarily by boat. Both the New Jersey Turnpike and Interstate 295 (I-295) run directly through Westampton. The Turnpike, originally a stagecoach road connecting Philadelphia and New York City, was constructed beginning in the 1950s and currently serves millions of cars annually. Interstate 295 provides high-speed access from Delaware to central New Jersey, and its construction spurred southern New Jersey's accelerated population growth throughout the 1950s and 1960s.

A number of major subdivisions have been built or approved in recent years, reflecting the attractiveness of Westampton Township to developers, including the Deerwood Country Club Estates, a development of about 200 single-family homes and a number of multi-family homes. A court-ordered major subdivision located on Woodlane Road between Interstate 295 and the New Jersey Turnpike consisting of over 500 units of affordable housing was approved in 2007, although it has not begun construction yet.



Deerwood Country Club Estates

In 2010, Westampton Township completed a Visioning Plan for the future growth of the township. This plan evaluates existing historic and cultural resources, housing, transportation, community facilities, and infrastructure, and reflects the community's desired vision for future development in the township based on visioning workshops with citizens. Although locations across the township are addressed, particular emphasis is placed on Route 541, the commercial corridor that represents the heart and gateway of Westampton. In addition to the Visioning Plan, a Master Plan review was initiated in 2009 to update the overall municipal plan in order to reflect current conditions and accommodate future growth.

Westampton Township's history stretches from Native American inhabitation to the early European settlement, the Civil War, Industrial Era development, and modern highway-driven population growth. Westampton is in an era of rapid change, and will decide its future through the planning it undertakes now to protect its quality of life. Recent decisions to preserve farmland, protect historic landmarks, and guide future growth reflect Westampton's intention to effectively plan for its future.



Rancocas Creek

Location, Size, and Land Use

Westampton is an incorporated township located in northern Burlington County, New Jersey. The township is bounded by seven municipalities: Burlington and Springfield townships to the north, Eastampton and Mount Holly townships to the east, Hainesport and Mount Laurel townships to the south, and Willingboro Township to the west. See [Figure 2: Location of Westampton Township](#), [Map 1: Westampton Township](#) and [Map 2: Aerial Photo \(2007\)](#). Westampton is located just 25 miles from Philadelphia and 20 miles from Trenton.

Figure 2: Location of Westampton Township



Source: DVRPC, 2010

According to the US Census Bureau, Westampton Township occupies a total area of approximately 7,100 acres, or 11.2 square miles. The U.S. Census Bureau estimates that Westampton Township had a population of 8,626 in 2008, an increase of 20% from its 2000 population of 7,217.

Westampton Township is divided by both I-295 and the New Jersey Turnpike. These two limited access highways both cross the township in a northeast/southwest direction and both have exits within the township. Exit 45 of I-295 is an interchange with east/west Route 626, while Exit 5 of the New Jersey Turnpike connects with Burlington Mount Holly Road, which in turn connects with Exit 47 of I-295.

Residential development is concentrated in the southeastern area of the township, adjacent to Mount Holly Township, although smaller areas of residential development are

located throughout Westampton. Commercial and industrial development is located near Exit 45 of I-295 in the southwestern area of the township. There is additional commercial development along County Route 541 at Exit 5 of the New Jersey Turnpike and between Woodlane Road and the border with Mount Holly Township.

Despite the two major highway corridors running through the township, Westampton maintains several large parcels of wooded areas and large tracts of farmland. The 1,252 acre Rancocas State Park is located along the Rancocas Creek, the north branch of which forms the southern border of Westampton. The Rancocas Nature Center, located within the park, is operated and maintained by the New Jersey Audubon Society. A portion of the park is leased to the Powhatan Indians, who maintain an historic Indian village and host an annual event with music, performances, and crafts. Other public land uses in Westampton include two country clubs, the Burlington County Institute of Technology, the Burlington County Library, the Burlington County Animal Shelter, the Burlington County Emergency Services Training Center, the Burlington County Special Services School, and Family Services.

The historic Rancocas Village, located in the extreme western end of the township near the border of Willingboro, is the oldest settlement in Westampton. Once a predominantly agricultural community, contemporary Westampton Township is increasingly suburban in nature. A little more than one-third of the township is developed (or urban) and two-thirds is undeveloped. The largest category of undeveloped land is agriculture, which covers 25 percent of the township.



Rancocas Nature Center

Agricultural land is located across the township, with large areas located between I-295 and the New Jersey Turnpike. Wetlands cover 22 percent of the township and are associated with low-lying areas and streams. The largest wetlands area in Westampton is located between Burrs Road and Kings Road. Forested land covers 14 percent of Westampton and is mostly located in Rancocas State Park along the township's southern border. Barren land and water each cover just one percent of the township.

Table 1: General Land Cover Classes (2007) shows Westampton's land cover grouped into general categories based on data collected from the New Jersey Department of Environmental Protection's (NJDEP's) 2007 color infrared digital imagery. **Table 2: Detailed Land Cover (2007)** breaks down the 2007 general land cover categories into detailed land cover categories. See also **Map 3: NJDEP Land Cover (2007)**.

Table 1: General Land Cover (2007)

General Land Classes	Area (Acres)	Percent
Agriculture	1,742.64	24.55%
Barren land	38.18	0.54%
Forest	997.53	14.05%
Urban	2,631.55	37.07%
Water	98.77	1.39%
Wetlands	1,591.09	22.41%
TOTAL	7,099.76	100%

Source: NJDEP, 2007

Table 2: Detailed Land Cover (2007)

Land Use Categories	Area (Acres)	Percent
Agricultural Wetlands (Modified)	253.39	3.57%
Airport Facilities	7.76	0.11%
Artificial Lakes	39.02	0.55%
Athletic Fields (Schools)	64.26	0.91%
Bridge Over Water	1.14	0.02%
Cemetery	3.11	0.04%
Commercial/Services	256.90	3.62%
Confined Feeding Operations	12.94	0.18%
Coniferous Brush/Shrubland	7.14	0.10%
Coniferous Forest (10-50% Crown Closure)	24.47	0.34%
Coniferous Forest (>50% Crown Closure)	14.61	0.21%
Coniferous Wooded Wetlands	1.92	0.03%
Cropland and Pastureland	1635.72	23.04%
Deciduous Brush/Shrubland	90.76	1.28%
Deciduous Forest (10-50% Crown Closure)	132.20	1.86%
Deciduous Forest (>50% Crown Closure)	408.45	5.75%
Deciduous Scrub/Shrub Wetlands	128.07	1.80%
Deciduous Wooded Wetlands	945.63	13.32%
Disturbed Wetlands (Modified)	11.87	0.17%
Former Agricultural Wetland (Becoming Shrubby, Not Built-Up)	30.38	0.43%
Freshwater Tidal Marshes	82.38	1.16%
Herbaceous Wetlands	42.50	0.60%

Land Use Categories	Area (Acres)	Percent
Industrial	235.53	3.32%
Major Roadway	173.41	2.44%
Managed Wetland In Built-Up Maintained Rec Area	16.17	0.23%
Managed Wetland In Maintained Lawn Greenspace	9.48	0.13%
Mixed Deciduous/Coniferous Brush/Shrubland	55.38	0.78%
Mixed Forest (>50% Coniferous With 10-50% Crown Closure)	43.22	0.61%
Mixed Forest (>50% Coniferous With >50% Crown Closure)	10.34	0.15%
Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	80.19	1.13%
Mixed Forest (>50% Deciduous With >50% Crown Closure)	82.91	1.17%
Mixed Scrub/Shrub Wetlands (Deciduous Dom.)	20.32	0.29%
Mixed Urban Or Built-Up Land	2.21	0.03%
Mixed Wooded Wetlands (Coniferous Dom.)	22.59	0.32%
Mixed Wooded Wetlands (Deciduous Dom.)	11.65	0.16%
Natural Lakes	0.55	0.01%
Old Field (<25% Brush Covered)	36.03	0.51%
Orchards/Vineyards/Nurseries/Horticultural Areas	9.17	0.13%
Other Agriculture	84.82	1.19%
Other Urban Or Built-Up Land	266.42	3.75%
Plantation	11.84	0.17%
Recreational Land	275.73	3.88%
Residential, High Density Or Multiple Dwelling	142.52	2.01%
Residential, Rural, Single Unit	369.65	5.21%
Residential, Single Unit, Low Density	137.48	1.94%
Residential, Single Unit, Medium Density	554.79	7.81%
Stormwater Basin	60.52	0.85%
Tidal Rivers, Inland Bays, And Other Tidal Waters	58.06	0.82%
Transitional Areas	38.18	0.54%
Transportation/Communication/Utilities	59.99	0.84%
Upland Rights-Of-Way Developed	12.37	0.17%
Upland Rights-Of-Way Undeveloped	8.90	0.13%
Wetland Rights-Of-Way	14.75	0.21%
TOTAL	7,099.76	100%

Source: NJDEP, 2007

Natural Resources

Physiography

Physiography is the study of a location in relation to its underlying geology. New Jersey is characterized by four main physiographic provinces: the Ridge & Valley, the Highlands, the Piedmont Plateau, and the Atlantic Coastal Plain. The Atlantic Coastal Plain is divided into the Inner and Outer Coastal Plains. These provinces are illustrated in **Figure 3: The Physiographic Regions of New Jersey**. The rocky terrain of the Appalachian Province is at one extreme and the sands of the coast are at the other.

Figure 3: The Physiographic Regions of New Jersey



Source: NJGS

The Atlantic Coastal Plain landscape extends from Massachusetts to Texas and is divided into Inner and Outer sections. The Coastal Plain generally consists of unconsolidated sands, silts, and clays. As these sediments are prone to erosion, the Coastal Plain is generally characterized by regions of low topographic relief. In New Jersey, the Inner Coastal Plain is made up of interbedded sand and clay. Deposits originating in the breakdown of Appalachian and Catskill sedimentary, metamorphic, and igneous rocks are interbedded with layers formed by oceanic (marine) deposition, which occurred as the ocean shoreline advanced and receded over geologic time. The Inner Plain layers date from the Cretaceous Period, 145 to 65 million years ago. Generally, soils of the Inner Coastal Plain are quite fertile. Westampton Township is located in the Inner Coastal Plain.

The Outer Coastal Plain was formed more recently than the Inner Coastal Plain. It was laid down by the ocean and developed during the mid-to-late part of the Cenozoic Era, 65 million years ago to the present. Outer Coastal Plain soils are sandier and less fertile than those of the Inner Plain and do not hold water as well.

In the general vicinity of the dividing line between the two segments of the Coastal Plain is a belt of low hills, which runs northeast and southwest through the southern half of New Jersey. These hills are the youngest of the Cretaceous formations and are largely made up of sand and marl formations. In Burlington County, the hills can be identified between Arney's Mount in Springfield Township and Big Hill in Southampton Township. The Inner

Coastal Plain lies to the west of the band of hills and the Outer Coastal Plain lies to the east.

Westampton Township lies entirely within the Inner Coastal Plain, with the majority of the township's soils being agriculturally productive. An abundance (approximately 60%) of the township's soils is designated as prime farmland.

Topography and Surface Landscapes

Topography relates to the surface terrain and features of an area. Most of Westampton is generally flat, typical of areas in the Atlantic Coastal Plain. Ridges and high points delineate the boundaries of watersheds, seen in [Map 8: Watersheds](#). The entire topography of Westampton Township is shown in [Map 4: Elevation](#). At approximately 3 feet above sea level, the lowest elevation in the township is located in the southern portion along a tributary of the Rancocas Creek. At approximately 105 feet above sea level, the highest elevation is found in the northern area of the township near the intersection of Hill Road and Burrs Road. There is a ridge of high elevation located just to the west of Burrs Road.

Because of its relatively flat topography, several areas of Westampton are located in FEMA's 100-year floodplain. These areas occur predominantly along streams in the township including the Rancocas Creek, Mill Creek, and Barkers Brook. In general, development and agriculture are located on upland areas, with wetlands and forests located in the lower elevations.

Westampton's landscape is heavily dominated by natural and agricultural wetlands along the creeks and between smaller tributaries. The relatively steeper valleys of Rancocas Creek and its numerous tributaries define the southern border of the township, while the generally flat valleys of Mill Creek and Barkers Brook characterize the northern areas. Many of the streams retain lush riparian buffers of upland forest and wooded wetlands.



Burlington County Country Club

The upland area is characterized by rich soils that once supported extensive mixed deciduous forests. Today, Westampton's upland forests are dominated by beech, oak, maple, and birch trees. Along the river valleys are freshwater wetlands and wet forests of sweet gum and red maple trees. As in all of southern New Jersey, Westampton's streams are relatively flat with mostly muddy and/or sandy bottoms, although the bottoms of some stream segments are lined with small rounded rocks and pebbles.

Steep Slopes

Slope is measured as the percent of vertical rise to horizontal distance. The majority of Westampton Township has slopes of less than 10 percent. There are bands of steeper slopes near the township's southern border along the North Branch of the Rancocas Creek. There is another diagonal band of forested steep slopes located in the southeastern residential section of Westampton. Most of the steep slopes in the township are well vegetated with a dense forest canopy cover. Westampton's steep slopes are depicted on [Map 5: Steep Slopes](#).

In general, development of areas with steep slopes is inadvisable as it is likely to result in soil instability, erosion, sedimentation of streams, increased stormwater runoff, and increased flooding. These effects can then lead to habitat destruction, water pollution, and potential damages to property. Erosion on steep slopes is especially prevalent where excessive tree removal has taken place. See the [Erosion](#) section on page 97 for more details.

On steep slopes bordering creeks and streams, it is not unusual to see trees that have fallen into the gulleys or into the streams themselves. In some places, the rate of tree loss is accelerated beyond natural rates by erosion from flash flooding, which in turn is often caused by increases in impervious surface upstream. However, trees on steep slopes fall for other reasons as well, including age, severe storms (especially if their roots have been exposed from erosion), and heat and water loss, which dries the soil. Where steep slopes remain forested, some very old trees may often be found.

Soils

Soil is the foundation for all land uses. A region's soil defines what vegetation is possible, therefore influencing agricultural uses. It determines how land can be developed for other purposes and is a natural resource that takes millions of years to replenish.

Westampton Township soils consist of 21 series types and 48 variations within those series (excluding water) as identified by the U.S. Department of Agriculture's Natural Resources Conservation Service. The great majority of Westampton's soils, over 85 percent, are classified as important farmland soils. These are listed in [Table 4: Soils](#) and shown on [Map 6: Soils](#).

Soil Quality Classification

Prime Farmland Soils

The most abundant of all soils in Westampton Township are those classified as Prime Farmland (P-1), which occupies 61 percent (4,349 acres) of the township's land. Prime Farmlands are lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. They can sustain

high yields of crops when managed with correct farming methods. Prime Farmland soils are not excessively erodible or saturated with water for long periods of time and do not flood frequently.

The Natural Resources Conservation Service (NRCS) outlines specific criteria for Prime Farmland classification. For example, according to Prime and Unique Farmlands federal regulation, soil horizons (layers) within a depth of 40 inches must have a pH between 4.5 and 8.4 (mildly acidic to mildly basic). In addition, the soils must have an average temperature above 32 degrees Fahrenheit at a depth of 20 inches. The USDA outlines additional Prime Farmland requirements for mean summer soil temperature, erodibility factor, water table depth, permeability rate, and more. Land classified as Prime Farmland does not have to be farmed but does have to be available for such use.

Soils of Statewide Importance

About 22 percent (1,584 acres) of soils in Westampton are classified as soils of Statewide Importance (S-1). These soils are close in quality to Prime Farmland and can sustain high yields of crops when correctly managed under favorable conditions. Criteria for establishing Soils of Statewide Importance are determined by state agencies. Soils of Statewide Importance are located throughout Westampton Township.

Soils of Unique Importance

Westampton also has a small percentage (1%) of soils considered to be of unique importance (U-1), totaling almost 84 acres. These are soils that are significant or rare to Westampton Township, but not necessarily to the rest of South Jersey. The USDA outlines specific Unique Farmland criteria that support a particular food or fiber crop, including temperature, humidity, air drainage, elevation, aspect, or proximity to market. In order for lands to be classified as Unique Farmland, the land must also be used for a specific high-value food or fiber, and have an adequate moisture supply for that crop.

Land Not Appropriate For Farming

Approximately 15 percent of Westampton's soils have not been rated for agricultural use by the NRCS and are therefore labeled "NA." These soils are not appropriate for agricultural use and may be best suited for other uses or they may not yet have been assessed for quality by NRCS.

Hydric Soils

Less than half of Westampton's land area consists of hydric soils. Hydric soils, as defined by the NRCS, are soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic (oxygen-free) conditions in their subsurface. These soils have unique soil properties and are an important element of wetland areas. If a soil is classified as "hydric," land use may be restricted due to the

relationship of hydric soils to the definition of wetlands and to laws regarding wetland preservation. Soils that have limitations, such as a high water table or flooding, can qualify as prime and statewide when the limitations are overcome by measures such as drainage or flood control.

See [Table 3: Agricultural](#) for the acreage of each of these classes of farmland. See also [Map 7: Agricultural Quality of Soils](#) for a visual depiction.

Table 3: Agricultural Quality of Soils

Designation	Type	Area (Acres)	Percent
P-1	Prime Farmland	4348.56	61.3%
S-1	Statewide Importance	1584.39	22.3%
U-1	Unique Importance	84.20	1.2%
	Totals	6017.15	84.8%

Source: NJ Farmlands Inventory, 1995 classifications; NRCS SSURGO data 2008

Soil Series

Several soil series that are common in Westampton Township are briefly described as follows according to the Burlington County Soil Survey and NRCS soil database:

Sassafras Series

The most abundant soil series in Westampton Township is the Sassafras series. The Sassafras series accounts for approximately 28 percent (1,968 acres) of the township's soils. This series, most often classified as sandy loam, loamy sand, or sand, is found at elevations with slopes between 0 and 60%. It is typically found on slopes or summits. The distance to bedrock is generally greater than 60 inches, while the seasonal high water table is greater than 72 inches. In their natural state, Sassafras soils are well-drained and are characterized by moderate permeability. As they are well drained, the associated land cover of Sassafras soils is often suited for crops, pastures, fruits, and woodlands. Native vegetation tends to consist of mixed upland hardwoods with some shortleaf and Virginia pine. All of the Sassafras series soils have been designated by New Jersey as Prime Farmland and farmland of Statewide Importance. The majority of the western areas of the township, specifically west of the NJ Turnpike, consist of the Sassafras soil series. However, they are also found in the northern portion of the township surrounding the highest elevation point off of Hill Road.

Shrewsbury Series

The Shrewsbury series accounts for approximately 11 percent (812 acres) of the township's soils. Shrewsbury series soils consist of nearly level, wet, mottled gray soils. The soils drain poorly and occur in low topographic areas, where they receive much

surface water running off from the slopes above. In their natural condition, the soils are moderately permeable, moderately fertile, moderately high in organic material, and saturated for six to eight months out of the year. As a result, these areas are prone to flooding. However, when Shrewsbury soils are drained, they have a high available water capacity and can support the cultivation of corn, soybeans, small grains, hay, pasture, turf grass, and in some areas, blueberries and vegetables. Most soils from the Shrewsbury series have been designated by New Jersey as farmlands of Statewide Importance. They are primarily located in the eastern area of the township, along Barkers Brook. There is also a large parcel of Shrewsbury soils located in the northeastern area of the township, near the intersection of Gilbert Road and Oxmead Road.

Holmdel Series

Roughly 11 percent (751 acres) of the soils in Westampton Township are from the Holmdel series. The Holmdel series ranges from moderately well drained to somewhat poorly drained loamy and sandy soils formed from marine deposits. The fertility of Holmdel soils is moderate to moderately high. All variants of the Holmdel series present in Westampton Township are considered Prime Farmland by the state of New Jersey. These soils allow for the production of corn, soybeans, small grains, hay, pasture, fruit, vegetables, and nursery plants. The native vegetation supported by the Holmdel series is forests consisting of red, white, and scarlet oak, yellow poplar, beech, and hickory. The Holmdel series soils are also found throughout the township, with the most concentrated areas in the northeast and southwest.

Freehold Series

About 9 percent (613 acres) of Westampton is made up of Freehold soils. These soils can be found on uplands in the coastal plains, have slopes ranging from 0 to 40 percent, and are well drained, moderately fertile soils formed by marine sediments containing glauconite. Found in many coastal plain soils, glauconite is a marine mineral that enhances soil fertility. Except for steep areas, Freehold soils support the growth of fruits, vegetables, grain, hay, pasture, nursery plants, and cultivated sod. They are designated as Prime Farmland or farmlands of Statewide Importance, with the exception of those located on steep slopes. In Westampton, Freehold series soils are found throughout the township, with the largest contiguous areas in the central and southeastern areas.

Woodstown Series

Approximately 6 percent (461 acres) of Westampton Township consists of the Woodstown series. These soils are typically found on the upland marine terraces and old stream terraces of the coastal plains. These soils are formed by sandy marine and old alluvial sediment parent material. The Woodstown series typically have slopes between 0 and 30 percent and are moderately well drained. Depth to the seasonal high water table is between 18 to 42 inches from January through April. In their natural condition, Woodstown soils are suitable for crops such as corn, soybeans, small grains, hay, and pasture. All of the Woodstown soils in Westampton Township are designated as Prime Farmland. Native

vegetation is oak and hardwoods with some Virginia pine. The Woodstown series soils are found primarily in the western areas of Westampton.

Collington Series

Another common soil family in Westampton Township is the Collington series. This series contains about 6 percent (450 acres) of the total township soil area. The Collington series soils are well drained loamy soils that contain fair amounts of clay, especially in the subsoil. The Collington series occur in high topographic positions and have slopes of as much as 10 percent. Collington soils have high organic matter content and a moderately high natural fertility. They are well suited for agricultural usage, especially the growth of fruits, vegetables, corn, small grains, soybeans, hay, and pasture. Historically, most potatoes grown in Burlington County have been raised in Collington soils. All of the Collington soils in Westampton Township are considered to be Prime Farmland or farmland of Statewide Importance. The natural vegetation that occurs on Collington soils is hardwood forest that consists of red oak, yellow poplar, hickory, ash, beech, with viburnums in the underbrush. In Westampton, the Collington series soils are located primarily in the southern and southeastern areas of the township.

Colemantown Series

The Colemantown series comprises about 6 percent (414 acres) of the soils in Westampton. These deep, poorly drained soils are greenish-gray, and are found in flat, low-lying areas of the coastal plain. The Colemantown series is formed from marine deposits, typically with high levels of glauconite. These soils are typically found in areas with a high water table and could be characterized as wetland soils. They do not make good agricultural soils, as they are frequently flooded and highly acidic, but if drained and limed, they can be productive. Where they have been converted to agriculture, they commonly produce hay, pasture, turf, corn, and soybeans. Their natural vegetation is dominated by sweetgum, red maple, white oak, American holly, and yellow poplar. Large concentrations of Colemantown soils are mostly found along Barkers Brook and in the eastern region of the township. They are also found near the headwaters of several creeks and their tributaries.

Adelphia Series

A final common soil type in Westampton Township is the Adelphia series, which makes up 5 percent (367 acres) of the township. This series consists of soils with a loamy composition containing moderate amounts of glauconite. Adelphia series soils have a moderate concentration of organic matter and are moderately high in their natural fertility. Crops grown on Adelphia series soils include small grains, corn, soybeans, hay, pasture, tomatoes, potatoes, fruit, nursery stock, and sod. Adelphia series soils have been designated as Prime Farmland, although much of the Adelphia soils in the state have been urbanized. The Adelphia series soils can be found primarily in the southeastern areas of the township.

Certain soil characteristics can severely restrict the use of sites for construction and development. **Table 5: Soil Limitations for Development** records the soils and their possible limitations for building foundations and septic systems.

As indicated in the table, the township has some soils that are severely limited for on-site septic systems. Septic systems require soils that have a low water table (five feet or more from the surface) and high permeability to allow for proper drainage of wastewater. Soils with high water tables (five feet or less from the surface) create a potential for erosion, wet basements, and low permeability, often allowing wastewater to collect near the surface. Because the suitability of a soil for a septic disposal field is very site-specific and relies on many factors, including but not limited to the soil type, there is not an accurate source of soil information regarding this subject. Any new septic system must be approved by the County Health Department after a site survey by a professional.



Westampton Farms

Table 4: Soils

Soil Type	Soil Description	Acreage	% of Total Acreage	Ag. Quality*	Hydric?
AdmA	Adelphia fine sandy loam, 0 to 2 percent slopes	353.66	4.98%	P-1	Yes
AdmB	Adelphia fine sandy loam, 2 to 5 percent slopes	13.24	0.19%	P-1	No
CoeAs	Colemantown loam, 0 to 2 percent slopes, occasionally flooded	414.04	5.83%	NA	Yes
ComA	Collington fine sandy loam, 0 to 2 percent slopes	288.18	4.06%	P-1	No
ComB	Collington fine sandy loam, 2 to 5 percent slopes	102.84	1.45%	P-1	No
ComC	Collington fine sandy loam, 5 to 10 percent slopes	45.35	0.64%	S-1	No
ConB	Collington loam, 2 to 5 percent slopes	13.11	0.18%	P-1	No
DoaA	Donlonton fine sandy loam, 0 to 2 percent slopes	34.39	0.48%	P-1	Yes
DobA	Donlonton loam, 0 to 2 percent slopes	19.50	0.27%	P-1	Yes
DocB	Downer loamy sand, 0 to 5 percent slopes	28.31	0.40%	S-1	Yes
FanA	Fallsington fine sandy loam, 0 to 2 percent slopes	1.90	0.03%	S-1	Yes
FmhAt	Fluvaquents, loamy, 0 to 3 percent slopes, frequently flooded	152.43	2.15%	NA	Yes
FrfB	Freehold loamy sand, 0 to 5 percent slopes	68.91	0.97%	P-1	Yes
FrkC3	Freehold sandy loam, 5 to 10 percent slopes, severely eroded	4.49	0.06%	NA	No
FrmA	Freehold fine sandy loam, 0 to 2 percent slopes	9.38	0.13%	P-1	No
FrmB	Freehold fine sandy loam, 2 to 5 percent slopes	437.60	6.16%	P-1	No
FrmC	Freehold fine sandy loam, 5 to 10 percent slopes	86.03	1.21%	S-1	No
FrmD	Freehold fine sandy loam, 10 to 15 percent slopes	6.13	0.09%	NA	No
GahB	Galloway sand, 0 to 5 percent slopes	74.24	1.05%	S-1	Yes
HodA	Holmdel fine sandy loam, 0 to 2 percent slopes	446.32	6.29%	P-1	Yes
HodB	Holmdel fine sandy loam, 2 to 5 percent slopes	182.35	2.57%	P-1	No

Soil Type	Soil Description	Acreage	% of Total Acreage	Ag. Quality*	Hydric?
HodkA	Holmdel fine sandy loam, clayey substratum, 0 to 2 percent slopes	30.20	0.43%	P-1	Yes
HofB	Holmdel-Urban land complex, 0 to 5 percent slopes	92.37	1.30%	NA	No
KeaA	Keansburg fine sandy loam, 0 to 2 percent slopes	127.51	1.80%	NA	Yes
KenB	Keyport fine sandy loam, 2 to 5 percent slopes	13.40	0.19%	P-1	No
KeoA	Keyport loam, 0 to 2 percent slopes	54.12	0.76%	P-1	Yes
MamnAv	Mannington-Nanticoke complex, 0 to 1 percent slopes, very frequently flooded	84.20	1.19%	U-1	Yes
MunA	Mullica fine sandy loam, 0 to 2 percent slopes	127.76	1.80%	S-1	Yes
PeftB	Pemberton sand, thick surface , 0 to 5 percent slopes	58.42	0.82%	S-1	No
PHG	Pits, sand and gravel	16.93	0.24%	NA	No
SaeA	Sassafras fine sandy loam, 0 to 2 percent slopes	776.79	10.94%	P-1	No
SaeB	Sassafras fine sandy loam, 2 to 5 percent slopes	981.34	13.82%	P-1	No
SaeC	Sassafras fine sandy loam, 5 to 10 percent slopes	100.74	1.42%	S-1	No
SaekA	Sassafras fine sandy loam, clayey substratum, 0 to 2 percent slopes	41.38	0.58%	P-1	No
SaekB	Sassafras fine sandy loam, clayey substratum, 2 to 5 percent slopes	20.82	0.29%	P-1	No
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	46.49	0.65%	NA	No
ShsA	Shrewsbury fine sandy loam, 0 to 2 percent slopes	467.52	6.59%	S-1	Yes
ShskA	Shrewsbury fine sandy loam, clayey substratum, 0 to 2 percent slopes	156.91	2.21%	S-1	Yes
ShtA	Shrewsbury loam, 0 to 2 percent slopes	187.74	2.64%	S-1	Yes
ThfC	Tinton sand, 5 to 10 percent slopes	26.03	0.37%	S-1	No
ThftB	Tinton sand, thick surface, 0 to 5 percent slopes	223.44	3.15%	S-1	No
URCLAB	Urban land, clayey substratum, 0 to 8 percent slopes	2.42	0.03%	NA	No

Soil Type	Soil Description	Acreage	% of Total Acreage	Ag. Quality*	Hydric?
URSAAB	Urban land, sandy, 0 to 8 percent slopes	168.38	2.37%	NA	No
URSACB	Urban land, sandy over clayey, 0 to 8 percent slopes	3.46	0.05%	NA	No
WATER	Water	47.96	0.68%	NA	No
WofA	Woodstown fine sandy loam, 0 to 2 percent slopes	155.04	2.18%	P-1	Yes
WofB	Woodstown fine sandy loam, 2 to 5 percent slopes	52.28	0.74%	P-1	No
WofkA	Woodstown fine sandy loam, clayey substratum, 0 to 2 percent slopes	104.58	1.47%	P-1	Yes
WofkB	Woodstown fine sandy loam, clayey substratum, 2 to 5 percent slopes	149.12	2.10%	P-1	No
	Total	7,099.76	100.00%		3,089.29

Source: NJDEP, 2008

Explanation of Designations	
P-1	Prime Farmland
S-1	Statewide Importance
L-1	Local Importance
N/A	Soil not rated for agricultural use by NRCS, but may be suitable or currently used for such use.

Table 5: Soil Limitations for Development

Soil Series	Soil Types	Acreage	% of Total Acreage	Land Use Implications*		
				Building without Basement	Building with Basement	Septic Systems
Adelphia	AdmA, AdmB	366.90	5.17%	B	C	C
Colemantown	CoeAs	414.04	5.83%	C	C	C
Collington	ComA, ComB, ConB	404.13	5.69%	B	A	C
Collington	ComC	45.35	0.64%	B	B	C
Donlonton	DoaA, DobA	53.89	0.76%	B	C	C
Downer	DocB	28.31	0.40%	A	A	C
Fallsington	FanA	1.90	0.03%	C	C	C
Fluvaquents	FmhAt	152.43	2.15%	C	C	C
Freehold	FrfB, FrmA, FrmB	515.89	7.27%	A	A	C
Freehold	FrkC3, FrmC, FrmD	96.65	1.36%	B	B	C
Galloway	GahB	74.24	1.05%	B	C	C
Holmdel	HodA, HodB, HodkA, HofB	751.24	10.58%	B	C	C
Keansburg	KeaA	127.51	1.80%	C	C	C
Keyport	KenB	13.40	0.19%	B	C	C
Keyport	KeoA	54.12	0.76%	B	B	C
Mannington-Nanticoke	MamnAv	84.20	1.19%	C	C	C
Mullica	MunA	127.76	1.80%	C	C	C
Pemberton	PeftB	58.42	0.82%	A	B	C
Pits, sand and gravel	PHG	16.93	0.24%	NR	NR	NR
Sassafras	SaeA, SaeB, SapB	1,804.62	25.42%	A	A	C

Soil Series	Soil Types	Acreage	% of Total Acreage	Land Use Implications*		
				Building without Basement	Building with Basement	Septic Systems
Sassafras	SaeC	100.74	1.42%	B	B	C
Sassafras	SaekA, SaekB	62.20	0.88%	A	B	C
Shrewsbury	ShsA, ShskA, ShtA	812.17	11.44%	C	C	C
Tinton sand	ThfC	26.03	0.37%	B	B	C
Tinton sand	ThftB	223.44	3.15%	A	A	C
Urban land	URCLAB, URSACB	5.88	0.08%	B	B	C
Urban land	URSAAB	168.38	2.37%	A	A	C
Water	WATER	47.96	0.68%	NR	NR	NR
Woodstown	WofA, WofB	207.32	2.92%	A	B	C
Woodstown	WofkA, WofkB	253.70	3.57%	B	C	C
Total		7,099.75	100.00%			

Source: NJDEP (2008) based on data from USDA and NRCS

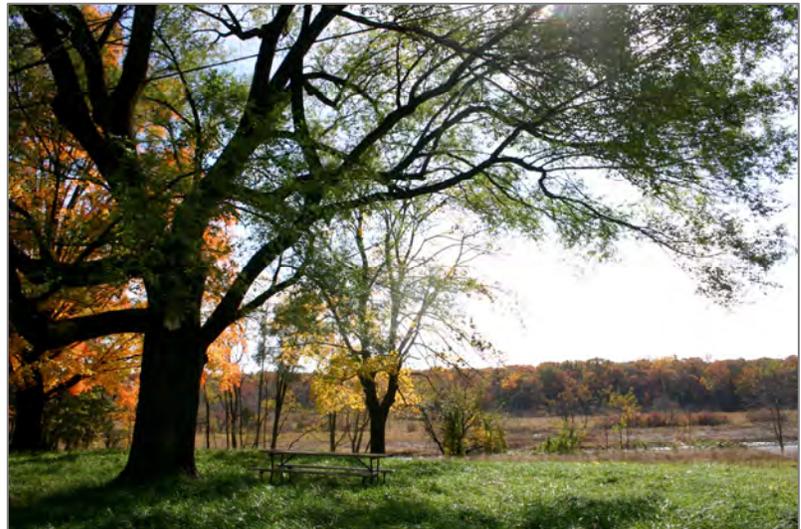
*Key to Land Use Implications	
A = Not Limited	Little or no limitation(s) or easily corrected by use of normal equipment and design techniques.
B = Somewhat Limited	Presence of some limitations that normally can be overcome by careful design and management at a somewhat greater cost.
C = Very Limited	Limitations that normally cannot be overcome without exceptional, complex, or costly measures.

Climate

Geographically situated approximately halfway between the Equator and the North Pole, New Jersey's climate is extremely variable. The state's temperate, continental climate is influenced by hot, cold, dry, and humid airstreams that create highly variable local weather conditions. From May through September, New Jersey is dominated by moist, tropical air originating in the Gulf of Mexico and carried by prevailing winds from the southwest. In winter, winds generally prevail from the northwest, bringing cold, polar air masses from subarctic Canada.

Although New Jersey is one of the smallest states in the country, it has five distinct climate regions. The state's climate varies across these five regions: North, Central, Southwest, Pine Barrens, and Coastal. Distinct variations between these climate regions are due to a combination of factors, including geology, distance from the Atlantic Ocean, and prevailing atmospheric flow patterns.

Westampton straddles the Southwest and Pine Barrens zone, exhibiting climate patterns that are characteristic of both zones. The Southwest region is generally warmer than the Pine Barrens, due to the proximity of the Delaware Bay and its maritime influence. In addition, the soils of the Southwest retain moisture better than those of the Pine Barrens, contributing to the warmer temperatures. The soils of the Pine Barrens are sandy, allowing precipitation to rapidly infiltrate the ground and leave the surface dry. This phenomenon allows for a wider range between the daily maximum and minimum temperatures than in the Southwest. Finally, the Southwest climate zone experiences the longest growing season in the state thanks to the moderating effects of the Delaware Bay and the relatively early spring frosts and late fall frosts, particularly in comparison to the other regions.



Rancocas Creek

The National Climate Data Center (NCDC) operates over 4,000 stations in the United States, none of which are located directly in Westampton Township. The closest station is in Pemberton Township, approximately eight miles to the east of Westampton. Based on data collected between 1971 and 2000, the mean annual temperature in Pemberton Township is 53.9°F. January is the coldest month with a mean temperature of 32.3°F, and July is the hottest month with a mean temperature of 74.9°F. The mean annual precipitation is 47.12 inches. August is the rainiest month with a mean precipitation of 5.16 inches, and February is the driest month with an average of just 2.85 inches.

The National Oceanic and Atmospheric Administration (NOAA) operates a weather station and office in Westampton off Woodlane Road. Although located in Westampton, this station is known as the Mount Holly station, and provides climate, weather, and water forecasts and warnings for parts of Pennsylvania, New Jersey, and Delaware.

Growing Seasons

Westampton Township is located within U.S. Department of Agriculture (USDA) Plant Hardiness Zone 6B, where annual minimum temperatures are typically between -5°F and 0°F. Hardiness zones are based on average annual minimum temperatures and are helpful in indicating which plant species are able to survive the winter in each area. The majority of Burlington County is actually designated as Zone 7, which is the warmest Plant Hardiness Zone in New Jersey, and is characterized by annual minimum temperatures between 0°F and 5°F.

Westampton's agricultural growing season is approximately six months, or 180 days, from mid-April through mid-October. The growing season is generally defined as the period between the last spring frost and the first autumn frost. However, the harvest of grain crops typically continues throughout November and winter crops such as broccoli, cauliflower, and cabbage are grown until the first hard freeze, usually in early January.

Surface Water Resources

All of Westampton's land ultimately drains to the Delaware River, either by way of the Rancocas Creek or the Assiscunk Creek. Generally speaking, land in the western portion of Westampton drains to the Rancocas Creek (main stem), land in the center and south drains to the Rancocas Creek North Branch, and land in the northeast drains to the Assiscunk Creek via Barkers Brook. These areas are depicted on [Map 8: Watersheds](#).

Watersheds

A watershed is all the land that drains to a particular waterway, such as a river, stream, lake, or wetland. The high points in the terrain, such as hills and ridges, define the boundaries of a watershed. Large watersheds are made up of a succession of smaller ones, and smaller ones are made up of the smallest area—the catchment area of a local site. So, for example, the Delaware River watershed is made up of many smaller watersheds, such as the Rancocas Creek watershed, which themselves consist of smaller subwatersheds. These subwatersheds can be further subdivided into smaller ones, each surrounding smaller tributaries that flow to the larger channel, and so on down to the catchment level. Watersheds are natural ecological units, where soil, water, air, plants, and animals interact in a complex relationship.

Each watershed corresponds to a hydrological unit code (HUC), as delineated by the U.S. Geological Survey (USGS). A HUC 11 watershed (identified by an 11-digit code) contains

a number of HUC 14 subwatersheds (identified by a 14-digit code). The State of New Jersey has 152 HUC 11 watersheds and over 900 HUC 14 subwatersheds.

Watershed Management Areas

The NJDEP manages natural resources on a watershed basis. The state has been divided into 20 Watershed Management Areas (WMAs). Westampton Township is located within two WMA's: WMA 19 "Rancocas" and WMA 20 "Assiscunk, Crosswicks, and Doctors."

Watershed Management Area 19 is the largest watershed area in south central New Jersey, and is comprised of the North Branch, South Branch, and Mainstem of the Rancocas Creek, including Mill Creek. Portions of Burlington, Camden, and Ocean Counties, and approximately 33 municipalities are included in this management area which covers 360 square miles, and reaches deep into the Pinelands. The entire Rancocas Creek watershed is illustrated in [Figure 4: Rancocas Creek Watershed](#).

Watershed Management Area 20 includes the Assiscunk, Blacks, Crafts, Crosswicks, Doctors, Duck, and Mill Creeks. This management area covers 253 square miles and 26 municipalities spanning four counties: Burlington, Mercer, Monmouth, and Ocean.

Rancocas Creek Watershed

About two-thirds of Westampton's land area flows into the Rancocas Creek. Within Westampton, the larger Rancocas Creek watershed is divided into two HUC 11 watersheds. The Rancocas Creek (main stem) drains about 37 percent and the Rancocas Creek North Branch (below Smithville) drains about 31 percent of the township. The main stem HUC 11 watershed is further divided into two HUC 14 subwatersheds: Mill Creek (Willingboro) and Rancocas Creek (Martin's Beach to North Branch/South Branch). See

[Table 6: Watersheds and Subwatersheds](#).



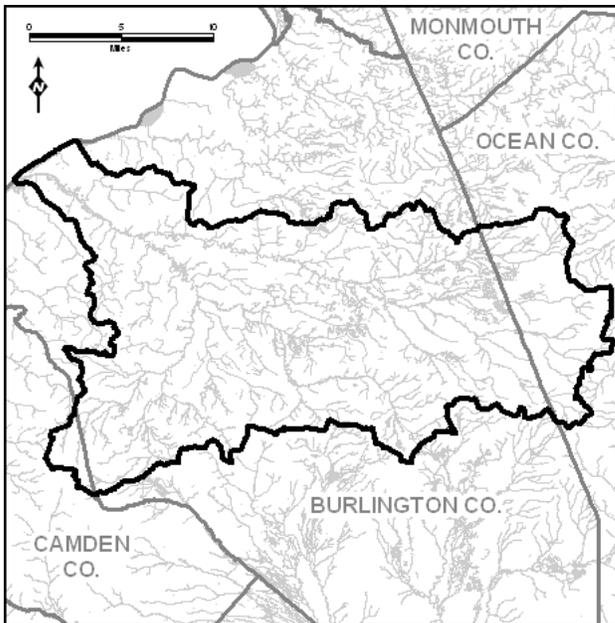
Rancocas Creek

The Rancocas, which means "many kinsmen" in the Lenni Lenape language, is the largest watershed in south central New Jersey, and was also the first watershed in New Jersey to have a management plan. Most watersheds in the Pinelands drain either east to the Atlantic Ocean or south to the Delaware Bay, although the Rancocas Creek watershed is an exception to this in that it drains west to the Delaware River. Approximately 68 percent

of the Rancocas Creek watershed is within the Pinelands Management Area, which is regulated by the Pinelands Commission.

The Rancocas Creek is composed of the main stem and two branches: the North Branch and the South Branch. The tributaries that flow through Westampton Township primarily flow into the main stem and North Branch. The North Branch, which starts just south of Fort Dix, is 31 miles long and drains 167 square miles, making the North Branch the largest subwatershed within the Rancocas Creek basin. The North Branch's main tributaries are Greenwood Branch, McDonalds Branch, and Mount Misery Brook. The South Branch begins near Chatsworth and drains 144 square miles. Its tributaries include the Southwest Branch Rancocas Creek, Stop the Jade Run, Haynes Creek, and Friendship Creek.

Figure 4: Rancocas Creek Watershed



Source: DVRPC

The main stem, which flows for approximately eight miles, drains 49 square miles between the confluence of the North and South Branches at Hainesport and the Delaware River. The mouth of the Rancocas Creek is located between Riverside and Delanco on the Delaware River. The tidal influence of the stream is evident as far as 15 miles upstream from the mouth, near the dam at Mount Holly on the North Branch, Vincentown on the South Branch, and Kirby Mills on the Southwest Branch. Within Westampton, the North Branch of the Rancocas Creek, which forms the southernmost border of the township, is tidal. The eastern part of the watershed is predominantly forested or agricultural, while the western side of the watershed is more heavily developed. Approximately 40 percent of the total watershed is forested, 30 percent is developed, and 17 percent is used for agriculture, including cranberry bogs.

Assiscunk Creek Watershed

The eastern portion of Westampton Township drains to the Assiscunk Creek, located in WMA 20. Approximately 32 percent of Westampton's land falls within the Assiscunk Creek watershed. Within the township, the Assiscunk Creek watershed is divided into two HUC 14 subwatersheds. The Jacksonville tributary (above Barkers Brook) subwatershed drains about 31 percent of Westampton, and the Assiscunk Creek (below Neck Road) subwatershed drains just one percent of the township.

The Assiscunk Creek main channel has a total length of nine miles, from its origins in the Tilghmans Corner area, just north of Westampton in southeast Springfield Township, to the Delaware River at Burlington Borough. This watershed includes large areas of both

Mansfield and Springfield townships, and the main channel of the creek is the boundary between those two municipalities. The watershed also includes parts of Florence, Eastampton, Westampton, and Burlington townships. Although the creek is not located directly in the municipality, there are many small unnamed tributaries in Westampton Township that flow to the Assiscunk. The Assiscunk Creek provides one of the most important habitats for wood and bog turtles in the inner coastal plain region. The creek itself is tidal up to Neck Road in Burlington Township.

The Assiscunk Creek is a designated Category One (C1) stream for much of its reach. As designated by New Jersey's Surface Water Quality Standards (N.J.A.C. 7:9B), C1 waters have additional protection requirements to help prevent water quality degradation due to their exceptional ecological, recreational, fishery, or water supply significance. Although the stream is located outside the municipal borders, portions of Westampton Township drain to the Assiscunk Creek. Therefore, development within the Assiscunk Creek subwatershed in Westampton may degrade the water quality and ecological integrity of this creek.

Table 6: Watersheds and Subwatersheds

Watershed Name (HUC11 #)	Subwatershed Name (HUC14 #)	Acreage within Westampton	Stream Classification	% of municipality in each watershed
Assiscunk Creek (02040201100)	Assiscunk Creek (below Neck Road) (02040201100060)	86.11	FW2-NT(C1)	1.21%
	Jacksonville Trib (above Barkers Brook) (02040201100030)	2,209.26	FW2-NT (C1)	31.12%
Rancocas Creek (02040202080)	Mill Creek (Willingboro) (02040202080030)	1,968.71	FW2-NT	27.73%
	Rancocas Creek (Martins Beach to NB/SB) (02040202080020)	662.94	FW2-NT	9.34%
Rancocas Creek NB (below New Lisbon dam) (02040202040)	Rancocas Creek NB (below Smithville) (02040202040050)	2,172.74	FW2-NT	30.60%
Total		7,099.76		100%

Source: NJDEP, 2008

Streams

Between its northern border of Mill Creek and southern border of the Rancocas Creek North Branch, Westampton Township contains nearly 13 miles of streams. Named streams within the township include Barkers Brook, Gaunts Brook, Mill Creek, and the Rancocas Creek and its North Branch.

Waterways are classified by their stream order, which is a hierarchy used to differentiate smaller streams from larger ones. This hierarchy is illustrated in [Figure 5: Stream Order](#). As shown in [Table 7: Streams](#), over 10 miles of the streams in Westampton are first or second order (headwater) streams, meaning that they are the initial sections of stream channels with no contributing tributaries (first order streams), or they are stream channels formed from only one branching section of tributaries above them (second order streams). The headwaters are where a stream is “born” and actually begins to flow. With the exception of the sixth order North Branch of the Rancocas Creek that forms the township’s southern border, all of the streams within Westampton are headwater streams.

Table 7: Streams

Stream Order	Length (miles)
First order streams (smallest)	9.92
Second order streams	1.15
Sixth order streams	1.69
Total	12.76

Source: NJDEP, 1998

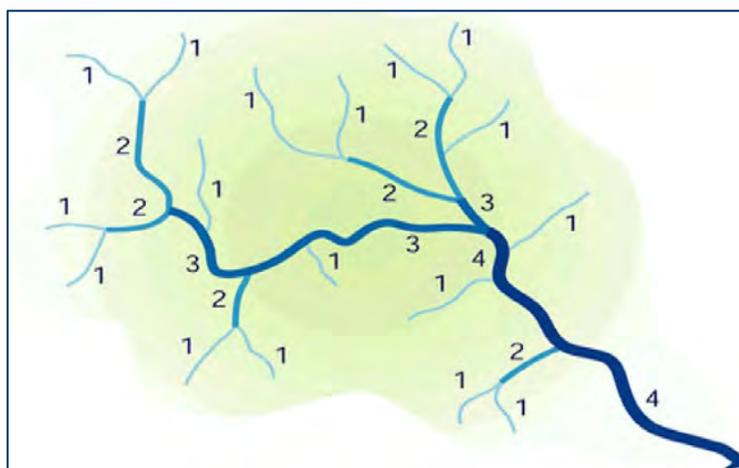
Headwaters are of particular importance because they tend to contain a diversity of aquatic species and their condition affects downstream water quality. Because of their small size, they are highly susceptible to impairment by human activities on the land. First and second order streams are narrow and often shallow, and are characterized by relatively small base flows. This makes them subject to greater temperature fluctuations, especially when forested

buffers on their banks are removed.

They are also easily over silted by sediment-laden runoff and their water

quality can be rapidly degraded. In addition, first order streams are greatly affected by changes in the local water table because they are fed by groundwater sources.

Figure 5: Stream Order



Source: T. A. Endreny, 2003

Headwaters are important sites for the aquatic life that is at the base of the food chain and often serve as spawning or nursery areas for fish.

Lakes and Ponds

There are 39 acres of artificial lakes in Westampton. The largest lake covers over seven acres and is located on the horse farm in the northeastern section of the township just south of Oxmead Road (Route 639). There are a number of other artificial lakes in Westampton that are each less than two acres in size.

Artificial lakes and ponds are man-made impoundments of water that are formed by damming. They are often used for irrigation and flood control. Artificial ponds and lakes may also be the result of extractive mining operations or cranberry farming.

Wetlands

Wetlands support unique communities that serve as natural water filters and as incubators for many beneficial species. The term “wetland” is applied to areas where water meets the



Wetlands at the Deerwood Country Club Estates

soil surface and supports a particular biological community. The source of water for a wetland can be an estuary, river, stream, lake edge, or groundwater that rises close to the land surface. Under normal circumstances, wetlands are those areas that support a prevalence of defined wetland plants on a wetland soil. The U.S. Fish & Wildlife Service designates all large vascular plants as wetland (hydric), non-wetland (non-hydric), or in-between (facultative). Wetland soils, also known as hydric soils, are areas where the land is saturated for at least seven consecutive days during the growing season. Wetlands are classified as either tidal (coastal) or

nontidal (interior). Tidal wetlands can be either saline or freshwater. There are also special wetland categories to denote saturated areas that have been altered by human activities.

New Jersey protects freshwater (interior) wetlands under the New Jersey Freshwater Wetlands Protection Act Rules: N.J.A.C. A 7:7A. The law also protects transition areas, or “buffers,” around freshwater wetlands. The New Jersey freshwater wetlands maps provide guidance on where wetlands are found in New Jersey, but they are not the final word. Only an official determination from DEP, called a “letter of interpretation (LOI),” can legally determine for sure if there are freshwater wetlands on a property. An LOI verifies the presence, absence, and boundaries of freshwater wetlands and transition areas on a site.

Activities permitted to occur within wetlands are very limited and usually require a permit. Additional information on wetlands rules and permits is available through NJDEP.

All of Westampton's wetlands are freshwater. Natural wetlands of all types total approximately 1,591 acres within the township (22 percent of total land area), of which 982 acres are wooded wetlands, 170 acres are low-growing emergent, scrub/shrub or herbaceous wetlands, and 82 acres are freshwater tidal marshes. See [Map 9: Surface Water, Wetlands, and Vernal Pools](#).

In addition to natural wetlands, Westampton also includes approximately 336 acres (about five percent of total land area) of modified or disturbed wetlands. Modified wetlands are former wetland areas that have been altered by human activities and no longer support typical wetland vegetation, or are not vegetated at all. Modified wetland areas do, however, show obvious signs of soil saturation and exist in areas shown to have hydric soils on U.S. Soil Conservation Service soil surveys.

Westampton's modified wetlands fall into the following categories: 253 acres of agricultural wetlands, 12 acres of disturbed wetlands, 30 acres of former agricultural wetlands, 15 acres of wetlands used as right-of-ways, and 25 acres of wetlands found in maintained greenspace, lawns, or recreation areas. A more detailed description of Westampton's natural wetlands is found in the [Natural Vegetation](#) section on page 65.

Agricultural Wetlands

Agricultural wetlands occupy 253 acres (four percent) of Westampton Township. These are located throughout the township, and are concentrated in the northeastern area. Agricultural wetlands are modified former wetlands that are under cultivation yet still exhibit evidence of soil saturation in aerial infrared photo surveys. See [Map 9: Surface Water, Wetlands, and Vernal Pools](#).

Agricultural wetlands were usually drained by a technique called "tile drainage." Tile drainage was a common method of removing excess water from farm fields that exhibited one or more of the following characteristics: (1) small areas of isolated wetlands, (2) very flat land that ponded in wet weather, (3) soils were slow to warm in the spring because of a relatively high water table, or (4) soils had a very high clay content and, therefore, drained slowly. Tile drainage was very labor intensive, as it involved installing subsurface drainage pipes throughout a field at a depth of three to six feet. Tile drains were used sparingly—only where there were extremely wet spots. Therefore, the existence of tile drainage strongly indicates a natural wetland hydrology.

The Natural Resources Conservation Service sponsors the Wetlands Reserve Program, a voluntary program that offers landowners a chance to receive payments for restoring and protecting wetlands, including agricultural wetlands on their property. Restoring agricultural wetlands would require removing them from agricultural use and restoring them to their natural state. This program provides technical and financial assistance to eligible landowners who can enroll eligible lands through permanent easements, 30-year easements, or restoration cost-share agreements. See [Appendix A: Federal and State](#)

Conservation Programs for Farmers for additional information on assistance available to farmers.

Vernal Pools

Vernal pools are bodies of water that appear following snowmelt and during spring rains, but disappear or are dry during the rest of the year. They are highly important sites for certain rare species of amphibians. Particular types of frogs and salamanders will only breed in vernal ponds (obligate breeders), which provide their offspring with a measure of protection because the pond's impermanence prevents the residence of predators of the eggs and young. Other species may use vernal pools for breeding, but can also breed in habitats that contain fish (facultative breeders).

Vernal pools are so intermittent that their existence as wetlands has not been frequently recognized. Consequently, many of them have disappeared from the landscape, or have been substantially damaged. This, in turn, is a principal cause of the decline of their obligate amphibian species.

The New Jersey Division of Fish and Wildlife has been conducting a Vernal Pool Survey project since 2001 to identify, map, and certify vernal ponds throughout the state. A certified vernal pool is one that occurs in a confined basin without a permanently flowing outlet, has habitat documented for one obligate or two facultative herptile (reptile and amphibian) species, maintains ponded water for at least two continuous months between March and September, and is free of fish populations throughout the year.

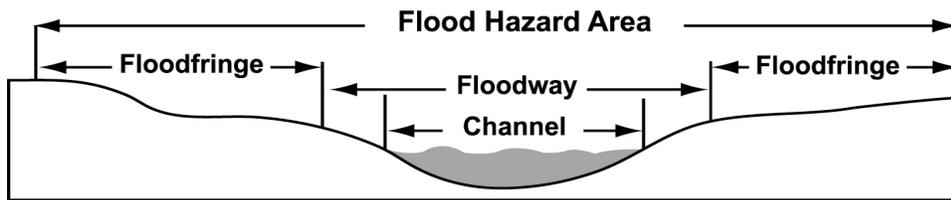
Once a vernal pond is certified, regulations require that a 75-foot buffer be maintained around the pond. NJDEP's Division of Land Use Regulation oversees this designation and restricts development around vernal ponds by denying construction permits. Local municipalities can provide additional protection by negotiating conservation easements on the land surrounding the pond or by instituting restrictive zoning, such as passing a stream corridor protection overlay ordinance that specifically includes the vernal pools. A township can also include the pools in its official map. The South Jersey Land and Water Trust provides training sessions every March to teach volunteers how to identify, survey, and certify vernal pools.

The state has identified 14 potential vernal pools in Westampton Township, which are listed in **Appendix B: Vernal Pools in Westampton Township** and shown on **Map 9: Surface Water, Wetlands, and Vernal Pools**. These vernal pools are scattered throughout the township, although there is a concentration of vernal pools along Mill Creek and its tributaries in the northwestern area of the township. Surveys of each pond are needed to determine if the pond is still in existence as a natural habitat, and if it is, what species are present. Once surveyed, the New Jersey Division of Fish and Wildlife will review the data and those pools that meet the criteria will be certified.

Floodplains

Areas naturally subject to flooding are called floodplains, or flood hazard areas. As shown in [Figure 6](#), Floodplains encompass a floodway, which is the portion of a floodplain subject to high velocities of moving water, and the adjacent flood fringe, which helps to hold and carry excess water during overflow of the normal stream channel. The 100-year floodplain is defined as the land area that will be inundated by the overflow of water resulting from a 100-year flood (a flood that has a one percent chance of occurring in any given year).

Figure 6: Parts of a Flood Hazard Area



Source: NJDEP

Floodplains require protection in order to prevent loss to residents, especially within the boundaries of the floodway. Equally important is the preservation of the environmentally sensitive aquatic communities that exist in floodplains. These communities are often the first link in the food chain of the aquatic ecosystem. In addition, floodplains serve the function of removing and mitigating various pollutants through the uptake by their vegetation of excess chemical loads in the water and by the filtering of sediments generally. All efforts to keep development out of floodplains will help to preserve the flood-carrying capacity of streams and their water quality.

In New Jersey and throughout the country, building in areas subject to flooding is regulated to protect lives, property, and the environment. New Jersey regulates construction in the flood hazard area under the Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq., and its implementing rules at N.J.A.C. 7:13. Activities that are proposed to occur in a flood hazard area will require issuance of a flood hazard area permit or a letter of nonapplicability from the NJDEP. Although the terms “flood hazard area” and “100-year floodplain” refer to similar concepts, NJDEP defines them in slightly different ways. There are a number of different methods the NJDEP uses to determine the extent of the flood hazard area, including defining the flood hazard area as the area inundated by a flood resulting from the 100-year discharge increased by 25 percent.

New Jersey’s flood hazard area maps are not available in digital form, and so it is only possible to approximate the spatial extent of the flood hazard area in Westampton by using the Federal Emergency Management Agency’s (FEMA’s) 100-year floodplain maps. FEMA’s maps show that almost 852 acres, or 12 percent, of Westampton Township’s land is within the 100-year flood hazard area, and an additional 116 acres are within the 500-year flood hazard area. Nearly all of Westampton’s floodplain areas are located along

three main waterways in the township: the North Branch of Rancocas Creek, Mill Creek, and Barkers Brook. See [Map 10: Floodplains](#).

Surface Water Quality

Water quality standards are established by federal and state governments to ensure that water is suitable for its intended use. The ultimate objective of the federal Clean Water Act (P.L. 95-217) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Standards are intended to restore the quality of the nation's waters to provide for the protection and propagation of fish, shellfish, and wildlife and to provide for recreation in and out of the water, wherever attainable.

All waterbodies in New Jersey are classified by NJDEP as either freshwater (FW), pinelands water (PL), saline estuarine water (SE), or saline coastal water (SC).

Freshwater is further broken down into freshwater that originates and is wholly within



Rancocas Creek

federal or state parks, forests, or fish and wildlife lands (FW1) and all other freshwater (FW2). The water quality for each of these groups must be able to support designated uses that are assigned to each waterbody classification (see Surface Water Quality Standards N.J.A.C. 7:9B-1.12). In addition to being classified as FW1 and FW2, fresh waterbodies are classified as trout producing (TP), trout maintaining (TM), or nontrout waters (NT). Each of these classifications may also be subject to different water quality standards. All streams in Westampton are FW2-NT, meaning they are freshwater streams that are not trout producing or trout maintaining.

According to NJDEP rules, FW2-NT waters must provide for (1) the maintenance, migration, and propagation of the natural and established biota; (2) primary and secondary contact recreation (i.e., swimming and fishing); (3) industrial and agricultural water supply; (4) public potable water supply after conventional filtration and disinfection; and (5) any other reasonable uses.

The determination of whether or not water quality is sufficient to meet a body of water's designated use(s) is based on whether or not the body of water is within established limits for certain surface water quality parameters. Some examples of surface water quality parameters include fecal coliform, dissolved oxygen, pH, phosphorous, and toxic substances. NJDEP also evaluates water quality by examining the health of aquatic life in a stream.

New Jersey's Integrated Water Quality Monitoring and Assessment Report

The Federal Clean Water Act mandates that states submit biennial reports to the U.S. Environmental Protection Agency (EPA) that describe the quality of their waters. States must submit two reports: the first is the *Water Quality Inventory Report*, or 305(b) Report, which documents the status of principal waters in terms of overall water quality and support of designated uses; the second is the 303(d) List, which lists the waterbodies that are not attaining water-quality standards. States must also prioritize the impaired waterbodies on the 303(d) List for Total Maximum Daily Load (TMDL) analyses and identify those high-priority waterbodies for which they anticipate establishing TMDLs in the next two years.

Beginning in 2002, the NJDEP combined the 305(b) Report and the 303(d) List into a single report, according to the EPA's guidance. The biennial *Integrated Water Quality Monitoring and Assessment Report* places the state's waters on one of five "sublists." Sublists 1 and 2 contain waters that are attaining standards. Sublist 3 contains waters that have insufficient data to determine their status. Sublist 4 contains waters that do not attain water-quality standards, but which meet one of the following three conditions: (1) a TMDL has been completed for the pollutant causing nonattainment; (2) other enforceable pollution control requirements are reasonably expected to result in conformance with the applicable water-quality standards; or (3) nonattainment is caused by something other than a pollutant. Sublist 5, equivalent to the 303(d) List, contains waters that do not attain their designated use and for which a TMDL is required. See the subsequent section on **Total Maximum Daily Loads (TMDLs)**.

In 2006, NJDEP began reporting water quality data on a HUC 14 subwatershed basis, and so the assessments of portions of rivers and streams are reported by the subwatershed they fall within. Subwatersheds (assessment units) are assessed on their attainment of eight different designated uses, although not all uses are applicable to all subwatersheds. The designated uses are as follows:

- ▶ Aquatic life (general)
- ▶ Aquatic life (trout)
- ▶ Recreation
- ▶ Drinking water supply
- ▶ Agricultural water supply
- ▶ Industrial water supply
- ▶ Shellfish harvest
- ▶ Fish consumption

As none of the waters in Westampton Township support trout or shellfish, these designated uses are not applicable. As shown in **Table 8**, four of the five subwatersheds that are partially within Westampton are impaired (Sublist 5) for at least one designated

use; the fifth subwatershed (Jacksonville tributary) has insufficient data for assessment (Sublist 3). For aquatic life, the most general and encompassing parameter of water quality, four subwatersheds are impaired for aquatic life, and one has insufficient data. See [Map 11: Water Quality \(2008\)](#).

Table 8: New Jersey Integrated Water Quality Monitoring and Assessment Report, 2008

Subwatershed Name	Subwatershed ID	Aquatic Life (General)	Recreation	Drinking Water Supply	Agricultural Water Supply	Industrial Water Supply	Fish Consumption
Mill Creek (Willingboro)	02040202080030	5	3	5	2	2	5
Rancocas Creek NB (below Smithville)	02040202040050	5	4A	5	2	2	5
Rancocas Creek (Martins Beach to NB/SB)	02040202080020	5	3	2	2	2	5
Jacksonville Tributary (above Barkers Brook)	02040201100030	3	3	3	3	3	3
Assiscunk Creek (below Neck Rd)	02040201100060	5	3	2	2	2	5

Source: NJDEP, 2008

The four subwatersheds in Westampton that do not attain a designated use are each impaired due to two or more parameters, as shown in [Table 9: 303\(d\) List of Impaired Waters in Westampton with Priority Ranking, 2008](#).

Table 9: 303(d) List of Impaired Waters in Westampton with Priority Ranking, 2008

WMA	Subwatershed Name	Subwatershed	Parameter	Ranking
19	Mill Creek (Willingboro)	02040202080030	Arsenic	M
			Cause Unknown	L
			PCBs	M
19	Rancocas Creek NB (below Smithville)	02040202040050	Arsenic	M
			PCBs	M
			Phosphorus	H
19	Rancocas Creek (Martins Beach to NB/SB)	02040202080020	PCBs	M
			Phosphorus	H
20	Assiscunk Creek (below Neck Road)	02040201100060	Cause Unknown	L
			PCBs	M

Source: NJDEP, 2008

All four subwatersheds were impaired due to polychlorinated biphenyls (PCBs) in 2008. This highly toxic chemical is a persistent organic pollutant (POP) and is included on the “Dirty Dozen” list of hazardous chemicals that have been outlawed worldwide. POPs have long half-lives, adhere strongly to soil, bioaccumulate in the fatty tissue of animals, and are transmitted up the food chain. PCBs are byproducts of industrial processes used to make electrical, heat transfer, and hydraulic equipment; paints, plastics, and rubber products; pigments, dyes, and bleached paper; herbicides and pesticides; and many other industrial applications. Exposure to PCBs can cause cancer, skin conditions, and damage to the immune, reproductive, nervous, and endocrine systems.

Additionally, two subwatersheds are impaired due to phosphorus. Phosphorus exists naturally at low levels within the environment, although excess phosphorus can lead to harmful algae blooms. These in turn can produce “dead zones” where no aquatic life can survive as the excess algae dies and uses up the oxygen. Typical causes of phosphorus pollution include overfertilization of lawns and agricultural areas; runoff from impervious surfaces like parking lots, lawns, rooftops, and roadways; discharge from waste-water treatment plants; and overflow from septic systems. Soil erosion is a major contributor of phosphorus to streams, and streambank erosion occurring during floods can transport high quantities of phosphorous into the water system.

The Mill Creek (Willingboro) and Rancocas Creek North Branch (below Smithville) subwatersheds are also impaired due to arsenic. Consumption of arsenic, a heavy metal, has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate, as well as many other noncancer effects. Arsenic occurs naturally at low levels within the environment, although contamination of water resources is due to its presence in industrial and agricultural activities. About 90% of industrial arsenic is used as a wood preservative, although it is also used in paints, dyes, metals, drugs, soaps and semi-conductors. Arsenic is also present in some fertilizers and animal feeding operations.

The Mill Creek (Willingboro) and Assiscunk Creek (below Neck Road) subwatersheds are listed as being impaired with “cause unknown.” According to the NJDEP, this listing is given to subwatersheds where biological monitoring data shows impairment, but the associated chemical water quality data is not available or does not indicate that pollutants are above water quality standards.

Total Maximum Daily Loads (TMDLs)

For impaired waterways with a high priority ranking for remediation, the state is required by the EPA to establish a Total Maximum Daily Load (TMDL). A TMDL quantifies the amount of a pollutant that a waterbody can assimilate (its loading capacity) without violating water quality standards. The purpose of a TMDL is to initiate a management approach or restoration plan based on identifying the sources of a pollutant and determining the percentage reductions of the pollutant that must be achieved by each source. These sources can be point sources, such as sewage treatment plants, or nonpoint sources, such as stormwater runoff. A TMDL goes through four stages. First, it is proposed in a report by NJDEP; then it is established when NJDEP finalizes its report;

next it is approved by EPA; and finally it is adopted when NJDEP adopts it as an amendment to a water-quality management plan.

In general, implementation of a TMDL relies on actions mandated by the Municipal Stormwater Management program, which includes the ordinances that municipalities are required to adopt under that program. It also depends on voluntary improvements in stormwater management in agricultural and other areas.

A TMDL determines the percentage reduction needed in order for a stream segment to meet the water-quality standard. Nonpoint stormwater sources are the largest contributors, as runoff from various land uses transports pollutants into waterbodies during rain events. Nonpoint sources also include inputs from sources such as failing sewage conveyance systems, sanitary sewer overflows, and failing or inappropriately located septic systems.

Of the subwatersheds within which Westampton is partially located, three are impaired with phosphorus with a high priority for remediation. These are listed on the TMDL schedule as shown in **Table 10**.

Table 10: TMDLs for Impaired Waters in Westampton, 2008

WMA	Assessment Unit ID	Assessment Unit Name	Parameter
19	02040202080030	Mill Creek (Willingboro)	Phosphorus
19	02040202040050	Rancocas Creek NB (below Smithville)	Phosphorus
19	02040202080020	Rancocas Creek (Martins Beach to B/SB)	Phosphorus

Source: NJDEP, 2008

Water-Quality Monitoring Networks

New Jersey's *Integrated Report* is based on the water quality assessments of a number of different monitoring networks. The Ambient Surface Water Quality Monitoring Network (ASWMN) and the Ambient Biological Monitoring Network (AMNET) are the two primary sources of surface water monitoring data. Beyond the information included in the *Integrated Report*, additional water quality data gathered from these monitoring stations is available through the USGS and the NJDEP.

The ASWMN is a cooperative network between USGS and NJDEP that samples surface water quality at 112 stations in the state, none of which are located within Westampton. However, two monitoring stations are located nearby in Mount Holly and Willingboro. These station monitors temperature, dissolved oxygen (DO), pH, carbon dioxide, nitrogen, ammonia, phosphorus, arsenic, and many other parameters.

AMNET is another water quality monitoring system that the *Integrated Report* is based upon. AMNET, administered solely by NJDEP, consists of over 800 stream sites in the state and provides long-term biological data. The program routinely samples and evaluates the benthic macroinvertebrate population at each site as a biological indicator of water quality. Benthic macroinvertebrates are bottom-dwelling aquatic insects, worms, mollusks, and crustaceans that are large enough to be seen by the naked eye. There are no AMNET monitoring stations that are located within Westampton Township; however, there are several in adjacent townships as shown in **Table 11**. The Willingboro station serves both the ASWMN and the AMNET stream monitoring networks.

Table 11: Stream Monitoring Network Stations

Station Name	Municipality	ASWMN	AMNET
North Branch Rancocas Creek at Iron Works Park	Mount Holly Twp	01467005	
Mill Creek at Levitt Parkway	Willingboro	01467021	AN0175
Unnamed Tributary to Assiscunk Creek at Oxmead Road	Burlington Twp		AN0142C
Barkers Brook at Jacksonville-Smithville Road	Springfield Twp		AN0141O
Parkers Creek at Creek Road	Moorestown Twp		AN0174
Rancocas Ck NB at Pine St Pk	Mount Holly Twp		AN0151
Rancocas Ck at NJTPK bridge	Hainesport Twp		AN0176R
Rancocas Ck SB at Rt 38	Hainesport Twp		AN0176S

Source: NJDEP, USGS, 2009

Knowing the actual condition of streams and stream banks, and planning for their improvement, requires more frequent surveying and monitoring than the state can provide. The state primarily monitors main channels in nontidal areas and only does biological assessments through AMNET on a five-year cycle. Stream surveys by local organizations are much needed, along with regular monitoring of water quality on all of a community's waterways.

Other Monitoring

Certain fish may contain toxic chemicals, such as PCBs, dioxins, or mercury, which accumulate in bottom sediments and aquatic life, including fish tissue. Chemical contaminants, such as dioxin and PCBs, are classified by the USEPA as probable cancer-causing substances in humans. Elevated levels of mercury can pose health risks to the human nervous system. Infants, children, pregnant women, nursing mothers, and women of childbearing age are considered to be at a higher risk from contaminants in fish than other members of the general public. Since 1982, NJDEP has been catching fish at numerous sampling stations throughout the state and testing for contaminant levels. It then adopts advisories to guide residents on safe consumption practices.

The consumption advisories for fish caught in general freshwater are listed in [Table 12](#). There are no additional fish consumption advisories for waterbodies located within Westampton Township. Details on safe preparation and consumption of fish are found at the “Fish Smart Eat Smart” page of the NJDEP Division of Fish and Wildlife website.

Table 12: Fish Consumption Advisories for General Freshwater

Species	General Population	High-Risk Individuals
	Eat No More Than:	Eat No More Than:
Trout (Brown, Brook, Rainbow)	One Meal Per Week	One Meal Per Week
Largemouth Bass		
Smallmouth Bass		
Chain Pickerel		One Meal Per Month
Yellow Bullhead	No Restrictions	
Brown Bullhead		
Sunfish (4)		One Meal Per Week

Source: NJDEP, 2009

Causes of Water Quality Impairments

Point Sources of Pollution

Point sources of pollution, which come from a single source or “point,” such as an industrial pipe discharge, are regulated by NJDEP through the New Jersey Pollution Discharge Elimination System (NJPDES). New Jersey created NJPDES in response to the Federal Clean Water Act of 1972, which mandated that each state develop water quality standards and regulate the amount of pollution entering waterbodies. The act classified all water pollution into one of two categories: “point source” pollution coming from a single source, such as an industrial pipe; and “nonpoint source” pollution, which comes from many diffuse sources. Although the Federal Clean Water Act only required states to regulate point sources, New Jersey also regulates nonpoint sources through authority of the NJPDES rules. See [Nonpoint Sources of Pollution](#) in the subsequent section.

NJDEP, through the Division of Water Quality and the Bureau of Point Source Permitting, administers the NJPDES program. Under NJPDES, any facility discharging over 2,000 gallons per day (gpd) of wastewater directly into surface water or groundwater (generally through a septic system) must apply for and obtain a permit for discharging. Rather than creating individually tailored permits for each and every facility, the Division of Water Quality uses scientific standards to create and issue general permits for different categories of dischargers. NJDEP enforces the terms of the NJPDES permit by visiting discharging facilities and requiring facilities to periodically conduct and submit water

quality, biological and toxicological analyses, and thermal impact and cooling water assessments.

As of November 2009, five NJPDES permits for point source discharges were issued to individual facilities in Westampton Township. These are shown in **Table 13: NJPDES Permits for Point Source Discharges** and depicted on **Map 20: Sewer Service Area and NJDPES Permits**. Of the five permits, two discharge to groundwater (codes T1 and I2), two discharge to stormwater (code 5G2), and one discharges to surface water (code B).

Table 13: NJPDES Permits for Point Source Discharges

NJPDES Permit Number	PI Number	Facility Name	Effective Start Date	Expiration Date	Discharge Category	
					Code	Description
NJ0062693	46302	Woodlane Water Treatment Plant	12/1/2006	11/30/2011	B	Industrial Wastewater
NJG0102300	47465	Woodlane Water Treatment Plant	12/1/2008	11/30/2013	I2	Potable WTP Basins & Drying Beds (GP)
NJG0100617	47436	Burlington County Country Club	6/1/2008	5/31/2013	T1	Sanitary Subsurface Disposal (GP)
NJG0141305	159895	New Century Transportation Inc	6/1/2007	5/31/2012	5G2	Basic Industrial Stormwater GP - NJ0088315 (5G2)
NJG0144312	196142	Inductotherm	6/1/2007	5/31/2012	5G2	Basic Industrial Stormwater GP - NJ0088315 (5G2)

GP = General Permit

Source: NJDEP, Division of Water Quality, 2009

Nonpoint Sources of Pollution

Nonpoint source pollution, or stormwater runoff, has the largest effect on the water quality and channel health of streams in Westampton. These sources are also the most difficult to identify and remediate because they are diffuse, widespread, and cumulative in their effect. Most nonpoint source pollution in Burlington County is derived from stormwater drainage off paved surfaces, such as streets, commercial and industrial areas, residential sites (with and without detention basins), and agricultural fields lacking adequate

vegetative buffers. The waterways in Westampton are affected by stormwater runoff from both within the township and upstream municipalities.

The two major highways (I-295 and the New Jersey Turnpike), bisecting the township as well as the industrial complexes near the exit of I-295, generate a great deal of stormwater runoff. The expansive areas of paving that characterize these highways and complexes eventually drain to either Mill Creek to the north or Rancocas Creek to the south.

Since the adoption of the Federal Clean Water Act and the implementation of the NJPDES program in subsequent years, water pollution from point sources has decreased dramatically. However, as development has continued to spread throughout New Jersey, nonpoint source pollution has increased substantially in recent decades. NJDEP's new Stormwater Management Rules, listed in [Figure 7: Stormwater Management Basic Requirements](#), focus on reducing and controlling nonpoint sources of water pollution.

The Municipal Stormwater Regulation Program was developed in response to the USEPA's Stormwater rules published in December 1999. The Department issued final stormwater rules on February 2, 2004 and established four NJPDES general permits: the Tier A Municipal Stormwater General Permit (Tier A Permit for urban and suburban municipalities); the Tier B Municipal Stormwater General Permit (Tier B Permit for rural municipalities); the Public Complex Stormwater General Permit (Public Complex Permit); and the Highway Agency Stormwater General Permit (Highway Permit). Westampton Township is a Tier A Municipality with a valid NJPDES general permit, listed in [Table 14: NJPDES Permits for Nonpoint Source Pollution](#). Public complexes include certain large public colleges, prisons, hospital complexes, and military bases; there are no public complexes in Westampton with a NJPDES permit. Highway agencies include county, state, interstate, or federal government agencies that operate highways and other thoroughfares; however, there are no highway agencies with NJPDES permits in Westampton.

Table 14: NJPDES Permits for Nonpoint Source Pollution

NJPDES Permit Number	PI Number	Facility Name	Effective Start Date	Expiration Date	Discharge Category	
					Code	Description
NJG0147737	168146	Westampton Twp	3/1/2009	2/28/2014	R9	Tier A Municipal Stormwater General Permit

Source: NJDEP, Division of Water Quality, 2009

The program lays out guidance and requirements for management of and education about stormwater at the local level. Municipalities are required to obtain the NJPDES general permit for the stormwater system and its discharges within their borders, which are considered to be owned and “operated” by the municipality. The general permits address stormwater quality issues related to new development, redevelopment, and existing development by requiring regulated entities to implement Statewide Basic Requirements (SBRs).

Figure 7: Stormwater Management Basic Requirements

Stormwater Management Statewide Basic Requirements:
Tier A Towns, Highway Agencies, and Institutions

1. Control post-construction stormwater management in new development and redevelopment through:
 - Adoption of a stormwater management plan in accordance with N.J.A.C. 7:8-4.
 - Adoption and implementation of a stormwater control ordinance in accordance with N.J.A.C. 7:8-4. This ordinance requires retention on site of 100% of preconstruction recharge, and use of low-impact design in stormwater facilities, among other features.
 - Ensuring compliance with Residential Site Improvement Standards (RSIS) for stormwater management (N.J.A.C. 5:21-7). The RSIS was revised to incorporate the low-impact design and other requirements of the stormwater control ordinance.
 - Ensuring long-term operation and maintenance of Best Management Practices on municipal property.
 - Requiring that new storm drain inlets meet new design standards.
2. Conduct local public education:
 - Distribute NJDEP educational information about stormwater requirements, nonpoint source pollution, and stewardship annually to residents and businesses and conduct a yearly educational “event” (such as a booth with these messages at a community day).
 - Label all municipal storm drain inlets that are next to sidewalks or within plazas, parking areas, or maintenance yards with a variation of the “don’t dump” message.
 - Distribute information annually regarding fertilizer/pesticide application, storage, disposal, and landscaping alternatives.
 - Distribute information annually regarding proper identification, handling, and disposal of wastes including pet waste and litter.
3. Control improper disposal of waste through improved yard waste collection and through adoption and enforcement of ordinances (pet solid waste, litter, improper dumping, and wildlife feeding).
4. Control solids and floatables through increased street sweeping, retrofitting storm drain inlets during road repairs, and instituting programs for stormwater facility management for roadside erosion control and for outfall pipe scouring/erosion.
5. Improve maintenance yard operations, specifically for de-icing material storage, fueling operations, vehicle maintenance, and housekeeping operations.
6. Increase employee training about all of the above.

Source: NJDEP, 2005

Under the 2004 NJPDES permit, a town must meet certain specific requirements in planning, ordinance adoption, education, management of township facilities, and investigation of parts of the stormwater system. Fulfillment of these Statewide Basic Requirements was scheduled to occur over the course of five years. All of the requirements were intended to reduce the water pollution from stormwater runoff. As of June 2009, NJDEP is in the process of developing a rule proposal package for readopting the Stormwater Management Rules, with certain amendments. See [Figure 7](#) on page 46 for details of the Statewide Basic Requirements of this program.

Impervious Coverage

The volume of runoff that is carried to a stream impacts the stream channel condition. Increased volume usually results from increased impervious surface within a subwatershed. As an area becomes developed, more stormwater is directed to the streams from neighborhood storm drains, residential and commercial stormwater facilities, and road drainage. In general, scientists have found that levels of impervious cover of 10 percent or more within a subwatershed are directly linked to increased stormwater runoff, enlargement of stream channels, increased stream bank erosion, lower dry weather flows, higher stream temperatures, lower water quality, and declines in aquatic wildlife diversity. When impervious coverage in a watershed reaches 25 percent to 30 percent, streams can become severely degraded. Impervious coverage in Westampton is shown on [Map 12: Percent Impervious Cover by Subwatershed \(2002\)](#).

Several HUC 14 subwatersheds, which are completely or partially within Westampton Township, have a relatively high amount of impervious coverage. Approximately 24 percent of the land within the Mill Creek (Willingboro) subwatershed in northwestern Westampton is covered with impervious materials; this subwatershed drains many developed areas in Willingboro and Burlington Township. Approximately 18 percent of the land within the Rancocas Creek (Martins Beach to North Branch/South Branch) subwatershed is covered with impervious materials. The major north-south route of I-295, part of the NJ Turnpike, and highway-associated industrial and office parks are located within this HUC 14 subwatershed. Finally, approximately 18 percent of the land within the Rancocas Creek North Branch (below Smithville) subwatershed is considered impervious surface; the majority of developed areas in southern Westampton Township, including a portion of the NJ Turnpike, falls within this subwatershed. Approximately 16 percent of land in the Assiscunk Creek (below Neck Road) subwatershed is covered in impervious surfaces; residential areas in eastern Westampton Township fall within this subwatershed.

However, land in the Jacksonville Tributary (above Barkers Brook) subwatershed has only about 6 percent impervious coverage. This subwatershed drains mostly rural areas of the township characterized by large swaths of farmland, wetlands, and streams. See [Table 15: Impervious Coverage by HUC 14 Watersheds](#) for information regarding impervious cover.

Table 15: Impervious Coverage by HUC 14 Watersheds

Watershed Name	Watershed ID (HUC 11 #)	Subwatershed Name	Subwatershed ID (HUC 14 #)	% Impervious
Assiscunk Creek	02040201100	Jacksonville Trib (above Barkers Brook)	02040201100030	6.31%
		Assiscunk Creek (below Neck Rd)	02040201100060	16.24%
Rancocas Creek NB (below New Lisbon dam)	02040202040	Rancocas Creek NB (below Smithville)	02040202040050	18.17%
Rancocas Creek	02040202080	Rancocas Creek (Martins Beach to NB/SB)	02040202080020	18.24%
		Mill Creek (Willingboro)	02040202080030	23.95%

Source: NJDEP, 2002



Hancock Farmstead

Stream Buffers



Rancocas Creek

The stream buffer is the region immediately beyond the banks of a stream that serves to limit the entrance of sediment, pollutants, and nutrients into the stream itself. Stream buffers are quite effective at filtering substances washing off the land. The vegetation of the buffer traps sediment and can actually utilize (uptake) a percentage of the nutrients flowing from lawns and farm fields. When forested, a stream buffer promotes bank stability and serves as a major control of water temperature. The buffer region also serves as a green corridor – a greenway – for wildlife to move between larger forested habitat areas. Residents can utilize these greenways for recreation with the addition of trails, bikeways, and access points to water for fishing and canoe/kayak launching.

The importance of a healthy, intact buffer zone (also referred to as a “riparian corridor”), especially for headwater streams, has been well documented scientifically over the past 20 years. There is less agreement and much continuing research on the appropriate minimum width of a buffer. In the literature on this issue, a recommended minimum buffer width of 100 feet is most common, with differing activities permitted in each of three zones within the buffer. Buffers of up to 300 feet are recommended for wildlife corridors and potential passive recreational use, such as walking trails.

A stream corridor ordinance, which Westampton Township does not currently have, would help protect the entire stream ecosystem. NJDEP and ANJEC have model stream corridor ordinances that can provide guidance to interested municipalities. The ordinance should require developers to grant conservation easements on stream buffer areas as part of any site plan and subdivision approval. Regular easement inspections should also be established and enforced. Riparian buffer areas may also be acquired by municipalities as part of a recreational park, open space, or greenway plan.

In Westampton Township, there are adequate buffer zones of significant size surrounding much of the length of major waterways, including Mill Creek, Barkers Brook, and the North Branch of Rancocas Creek. Mill Creek and its tributaries, located in the northwestern portion of Westampton Township, are surrounded by dense stands of wooded wetlands and upland forest on each side of the riparian channel. In the eastern portion of Westampton, Barkers Brook is buffered in some places by wooded wetlands, although in other areas it flows through agricultural land lacking adequate vegetated buffers.

Along Westampton Township's southern border, the main waterway of the North Branch of Rancocas Creek is bordered by upland forest, wooded wetlands, and tidal marshes. However, upstream, as the Rancocas Creek approaches Mount Holly Township, the waterway's stream buffer becomes less extensive and the waterway is bordered by residential single-family homes. Many of the Rancocas Creek's smaller tributaries flow through wooded areas, yet a significant portion of the tributaries flow through land that is currently occupied by commercial, residential single-family, and residential multi-family development.

The New Jersey Freshwater Wetlands Protection Act incorporates buffer requirements into its wetland protection regulations. The width of the "transition zone" extending beyond a wetland is determined by the value of the wetland, based on its current use and on the documented presence/absence of threatened or endangered species. Municipalities may not establish buffers on wetlands that exceed those required by the state statute. However, the municipality can make certain that those limits are accurate through its review of the wetlands delineation process, and it can also monitor use of the land within the transition area and take action against encroachments.

Restoration of stream buffers on agricultural lands is supported by various programs, such as the Conservation Reserve Program (CRP), administered by the U.S. Department of Agriculture's Farm Service Agency (FSA) and the New Jersey Department of Agriculture. This program compensates farming landowners for the loss of land being converted to a buffer or other habitat. It also funds or directly creates new buffers where they are absent. Programs such as the Environmental Quality Incentive Program (EQIP), administered by the NRCS of USDA, encourage the "due care" management of agricultural lands, involving the proper levels of fertilizer and pesticide applications to farmland. It funds up to 75 percent of the costs of eligible conservation practices. These are all programs in which individual landowners volunteer to take part.

Groundwater

The geology of the New Jersey Coastal Plain can be visualized as a tilted layer cake, with its "layers," or strata, formed of gravels, sands, silts, and clays. The saturated gravel and sand layers, with their large pore spaces, are the aquifers from which water is drawn. The silt and clay layers, which impede the movement of water, are called confining beds.

A cross-section across southern New Jersey from west to east (see [Figure 8: Aquifers of Southern New Jersey Along a Line from Camden to Atlantic City](#)) would show that the aquifers are not horizontal, but tilted toward the southeast, getting deeper as they cross the state toward the Atlantic Ocean. Because of this tilting, each aquifer emerges on the land surface in a sequential manner. The deepest strata emerge on the surface near the Delaware River. Where each individual layer emerges is called its "outcrop" area.

The Potomac–Raritan–Magothy (PRM) formation, the deepest and most abundant aquifer, is a major water source for Inner Coastal Plain communities. Other smaller aquifers on top of the PRM are the Englishtown and the Wenonah-Mount Laurel. The Kirkwood-Cohansey

is a large formation composed of two thick layers, the Kirkwood (lower) and the Cohanse (upper) that overlie the older formations. It begins east of the Inner/Outer Coastal Plain divide.

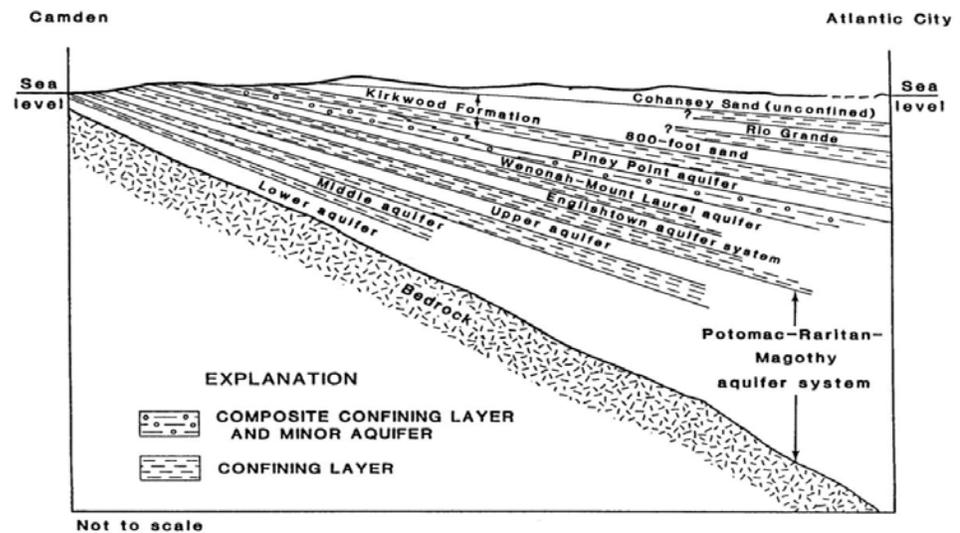
The dividing line of the Coastal Plain is to the east of Westampton Township, and so the township lies entirely within the Inner Coastal Plain. Formed mostly from deposits from the Cretaceous period, the Inner Coastal Plain is characterized by fertile, loamy soil ideal for agriculture.

An outcrop is the area where the aquifer emerges on the land surface. Preventing contamination of the land in outcrop areas is extremely important in order to maintain a safe drinking supply. The Englishtown aquifer system outcrops through the center of the township, and the Mt. Laurel-Wenonah aquifer outcrops near the township's eastern border. These two aquifers are separated by the Marshalltown-Wenonah confining unit, which outcrops in a band on the eastern side of the township and in smaller areas in the central portion of the township. The Merchantville-Woodbury confining unit separates the Englishtown aquifer system from the Merchantville Formation located just to the west of Westampton. See [Map 13: Geologic Outcrops](#).

Aquifers

The majority of Westampton Township's public water supply is drawn from the PRM Aquifer System. Some private wells may draw from the Englishtown Aquifer System and the Mount Laurel-Wenonah Aquifer.

Figure 8: Aquifers of Southern New Jersey Along a Line from Camden to Atlantic City



Source: U.S. Geological Survey

Potomac-Raritan-Magothy Aquifer System

The PRM is the principal geological formation underlying Westampton Township and the primary source of drinking water for Westampton's public wells and most private ones. This multiple aquifer is actually a large series of formations that have been combined and described as a single unit because the individual formations--the Potomac group and the Raritan and Magothy formations--are lithologically indistinguishable from one another over large areas of the Coastal Plain. That is, they are composed of materials of like kind and size laid down by both an advancing and retreating sea across southern New Jersey, and by deposits of material that came from the breakdown and erosion of the Appalachian and Catskill Mountains beginning in the Cretaceous Period.

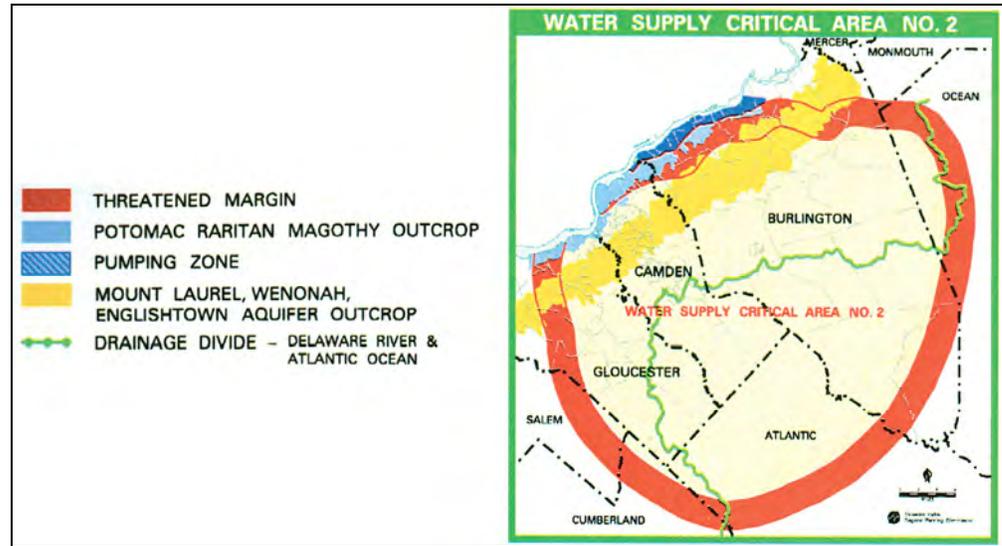
In the Delaware Valley, three aquifers have been distinguished within the PRM system, designated as lower, middle, and upper, and divided by two confining units or layers between the three water-bearing strata. The aquifers themselves are largely made up of sands and gravels, locally interbedded with silt and clay. The lower aquifer sits on the bedrock surface. Confining beds between the aquifers are composed primarily of very fine-grained silt and clay sediments, which are less permeable and thus reduce the movement of water between the aquifers. They also help to slow the entry of any contaminants on the surface down into the groundwater.

The PRM does not outcrop in Westampton Township; rather it outcrops under and immediately beside the Delaware River and water from the river enters and recharges the upper and middle PRM aquifers.

The PRM is the primary source of drinking water for New Jersey residents from Burlington to Salem Counties, as well as communities in Delaware. Because of such high usage, PRM aquifer water levels have declined. This became so serious that the New Jersey Department of Environmental Protection established the Water Supply Critical Area No. 2 in 1986. All water supply companies within Critical Area No. 2 were given annual limits on water withdrawals in the PRM. Usage from the PRM was cut back by more than 20 percent and no increases in pumping were allowed. Piping of treated Delaware River water filled the gap in much of the region. As shown in [Figure 9: Water Supply Critical Area No. 2](#), Westampton Township falls within Water Supply Critical Area No. 2.

There is increased concern that additional pumping from the aquifer in the borderline areas will necessitate the expansion of the Critical Area No. 2 boundaries. Water supply companies in Burlington, Ocean, Gloucester, and Salem Counties have and will continue to have difficulty getting approvals from the New Jersey Department of Environmental Protection for any additional water allocations from the PRM.

Figure 9: Water Supply Critical Area No. 2



Source: DVRPC

Englishtown Aquifer System

Some private wells in residential developments built more than 20 years ago may draw from the Englishtown aquifer system. The Englishtown Formation, of the late Cretaceous Age (65 to 100 million years ago), outcrops in the Inner Coastal Plain in an irregular band that extends from Raritan Bay to the Delaware River, adjacent to Salem County. Where the Englishtown Formation is exposed, the primary components are fine-to-medium-grained sands. In parts of Burlington, Camden, Gloucester, and Salem Counties, the aquifer is commonly less than 40 feet thick. It is not a major source of water in Burlington County due to its small size and greater proportion of fine-grained sediments, which results in lower yields. More productive aquifers lie above and below it. In Monmouth and Ocean Counties, however, this aquifer system is a significant water source.

Wenonah-Mount Laurel Aquifer System

A few private wells may also draw from the Wenonah-Mount Laurel aquifer system. The Wenonah-Mount Laurel aquifer is composed of the Wenonah Formation and the Mount Laurel Sand, both of the late Cretaceous Age. It is thickest in Burlington, Camden, Gloucester, and Salem Counties, reaching 100 to 120 feet, with its top and base being approximately 175 feet and 205 feet below sea level, respectively. Like the Englishtown aquifer, it is not a major water source in Burlington County due to low yield.

Groundwater Recharge

Over the last few decades, groundwater levels in the majority of the observation wells within and surrounding Westampton Township have diminished. These readings coincide with large-scale development in and around Westampton. As seen in **Table 16: USGS Groundwater Observation Sites**, the water level (depth below surface) in five wells has

increased, while it has decreased in just two wells. As the water level reading increases, the groundwater level decreases, which means that water is found at a greater depth below the land surface. With increased water level depth, wells must be drilled deeper to reach sizable and usable quantities of water.

There are three USGS Groundwater Observation Sites (Rancocas 1, PW5, and Club 1R) directly located within Westampton Township. In addition, there are several observation sites in the adjacent townships of Hainesport, Willingboro, and Mount Holly.

Recharge of groundwater is an important issue in southern New Jersey because of the dependence on aquifers for drinking supply and agricultural use. The amount of rainwater that actually enters an aquifer is a function of many factors, including the nature and structure of the aquifer itself. The amount of precipitation that infiltrates the soil and reaches the saturated zone to become groundwater—the recharge of the aquifer—is also dependent on climatic conditions, the nature of the soil, and the vegetation of an area.

Table 16: USGS Groundwater Observation Sites

USGS Observation Site	Site Name	Date of First Observation	Water Level (Feet Below Land Surface)	Date of Last Observation	Water Level (Feet Below Land Surface)	Primary Aquifer
400122074514101050637	Rancocas 1	7/1/1966	83	11/4/1993	94.7	PRM Middle
400041074480901050634	PW5	11/14/1978	111	10/21/2008	96.8	PRM Middle
400157074481901050745	Club 1R	12/1/1974	121.5	10/23/2008	123.08	PRM Upper
395928074502701051476	Rancocas St Pk MW3	4/20/1999	5	7/1/2009	5.51	Englishtown Formation
400213074510801050063	Willingboro 1 Obs	3/1/1966	48	6/1/2009	61.12	PRM Middle
400010074521601050645	Willingboro 2 Obs	3/22/1966	52.9	6/1/2009	67.75	PRM Lower
395941074472001051082	Dom	5/10/1982	27	10/29/2008	25.41	Mount Laurel Sand-Wenonah Formation

Source: USGS, 2009

Using precipitation records, soil surveys, and land use/land cover data, the New Jersey Geological Survey has developed a methodology for evaluating land areas for their ability to transmit water to the subsurface. The NJDEP has used this methodology to map and rank land areas throughout the state as to groundwater potential. Recharge is equivalent

to the amount of precipitation that will reach the water table in an area with a particular combination of soils and land use. It is expressed as inches per year.

In Westampton Township, about 43 percent of the land (3,022 acres) experiences groundwater recharge greater than 11 inches per year. These areas are mostly composed of grasslands and upland forests. These lands consist of significant parcels in the northern part of the township and in the central/western part of the township, surrounding both the NJ Turnpike and I-295. The majority of the land between I-295 and the NJ Turnpike, and the land between the NJ Turnpike and the North Branch of Rancocas Creek experiences groundwater recharge of greater than 11 inches per year.

Areas in the township that have groundwater recharge rates of 7--10 inches per year (16 percent or 1,162 acres) are generally found in areas of residential development, particularly in the southeast residential area of Westampton Township adjacent to Mount Holly. Other significant areas with moderate groundwater recharge occur on the western side of the township, in the historic district of Rancocas and the residential area near Mill Creek, adjacent to Willingboro.

The areas scattered throughout the township that have groundwater recharge rates of 2--6 inches (6.5 percent or 457 acres) are generally found in areas of transportation corridors, commercial development, light manufacturing, and community and residential land use parcels where the presence of larger parking lots and paving creates large swaths of impervious surfaces. These parcels tend to be smaller in size and are distributed throughout the township.

Finally, the areas of Westampton Township with the lowest groundwater recharge rates (less than 1 inch) are located primarily in the eastern half of the township, on the land surrounding Barkers Brook. This land, which has the township's lowest recharge rates, is an area of the township that has a significant concentration of wetlands; therefore the ground is already saturated most of the year. This pattern is consistent throughout the township, with the areas of wetlands surrounding Mill Creek and the North Branch of Rancocas Creek (and associated tributaries) also experiencing groundwater recharge rates of less than 1 inch. Other areas that exhibit the least amount of groundwater recharge are the lands immediately adjacent to the NJ Turnpike, areas of commercial development near the NJ Turnpike exit ramp, and the land adjacent to the tributaries of Rancocas Creek (which flow through areas of residential development near Mount Holly). These areas of low groundwater recharge compose 34 percent of the township, or 2,421 acres.

In general, lands immediately adjacent to the creeks' floodplains, marshes, and wetlands of the township exhibit less groundwater recharge. In addition, large amounts of paving and impervious cover on high recharge lands will have the most detrimental impact, although these areas are also usually the places most suitable for building because they are well-drained. Conversely, these are also regions where the dilution of substances from septic systems, such as nitrates, may require a larger land area because the soils are usually more "porous." For example, minimum average lot sizes of two to four acres are often needed for proper nitrate dilution from septic systems in areas having 10 or more

inches per year of groundwater recharge, depending on the soils. See [Table 17: Groundwater Recharge](#) and [Map 14: Groundwater Recharge](#).

Table 17: Groundwater Recharge

Recharge Rate (Inches Per Year)	Acres	Percent of Total Acreage in Township
0 to 1	2,421.28	34.3%
2 to 6	457.01	6.5%
7 to 10	1,162.16	16.0%
11 to 18	3,021.90	42.8%
Total	7,062.35	100.0%

Source: NJDEP 2006

Water Supply Wells

Wells that provide drinking water may be either private or public water supply wells. Private water supply wells are those that serve less than 25 people and are not regulated by the EPA or DEP. On the other hand, public water supply wells—which may be publicly or privately owned—are those that serve at least 25 people or 15 service connections for at least 60 days per year. According to the EPA, public water supply wells serve 90 percent of the people of the United States with drinking water. Public water supply wells are further defined as being either community or non-community. A public community water supply well serves 15 or more service connections used by year-round residents or at least 25 year-round residents. Public community water supply wells may serve municipalities, subdivisions, nursing homes, or other areas or institutions.

There are two active public water supply wells serving Westampton Township. Both are located near the intersection of Woodlane Road and Rt. 541. Completed in 1965 and 1976, the wells draw from the Middle PRM Aquifer. The data lists the owner as Mount Holly Water Company, although this company merged with New Jersey American Water (NJAW) in 2006. The two community wells are listed in

Table 18: Public Community Water Supply Wells and are shown on [Map 15: Public Water Supply Wells](#). One well reaches over 500 feet below the surface, while the other has missing data on its depth.

Private Drinking Wells

Private wells supplying potable water are not routinely monitored like public community water systems (public water) and public noncommunity wells. Beginning in 2002, however, the state of New Jersey, under the Private Well Testing Act, required that well water be tested for contaminants when properties are sold or leased. Prior to 2002, each county health department mandated what parameters were to be tested for real estate transactions.

Source: NJDEP, 2004

Table 18: Public Community Water Supply Wells

Well ID #	Well Permit #	Original Owner	Depth of Bottom of Well	Primary Aquifer
WSWL0000065686	2700006032	Mount Holly Water Co	524.00	Middle PRM
WSWL0000070229	4700000001	Mount Holly Water Co	-	Middle PRM

Source: NJDEP, 2009

Public noncommunity wells are another part of a public water system. There are two types of noncommunity water systems—transient and nontransient. The name refers to the type of populations that utilize them and their frequency of use. A transient, noncommunity water system serves at least 25 people daily, but the population changes each day. These systems are at places such as rest stops, gas stations, and restaurants. A nontransient, noncommunity water system serves at least 25 of the same people daily at a minimum of six months per year at places like schools, factories, and office parks.

There are seven public noncommunity wells in Westampton Township, three of which are transient and four of which are nontransient. They are listed in [Table 19: Public Noncommunity Water Supply Wells](#) and are shown on [Map 15: Public Water Supply Wells](#).

Table 19: Public Noncommunity Water Supply Wells

Well Permit #	Public Water Supply ID	System Name	Well Depth	Well Type
27-04862	0305300	Getty Station # 56204	50.00	Transient
27-05121	0337302	Academy Bus Lines	55.00	Transient
27-13268	0337306	Burlington County Country Club	300.00	Nontransient
	0337307	Mobil Station	180.00	Transient
27-12461	0338300	Inductotherm Corp.	360.00	Nontransient
27-03894	0338300	Inductotherm Corp.	100.00	Nontransient
27-03617	0338300	Inductotherm Corp.	444.00	Nontransient

Source: NJDEP, 2004

As required by federal and state regulations, public water supply wells (both community and noncommunity) in the state are monitored by NJDEP on a regular basis. New Jersey American Water - Mount Holly serves residences in the eastern side of Westampton and development on both sides of Burlington-Mount Holly Road, in addition to Mount Holly in its entirety and portions of surrounding municipalities. The vast majority of Westampton west of I-295 is served by the Willingboro Municipal Utilities Authority (MUA), although

none of the MUAs wells are located in Westampton Township. The monitoring schedules for both public community distribution systems are shown in

Appendix C: Monitoring Schedules for Public Water Supply Wells.

Sampling requirements for a water system may change at any time for several reasons, including analytical results, changes in population, and/or inventory. It is generally the responsibility of the public water system and its licensed operator to make sure proper monitoring is performed for the distribution system and each point of entry for all parameters. Sampling requirements may be confirmed by referring to the Code of Federal Regulations (40 CFR 141) and the New Jersey Safe Drinking Water Act Regulations (N.J.A.C. 7:10). State law also requires that water supply authorities issue annual reports on water quality to all residents.

Wellhead Protection Areas

Westampton's public wells draw on only one aquifer—the Middle PRM. As part of its 1991 Wellhead Protection Program Plan, NJDEP has delineated Wellhead Protection Areas (WHPAs) around all community wells. A WHPA is the area from which a well draws its water within a specified time frame (tiers). Pollutants spilled directly on or near the wellhead will enter the water source within that time frame. Once delineated, these areas become a priority for efforts to prevent and clean up groundwater contamination. Other components of the Wellhead Protection Plan include implementing best management practices to protect groundwater, land use planning, and education to promote public awareness of groundwater resources.

Once WHPAs are delineated, potential pollution sources may be managed by landowners or municipalities, in relation to the tier locations. Protection of land and restrictions on activities within wellhead zones (relating to uses that generate contaminants, and to the storage, disposal, or handling of hazardous materials) are important for maintaining the quality of water within those zones.

The radius of the WHPA depends on a number of factors related to the well and the underlying hydrogeology. The thicker and more porous the aquifer and the slower the pumping rate of the well, the smaller the radius is of the WHPA. The WHPAs delineated around Westampton's public wells are fairly small

Air Quality Criteria Pollutants

Ground level ozone (O₃) is formed when volatile organic compounds (VOC) and nitrogen oxides react with sunlight and heat. It is produced more in the summer months and is the primary constituent of smog. Ground level ozone is a pulmonary irritant, which even in low levels, can be dangerous to sensitive populations such as people with asthma or emphysema, and the elderly. It can also affect plant growth and is responsible for hundreds of millions of dollars in lost crop production.

Particulate matter (PM), or particle pollution, is made up of dust, ash, smoke, and other small particles formed from the burning or crushing of materials such as wood, rocks, and oil. When ingested, particulate matter can become lodged deep in the lungs and can contribute to serious respiratory illnesses such as asthma or lung disease. Particulate matter also creates haze, reduces visibility, and covers buildings in dirty soot.

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon fuel is not burned completely. It is a component of motor vehicle exhaust; therefore, higher levels of CO generally occur in areas with heavy traffic congestion. The highest levels of CO typically occur during the colder months when air pollution becomes trapped near the ground beneath a layer of rising warm air.

Nitrogen oxides (NO_x) are a group of highly reactive gases that contain nitrogen and oxygen in varying amounts. Motor vehicles, electric utilities, and homes and businesses that burn fuels emit nitrogen oxides; they can also be found naturally. Nitrogen oxides are primary components in ground-level ozone (smog), acid precipitation, and other toxic chemicals. Acid precipitation can cause lung ailments in humans, property damage, harm to aquatic life, and other environmental and human health problems.

Criteria Pollutants, *Continued*

Sulfur dioxide (SO₂) is released into the atmosphere when fuel containing sulfur, such as coal and oil, is burned, and when gasoline is refined from oil. Sulfur dioxide dissolves in water vapor to form acid precipitation.

Lead (Pb) is a pollutant that was historically released by cars and trucks burning leaded fuel, but metal processing plants and trash incinerators are the major source of emissions today. Lead tends to be a localized air pollutant, found in urban or high traffic areas, and is deposited in soil and water, harming fish and wildlife.

because these wells tap the deep and very thick PRM. The PRMs recharge lands are immediately beside and below the Delaware River and in Pennsylvania. In Westampton, confining layers protect the aquifer from contamination. The WHPAs in Westampton Township are depicted on [Map 15: Public Water Supply Wells](#).

Air Quality

Air quality is one of the most difficult environmental resources to measure because its sources are diffuse and regional in nature. Common sources of air pollution include industry, cars, trucks, buses, fires, and dust. For example, the burning of coal in Ohio, Michigan, and Western Pennsylvania to generate electricity sends

pollutants such as sulfur, nitrogen, and particulate matter all the way to the East Coast. Locally produced sources of air pollution include daily roadway traffic and industrial facilities.

Increasing public awareness regarding air pollution led to the passage of a number of state and federal laws, including the original Clean Air Act of 1963 and a much stronger Clean Air Act of 1970 (CAA). In 1990, the CAA was amended and expanded by Congress to include a market approach to reducing air pollution by allowing certain companies to buy and sell emission “allowances,” or “credits.” The 1990 CAA also required transportation projects receiving federal funding to be in conformity with state air quality goals. The 1990 CAA also revised the way that air toxins are regulated, increasing the number of regulated toxic air pollutants from 7 to 187.

In 1970, the Environmental Protection Agency (EPA) was formed to enforce the CAA. The CAA identified six criteria pollutants – ozone, particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide, and lead – which are destructive to human health and the built and natural environment (see explanation of Criteria Pollutants above). The EPA sets National Ambient Air Quality Standards (NAAQS) for those pollutants based on human health effects, as well as environmental and property damage.

Between 1970 and 2007, total emissions of the six criteria air pollutants decreased by more than 50 percent. The industrial sector reduced its toxic air emissions by 70 percent during this time period. Stricter emissions standards in the auto industry have made cars 90 percent “cleaner” since 1970. Cars also pollute less because refineries are required to produce cleaner fuels; leaded gasoline was completely banned in 1996.

Air Quality Monitoring

As of 2009, NJDEP's Bureau of Air Monitoring maintains a network of 42 continuous monitoring stations across the state and is proposing the establishment of two new sites

by the end of 2010. Most of the monitoring stations are clustered in the New York metropolitan area. Each station monitors at least one of 23 different parameters, including many air pollutants as well as wind speed, wind direction, solar radiation, or other parameters. Several of these parameters – carbon monoxide, nitrogen oxides, ozone, sulfur dioxide, smoke shade, particulate matter, and various meteorological data – are measured continuously and data is available instantaneously.

As enabled by the CAA, the EPA has set NAAQS for the six criteria pollutants: particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, and lead. There are two kinds of NAAQS: the primary standard is based on human health effects, while the secondary standard is based on environmental and property damage.

The monitoring station closest to Westampton Township is located approximately four miles (six kilometers) to the north in Burlington Township, Burlington County. The Burlington monitoring station tracks the concentration of three parameters—carbon monoxide, sulfur dioxide, and smoke shade (see definition below). Carbon monoxide was monitored at the “micro” scale, representative of 10 to 100 meters, which is not representative of Westampton. However, both sulfur dioxide and smoke shade were monitored at the “neighborhood” scale, representative of 1 to 10 kilometers, which is representative of Westampton. Annual data on sulfur dioxide and smoke shade monitored at the Burlington station is described below.

Sulfur dioxide (SO₂) is a heavy, colorless gas with a suffocating odor that easily dissolves in water to form sulfuric acid. SO₂ gases can be formed when fuels containing sulfur are burned, or when gasoline is extracted from oil. Most of the sulfur dioxide released into the air comes from electric utilities, especially those that burn coal with high sulfur content. There are three NAAQS for sulfur dioxide: (1) a yearly average of 0.030 ppm for primary effects; (2) a 24-hour average of 0.140 ppm, which cannot be exceeded more than once a calendar year, also for primary effects; and (3) a three-hour average of 0.5 ppm, which also cannot be exceeded more than once a calendar year for secondary effects. As opposed to the national standards, New Jersey’s standards are slightly different in that they use a rolling year unit instead of a calendar year, and there are standards for secondary effects for the first two standards listed above. The yearly average level of sulfur dioxide at the Burlington station in 2008 was 0.002 ppm, the maximum 24-hour average was 0.013 ppm, and the maximum three-hour average was 0.032 ppm. All of these levels for Burlington were well below the state and national standards.

Smoke shade (SS) is an indirect measurement of particles in the atmosphere and has been monitored in New Jersey for over 30 years. Smoke shade is primarily used for the daily reporting of particulate levels in the Air Quality Index (AQI), described below. There is no NAAQS standard for smoke shade, which is measured by a coefficient of haze (COH). COH are units of light transmittance, although it is not a direct measure of particle mass. The benchmark for smoke shade is a 24-hour average level of 2.0 COH, and readings above that level are reported as Unhealthy for Sensitive Groups on the daily AQI. In 2008, the Burlington station had an annual mean concentration of 0.20 COH, and a maximum daily average of 0.67 COH, both well below the benchmark.

The other continuous monitoring station closest to Westampton Township is located in Collier's Mills, Ocean County, approximately 20 miles (31 kilometers) to the east. In 2008, the Collier's Mills station monitored ozone. This station monitors at the "urban" scale, meaning it is representative of 10 to 100 kilometers from the station, which would include all of Westampton Township.

The amount of ozone has decreased greatly in New Jersey since the 1980s, and one-hour concentrations have not exceeded 0.200 parts per million (ppm) since 1988. For ground-level ozone (O₃), there are two NAAQ standards: (1) a one-hour average concentration of 0.12 ppm, and (2) an eight-hour average concentration of 0.08 ppm. For the national standards, these are the same for both primary and secondary effects. New Jersey, however, has tightened the one-hour concentration standard for secondary effects to 0.08 ppm. In 2008, the maximum one-hour average concentration of ozone at the Colliers' Mills station was 0.124 ppm and the maximum eight-hour average concentration was 0.100 ppm, both of which exceeded the standard.

In addition to the continuous monitoring network, the NJDEP Bureau of Air Monitoring operates a manual air quality monitoring network that measures a greater number of parameters. At these stations, samples are taken that are then analyzed in a laboratory for respirable particulate matter, lead, total suspended particulate matter, atmospheric deposition, ozone precursors, and a number of other contaminants. These stations are located across the state, but are generally concentrated in the New York metropolitan area.

The manual air quality monitoring network closest to Westampton Township is located in Pennsauken, Camden County, approximately 9 miles (14 kilometers) away. This station monitors at the "neighborhood" scale representative of 1 to 10 kilometers away. As this station is not representative of Westampton Township, its monitoring data is not included here.

Air Quality Index

The EPA created the AQI to indicate a metropolitan region's air quality by measuring levels of five of the six criteria pollutants (excluding lead). The AQI is focused on the potential human health hazards experienced by breathing unhealthy air. Scores for the AQI range from 0 to 500 and are divided into six color-coded categories, as shown in **Figure 10: Air Quality Index (AQI)**. The higher the AQI value, the greater the level of air pollution and associated health concerns.

Figure 10: Air Quality Index (AQI)

Numerical Air Quality Index (AQI) Rating	Descriptive Rating: Levels of Health Concern	AQI Color Code
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

Source: NJDEP, 2005

The daily score is based on the highest individual pollutant score reported. For example, if ozone scored 150 and particulate matter scored 100, the daily AQI would be 150 – considered Unhealthy for Sensitive Groups. The index is also used to measure overall air quality by counting the number of days per year when the AQI of each metropolitan region exceeds 100. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level the EPA has set to protect public health.

New Jersey is divided into nine regions, which report their respective AQI. Burlington County is in Region 5: Central Delaware Valley. The monitoring stations for Region 5 are located in Burlington Township and at Rider University in Ewing Township, Mercer County. In 2005, the most recent year of annual data, Region 5 reported 321 good (green) and 37 moderate (yellow) days, 7 days which were unhealthy for sensitive groups (orange), and 0 unhealthy (red) days.

Local Point Sources of Air Emissions

Under the CAA, the EPA limits the amount of other air pollutants and toxins that are emitted by point sources, such as chemical plants, industrial factories, power plants, and steel mills. The NJDEP Air Quality Permitting Program issues permits for stationary sources of air emissions, such as power plants, oil refineries, dry cleaners, food processing centers, and manufacturing plants, and regulates and monitors their emissions. There are 31 facilities with active air quality permits in Westampton Township, listed in **Table 20: Facilities with Active Air Quality Permits**. Some of these facilities may have more than one permit to emit pollutants into the air. Inductotherm, for example, has 19 different permits for specific emission sources.

Table 20: Facilities with Active Air Quality Permits

Facility Name	Address	PI Number
541 Amoco LP	1866 Rt. 541	A4824
Alternative Living Services	408 W. Woodlane Road	45634
APCO Petroleum Corp-APCO Westampton	2056 Burlington Mt Holly Road	A4501
AT&T Corp.	93 Stemmers Lane	46129
Burlington County Health Dept.	15 Pioneer Blvd.	46042
Burlington County Human Services Bldg.	795 Woodlane Road	46036
Burlington County Institute of Technology	695 Westampton Campus	45294
Burlington County Public Safety Center	1 Academy Drive	46037
Car Sense of Westampton	1971 Rt. 541	46314
Citgo Service Station	939 Woodlane Road	A9862
Dolan Group VI	111 Ikea Drive	45534
Dunkin Donuts	20 E. Park Drive	46190
Eaton Corp Cutler-Hammer	96 Stemmers Lane	46131
Former Exxon Facility #32089	Burlington-Mt Holly Road & Woodlane Road	45492
Getty Petroleum Corp-Getty # 56096	Woodlane Road & Rancocas Springside Road	A4608
Hampton Behavioral Health Center	650 Rancocas Road	45523
Holly Hills Elementary School	500 Odgen Drive	45674
Home Depot Inc. #939	2703 Burlington Mt. Holly Rd.	46311
Ikea	90 Stemmers Lane	46130
Ikea Wholesale Inc.	100 Ikea Drive	45477
Inductotherm Corp.	10 Indel Avenue	45163
New Century Transportation Inc	45 E. Park Drive	46090
Office Depot Distribution Center	80 Stemmers Lane	45535
Parks Star Cleaners Inc.	798 Woodlane Road	L4537
Pemberton Fabricators, Inc.	30 Indel Avenue.	45061
Resource Control Corp Mobile Treatment System	103 Willis Avenue	46023

Facility Name	Address	PI Number
Texaco Service Station #100234	1843 Burlington Mt Holly Rd.	A4657
US Gas 2 Service Station	1930 Burlington Mt. Holly Rd.	A4778
VCS Group LLC	100 Highland Drive	46226
Westampton Middle School	710 Rancocas Road	45556
Woodlane Treatment Plant	Woodlane Road	45505

Source: NJDEP, 2009

NJDEP enacted the Emission Statement Rule in 1992, requiring certain sites that have an air quality permit to report specific air contaminants, including carbon monoxide (CO), sulfur dioxide (SO₂), ammonia (NH₃), total suspended particulate matter (TSP), respirable particulate matter (PM₁₀ and PM_{2.5}), lead (Pb), volatile organic compounds (VOC), nitrogen oxides (NOx), and 38 other toxic air pollutants. Emission Statement reporting applies if a facility has a potential to emit: 5 tons or greater Pb, 10 tons or greater VOC, 25 tons or greater NOx, or 100 tons or greater of CO, SO₂, PM₁₀, PM_{2.5}, TSP, or ammonia.

In Westampton, there are two facilities that are required to submit Emission Statements: Pemberton Fabricators and Inductotherm, which are both located on Indel Avenue. The statement for Pemberton Fabricators releases data on their emissions of carbon dioxide, nitrogen oxides, and volatile organic compounds. The 2008 Emissions Statement for Pemberton Fabricators is included in **Appendix D: Air Emission Statements**. The statement for Inductotherm releases data on their emissions of ammonia, carbon monoxide, carbon dioxide, methane, nitrogen oxides, lead, respirable particulate matter, total suspended particulate matter, sulfur dioxide, and volatile organic compounds; however, Inductotherm has not released an Emissions Statement since 2005.

Biological Resources

When a community protects wildlife and habitat, it is also protecting biodiversity, which is important for the health and productivity of the ecosystem and its inhabitants, including humans. Biodiversity refers to the variety of genetic material within a species population, the variety of species (plants, animals, microorganisms) within a community, and the variety of natural communities within a given region. Biodiversity facilitates adaptation and evolution, improving a species' chance of survival as the environment changes. A diversity of plant and animal species is also necessary to maintain healthy human environments, working landscapes, and productive ecosystems. Lower organisms, many not well known, contribute to nutrient cycling, decomposition of organic matter, soil rehabilitation, pest and disease regulation, pollination, and water filtering. Once biodiversity declines, it is extremely difficult for an ecosystem to recover or replace species.

Westampton contains numerous types of habitats, all of which are important for maintaining biodiversity. Wooded wetlands and upland forests are the two most abundant natural ecosystems found in Westampton. Herbaceous wetlands and scrub wetlands are also present in large areas adjacent to stream corridors and creeks. Upland forests, which were once the most abundant type of natural habitat in Westampton, occur where land is dry and undeveloped. The following sections will identify and describe in more detail the plant and animal communities that inhabit these unique ecosystems within Westampton Township.

Natural Vegetation

A region's vegetation is dependent upon many factors, the most important of which are climate and soils. Westampton's climate is cool and temperate, and is characterized by moderate temperatures, precipitation, and wind, with an average annual temperature of 54°F. The average annual precipitation is 44 inches and is fairly well distributed throughout the year. The majority of Westampton's soils are generally well-drained soils, supporting a large diversity of trees and crops. The area also has a substantial amount of poorly drained soils that exhibit ponding and sustain wetland plants. See the **Soils** section beginning on page 15 for a detailed description of Westampton's soils.

There are two endangered plant species found in Westampton Township that are in the New Jersey Natural Heritage Database: Smooth Beardtongue and Awl-leaf Arrowhead. In addition, a freshwater tidal marsh complex (a rare ecological community) is also listed in Westampton Township. The Natural Heritage Database is an up-to-date list of rare plants and animals that are located within the state of New Jersey. It is a centralized source that

includes information from museums, collection records, publications, experts, and fieldwork. Most plant species listed in the database are globally rare. See **Appendix F: Rare Plant and Animal Species Found in Westampton Township** for further information.

Westampton’s natural vegetation types, along with human-influenced types of land cover, have been tabulated and mapped by NJDEP’s 2007 land cover analysis (see **Table 21: Natural Vegetation**). This data, based on infrared aerial photography, is the most recent available. The designation of a particular land cover as a vegetation type is based on definitions provided by the Anderson Land Use Classification System, created by the U.S. Geologic Survey. See **Map 16: Natural Vegetation (2007)**.

Table 21: Natural Vegetation

Vegetation Type	Area (Acres)	Percentage of Township
Brush/Shrubland	153.28	2.16%
Brush/Shrubland - Oldfield	36.03	0.51%
<i>Total Brush/Shrubland</i>	189.31	2.67%
Upland Forest - Coniferous	39.08	0.55%
Upland Forest - Deciduous	540.64	7.61%
Upland Forest - Mixed (Coniferous Dominated)	53.56	0.75%
Upland Forest - Mixed (Deciduous Dominated)	163.10	2.30%
<i>Total Upland Forest</i>	796.38	11.22%
Water	40.72	0.57%
Tidal Waters	58.06	0.82%
<i>Total Water</i>	98.77	1.39%
Wetlands - Herbaceous	42.50	0.60%
Wetlands - Modified	336.03	4.73%
Wetlands - Scrub/Shrub	148.38	2.09%
Wetlands - Wooded - Coniferous	1.92	0.03%
Wetlands - Wooded - Deciduous	945.63	13.32%
Wetlands - Wooded Mixed (Coniferous Dominated)	22.59	0.32%
Wetlands - Wooded Mixed (Deciduous Dominated)	11.65	0.16%
Tidal Marshes - Freshwater	82.38	1.16%
<i>Total Wetlands</i>	1,591.09	22.41%
Total Natural Vegetation	2,675.54	37.69%
Total Area of Westampton Township	7,099.76	100%

Source: NJDEP, 2007

Wetlands

Wetlands are a critical ecological resource, supporting both terrestrial and aquatic animals and boasting biological productivity far greater than that found on dry land. Wetlands play a vital role in maintaining water quality by naturally filtering surface and ground waters. The ecological importance of wetlands, however, has not always been appreciated. For over three centuries, people drained, dredged, filled, and leveled wetlands to make room for development and agriculture. Although the pace of wetland destruction has slowed markedly in the past three decades, human activities have destroyed approximately 115 million of the original 221 million acres of wetlands in the United States since the beginning of European settlement. See the **Wetlands** section on page 33 for additional information on wetlands regulations in the state.

Most wetlands in Westampton Township are found in association with major streams and their tributaries. Wetlands are dominant along the township's major waterways of the Rancocas Creek, Mill Creek, and Barkers Brook. Westampton's most abundant wetlands are deciduous wooded wetlands and scrub/shrub wetlands.

Common throughout Westampton Township are deciduous wooded wetlands (sometimes referred to as wetland forests, or more typically, hardwood swamps). Deciduous wooded wetlands occupy approximately 945 acres (13 percent) of Westampton's total land area and support mixed hardwoods that flourish in lowlands. The trees in Westampton's deciduous wooded wetlands may include American sycamore, river birch, white ash, swamp white oak, green ash, and sweetgum. Deciduous wooded wetlands provide important habitat for a wide variety of mammals, birds, reptiles, and amphibians.

Closely associated with deciduous wooded wetlands are scrub/shrub wetlands, occupying about 148 acres (2 percent) of Westampton. These wetlands are generally composed of young, medium-height, primarily deciduous woody plants. Scrub/shrub wetlands are usually in early successional stages and may later become tree-dominated wetlands and those dominated by canopy species. The trees in Westampton's scrub/shrub wetlands may include red maple, ash, and sweetgum, and are dominated by shrub species like silky dogwood, buttonbush, winterberry, swamp rose, elderberry, southern arrowhead, and hazel alder.

Large swaths of deciduous wooded, mixed wooded, and scrub/shrub wetlands are present in the northern and northeastern areas of Westampton Township, particularly surrounding the township's stream corridors such as Mill Creek and Barkers Brook. Barkers Brook flows through the township's most substantial area of deciduous wooded wetlands. Wooded wetlands are also found adjacent to the majority of the township's deciduous upland forests.

Other types of wetlands found in Westampton include herbaceous wetlands, which cover less than one percent of Westampton Township. Herbaceous wetlands generally occur along lake edges, open floodplains, and former agricultural wetland fields. Herbaceous wetlands are found in close proximity to wooded wetlands along some of Westampton's major and minor streams. Herbaceous wetland plants in Westampton may include rice cutgrass, reed canary grass, pond lily, tearthumb, arrow-leaved tearthumb, broadleaf

cattail, and the common reed (*Phragmites*). Herbaceous wetlands may be dominated by *Phragmites*, a reed that colonizes easily and pushes into wetland areas from adjacent dry land areas, spreading through an underground root system that is difficult to eradicate. In addition to its tendency to aggressively spread, *Phragmites* often becomes a dominant monoculture and is therefore considered an invasive species.

Modified wetlands are areas that have been altered by human activities and do not support natural wetland vegetation, but do show signs of soil saturation on aerial infrared surveys. Modified wetlands encompass agricultural wetlands, former agricultural wetlands, disturbed wetlands, and wetlands that occur in maintained green spaces, such as open lawns, golf courses, and stormwater swales. Westampton has several large tracts of modified wetlands covering 336 acres (4.7 percent) of the township's land area.

Although not identified on NJDEP maps, there is an Atlantic White Cedar swamp on the

property of the Fernwood Springs Farm located on Woodlane Road (Route 630). Atlantic White Cedar swamps were found extensively across the area prior to European settlement, although deforestation reduced their number and size dramatically. These swamps are characteristic of the Pinelands, and this area is ecologically unique in being the westernmost cedar swamp in Burlington County and the only one in New Jersey's Inner Coastal Plain. Atlantic White Cedar swamps provide a unique and threatened habitat for some of the rarest flora and fauna in the state. The tall stands of cedars in a well-established cedar swamp cool and shade the forest floor, which is



Fernwood Springs Farm

typically covered with sphagnum moss and various other plants. Other plants in cedar swamps include highbush blueberry, swamp magnolia, gray birch, swamp azalea, pitcher plants, sundews, several species of orchids, various wildflowers, as well as a diversity of grasses, sedges, and rushes. This area has been identified as suitable for a number of endangered plants, including swamp pink (*Helonias bullata*), fringed orchids, and curly grass ferns (*Schizaea pusilla*), although these have not been documented.

Upland Forests

Upland forests occur where drainage is sufficient so that soils do not become saturated for extended periods of time. Over 796 acres (11 percent) of Westampton is composed of upland forests, as of the 2007 land cover analysis by NJDEP. The area's original upland forests remain intact along the Rancocas Creek, on the southern border of the township. However, much of Westampton's original upland forests were cleared and converted to farms or residential or commercial development. Nearly all old growth forests were harvested for lumber during colonial times. The remaining upland forests are at least

second or third growth, and tend to be located near stream corridors, along I-295 and the New Jersey Turnpike, or are patchy woodlands on less desirable soils associated with large farms.

Upland forests are the second most abundant natural vegetative land cover in Westampton after wetlands. The great majority, 693 acres, of Westampton's upland forests consists of deciduous trees. The composition of Westampton's upland deciduous forests is likely to be largely one of mixed oaks—black, red, chestnut, Shumard, and scarlet oaks—joined by other hardwoods, such as paper birch, American beech, honey locust, hickory, and sweetgum. The understory may include flowering dogwood, black cherry, ironwood, and sassafras, as well as vines such as Virginia creeper, wild grapes, Japanese honeysuckle, and poison ivy. Spicebush, arrowwood, and black haw are common shrubs that are typically found in moister locations.

Coniferous trees exist on about 93 acres of Westampton. These forests are mostly made up of successional, or pioneer, plants like Virginia pine, scrub pine, and pitch pine. Over time, coniferous forests typically have become overgrown by dominant deciduous trees such as ash, birch, oak, and hickory.

Grasslands and Agricultural Lands

NJDEP defines grassland habitat as brushland, shrubland, or old fields that were cleared or disturbed at one time and then abandoned. Following abandonment, old fields are overgrown by perennial herbs and grasses. These pioneer plants remain the dominant species for 3 to 20 years. Later, woody plants take over. This habitat is visible, especially along wood edges, roadsides, and in landscapes where mowing is infrequent and where woody plants are not yet the dominant vegetation.

According to NJ DEP, 189 acres (2.7 percent) of Westampton's land cover consists of brushland, shrubland, or old fields. Old fields are sections of farmland that have become idle and have transitioned to land suitable for grassland and brushland species habitat. Patches of these lands are scattered throughout Westampton, and are often found adjacent to agricultural lands and upland forests.

Landscape Project Priority Habitats

The Landscape Project, developed by the Endangered and Nongame Species Program of the NJDEP Division of Fish & Wildlife, documents the value of various types of habitats within New Jersey. It categorizes these habitats into one of five groups according to their importance (five being the highest). Categories three through five include habitats throughout the state that possess two exceptional conditions: (1) a documented occurrence of one or more species on either the federal or the state threatened and endangered species lists, and (2) a sufficient amount of habitat type to sustain these species. These habitats are collectively known as “critical habitat.” Categories one and two include habitats that either have a documented occurrence of a Species of Special

Concern¹ in New Jersey, or are deemed suitable for species on the state or federal threatened and endangered species lists, but for which there are no documented occurrences or sightings. These habitats are labeled “suitable habitats.”

The Landscape Project identifies both critical and suitable habitat in Westampton Township. It is important to preserve both levels of habitat in order to maintain the diversity of species that still exists in the township. The rankings in Westampton are primarily the result of habitat being either critical or suitable for rare bird species, such as the Bald Eagle, Barred Owl, Cooper’s Hawk, and Great Blue Heron, or for rare reptiles like the Bog Turtle, Eastern Box Turtle, and Wood Turtle. See [Map 17: Landscape Project Priority Habitats \(2007\)](#).

Table 22: Landscape Project Habitats

Category	Rank	Area (Acres)	% of Total Habitat	% of Township Land
Emergent Wetlands	Critical Habitat (5)	14.33	0.33%	0.20%
	Suitable Habitat (2)	427.26	9.78%	6.02%
	Total	441.59	10.11%	6.22%
Forested Wetlands	Critical Habitat (5)	151.22	3.46%	2.13%
	Critical Habitat (3)	485.14	11.11%	6.83%
	Suitable Habitat (2)	515.28	11.80%	7.26%
	Total	1,151.64	26.37%	16.22%
Forest	Critical Habitat (3)	623.99	14.29%	8.79%
	Suitable Habitat (2)	401.94	9.20%	5.66%
	Total	1,025.94	23.49%	14.45%
Grassland	Suitable Habitat (2)	685.09	15.69%	9.65%
	Suitable Habitat (1)	1,062.46	24.33%	14.96%
	Total	1,747.55	40.02%	24.61%
Total Habitat		4,366.71	100.00%	61.51%
Total Westampton Land		7,099.76		100.00%

Due to an overlap of forested wetlands and forest layers, forest acres and percentages were calculated excluding overlapping forested wetlands areas.

Source: NJDEP, 2007

¹ A Species of Special Concern is a formal definition; it indicates a species that may be under consideration for listing as threatened due to documented population decline or habitat loss.

Landscape Project Data on Grassland-Dependent Species Habitat

The Landscape Project designates nearly 25 percent of Westampton Township (1,748 acres) as suitable habitat for rare grassland-dependent species. There were no areas designated as critical habitat. The majority of the suitable grassland-dependent species habitat is located between I-295 and the NJ Turnpike. Other large patches of suitable grassland-species habitat occur in the northeastern part of the township bordering Route 541. Smaller areas of suitable habitat for grassland-dependent species are scattered throughout the township.

Grassland-dependent species (mostly birds) are the most threatened group of species in



Grassland near the Rancocas State Park

New Jersey, primarily because the most common form of habitat used by these species, agricultural fields, is also the most threatened habitat in the state. This is due to development pressure associated with rising land values as well as changes in agricultural practices on remaining agricultural lands. Fortunately, Westampton has so far retained a significant amount of its critical grassland-dependent species habitat.

Many agricultural lands serve as habitat for grassland-dependent species since migrating birds cannot visually distinguish cropland from grassland, and because cropland evolves into grassland

when it is fallow for one year or more. Additionally, some crops, like alfalfa and soybeans, provide suitable nesting habitat for small birds like sparrows. All or most threatened and endangered birds require large ranges that include agricultural “grasslands.” The Landscape Project includes this land in its assessment because agricultural lands provide important disturbance buffers between the rare and endangered wildlife species and humans, and between the rare species and widespread predatory animals like dogs and cats.

Within Westampton, grasslands provide suitable habitat for the Eastern Box Turtle (a species of special concern) among other species.

Landscape Project Data on Wetland Habitat

The Landscape Project divides wetland habitats into two types—forested and emergent wetlands. Emergent wetlands are marshy areas characterized by low-growing shrubs and herbaceous plants in standing water. About 442 acres (six percent of the total land area) in Westampton are identified as priority emergent wetlands habitat, with the majority ranked at the suitable habitat level. Emergent wetlands are primarily found along waterways such as Rancocas Creek and Barkers Brook. Other small patches of emergent

wetlands are scattered throughout the township, with a large percentage located in the northeastern area of the township. Emergent wetlands are important habitat for migratory waterfowl and passerines (smaller perching birds), such as migrating flycatchers and warblers. In Westampton Township, emergent wetland habitat supports the endangered Bog Turtle and other animal species.

Westampton's forested wetlands occupy approximately 1,152 acres (16 percent of total land area). Of this area, about 636 acres (nine percent of total land area) are identified as critical habitat. Forested wetland habitat in Westampton occurs primarily along the township's major waterways and their tributaries, including Mill Creek, Barkers Brook, and the North Branch of Rancocas Creek. The most significant parcels of contiguous forested wetlands (both "critical" and "suitable" habitats) are found in the northeastern area of Westampton Township, adjacent to Barkers Brook.

Forested wetlands support species such as migratory and nesting warblers, many of which are species of special concern. They can also be home to various rare amphibians (frogs and salamanders). Westampton's forested wetlands are habitat for the threatened Barred Owl and Cooper's Hawk, the endangered Bog Turtle, and other more common species.

Landscape Project Data on Upland Forest Habitat

The Landscape Project ranks 1,026 acres (14 percent) of Westampton's total land cover as habitat for rare upland forest-dependent species. Of this, over 624 acres (nine percent of total land area) are ranked as critical upland habitat. This critical upland forest is found primarily in a large contiguous swath in the southern section of Westampton Township, between Rancocas Road (Route 626) and the township's southern border with Rancocas Creek. A narrow band of critical upland habitat borders the eastern side of the NJ Turnpike for several miles in Westampton Township. Smaller patches of critical upland forest occur in the eastern section of the township, along Kings Road and southern stretches of Barkers Brook.



Rancocas State Park

Approximately 402 acres of the township (six percent of the total land area) are ranked as "suitable" upland forest habitat. Finally, patches of suitable upland forest habitat can be found surrounding Mill Creek and in narrow contiguous strips along I-295 and the NJ Turnpike. These upland forest areas provide habitat for the threatened Barred Owl and Cooper's Hawk, as well as the Eastern Box Turtle and Great Blue Heron, both of which are species of special concern.

Animal Communities

In spite of population density, habitat fragmentation, and its relatively small land area, New Jersey is one of the most biodiverse states and is home to a diversity of wildlife. New Jersey lies at the southern edge of the range of many "northern" species and the northern edge of the range of many "southern" species. That, along with the variety of landscape types in the state, combines to support a diverse and abundant wildlife resource.

Records from the Rancocas State Park and Nature Center, as well as from the Natural Heritage Database and Landscape Project of the NJDEP, make up the inventory of animal species found in Westampton Township. Complete lists of animals observed in the township are included in **Appendix E: Animals Known or Probable in Westampton Township**. Threatened, endangered, and otherwise rare or declining species are highlighted in **Appendix F: Rare Plant and Animal Species Found in Westampton Township**.

Invertebrates

Invertebrates are the basis of a healthy environment and are part of every food chain—either as food for amphibians and fish, or as a part of nutrient cycling systems that create and maintain fertile soils. Invertebrates consist of insects (beetles, butterflies, moths, dragonflies, ants, termites, bees, wasps, flies, and others), arachnids (spiders, ticks, and mites), crustaceans (crayfish and microscopic copepods), mollusks (mussels, clams, snails, and slugs), and worms.

Macroinvertebrates are invertebrates that are visible to the naked eye but smaller than 50 millimeters. Benthic (bottom dwelling) macroinvertebrate communities provide a basis for ecological monitoring and are relatively simple to collect from shallow stream bottoms. These communities consist largely of the juvenile stages of many insects, such as dragonflies and mayflies, as well as mollusks, crustaceans, and worms. Monitoring for diverse assemblages of macroinvertebrates reveals the effect of pollutants over a longer period of time, as compared to chemical monitoring which measures water quality at one moment in time. The AMNET surveys streams for macroinvertebrate communities, which indicate certain levels of water quality, discussed in the section on **Surface Water Quality**, which begins on page 37.

There are nine endangered invertebrate species (two beetle species, four butterfly species, and three mussel species) and eight threatened invertebrate species (three butterfly species and five mussel species) in New Jersey. Of those species on the New Jersey Endangered and Threatened List, one, the dwarf wedge mussel, is listed as endangered under the Federal Endangered Species Act.

The only inventory of invertebrate species likely to be found in Westampton is a list of 37 butterfly species identified in western Burlington County during the month of August. This list is included in **Appendix E: Animals Known or Probable in Westampton Township**. These butterflies were found at the Rancocas Nature Center in Westampton Township and the Palmyra Cove Nature Park located on the shores of the Delaware River in the

Borough of Palmyra. None of the 37 species observed are threatened or endangered in the state.

Vertebrates

Vertebrates are less numerous than invertebrates, but their larger size makes them much more visible, and thus better studied and recorded. Fish species are fairly well documented, as are mammals. Birds that nest in the township are known, but migrants that depend on Westampton's wetlands and wet forests as stopover sites in which to rest and feed are not as thoroughly inventoried.

Mammals

Mammals appear to be abundant because they tend to be larger and live in habitats also ideal for human development. There are over 500 mammal species in New Jersey, of which only nine are listed as endangered and none are listed as threatened by the state. There are 27 species of mammals that have been observed in the Rancocas State Park and Nature Center in Westampton. Some common mammals found in Westampton Township include rabbits, mice, squirrels, skunks, opossums, bats, raccoons, beavers, foxes, moles, and deer. See [Appendix E: Animals Known or Probable in Westampton Township](#) for a complete list.

Management of white-tailed deer is an issue in New Jersey, and particularly in Westampton Township. Bow-hunting for deer is allowed in the Rancocas State Park during the deer hunting season. While many residents prize the presence of mammalian life, deer often come into conflict with humans in suburban areas. According to the U.S. Department of Agriculture, deer cause more damage to agricultural crops than any other vertebrate wildlife species. Farmers in densely human-populated areas appear to be the most affected. Additionally, deer can devastate the understory of forests through overgrazing, destroying the growth of seedlings and young trees. Finally, as most motorists are aware, collisions between deer and automobiles frequently result in serious damage.

Controlling deer numbers has become increasingly difficult in New Jersey, primarily because suburban landscaping provides year-round food, which supports population growth; and because the principal method of culling the population—hunting—is not feasible in suburban environments.

To minimize human-deer conflicts, the New Jersey Agricultural Experiment Station recommends both lethal and nonlethal deer management options for community-based deer management programs. For example, municipalities can extend the hunting season, issue depredation permits to private landowners, engage in sharp shooting, and employ traps and euthanasia to reduce deer numbers. Alternatively, communities and private landowners can choose to apply nonlethal, although more costly, deer management strategies, such as installing reflectors and reducing speed limits on rural roads to decrease deer-vehicle collisions, modifying habitat by planting bad tasting plants on

commercial and residential properties, using taste-based and odor-based repellents, and employing traps and translocation techniques.

Birds

New Jersey has between 350 and 500 species of birds, which is an exceptional number given the state's small size. New Jersey is an important location for migratory birds heading south for the winter. Not only is the state an important "rest stop" for birds migrating to warmer climates in Central and South America, but also the New Jersey Atlantic Coast and the Delaware Bay are major parts of the Eastern Flyway (established migratory air route) in North America.

There are nearly 200 species of birds likely to be found in Westampton Township according to the New Jersey Audubon Society. Common birds found in Westampton Township include geese, ducks, vultures, woodpeckers, doves, swallows, crows, grackles, bluebirds, jays, robins, starlings, wrens, warblers, cardinals, finches, sparrows, and some hawks. The Barred Owl, Cooper's Hawk, Great Blue Heron, Bald Eagle, and other rare species have been documented in the township. See **Appendix E: Animals Known or Probable in Westampton Township** for the full list of birds identified at the Rancocas State Park and Nature Center in Westampton.

Another common bird is the Canada goose. The State of New Jersey has a "resident" Canada goose population of approximately 100,000 birds that no longer migrate to more southern locales, and that number may double in the next 5 to 10 years. While geese are a valuable component of the urban/suburban environment, providing enjoyable wildlife opportunities for the public, they can also cause property and environmental damage. Goose droppings that wash into lakes during storm events can elevate coliform bacteria to unhealthy levels, closing lakes to swimming. Goose droppings limit human use of grassy areas in parks, and because geese can be quite aggressive during the nesting season, they can also injure humans.

Removing geese or preventing them from residing in park areas is a difficult task. Because geese move freely, the most effective management solutions are best conducted at the community level. Canada geese are protected by the Migratory Bird Treaty Act. Therefore, a management program may require the U.S. Department of Agriculture's approval and permits. A new federal rule signed into law in December 2005 eases hunting restrictions and allows county and municipal officials to coordinate with state fish and wildlife departments to destroy birds and/or eggs that pose a threat to public health and safety. Management techniques include planting shrubby vegetation around streams, lakes, and ponds to block waterfowl access, discouraging humans from feeding geese, and removing geese eggs and replacing them with decoys.

Reptiles and Amphibians

Reptiles and amphibians can be quite elusive when surveys attempt to document them. Amphibians are more likely to be spotted during periods of high humidity and rain. Snakes and lizards may be found basking in the morning sun in open areas such as on rock

outcroppings or dirt roads. Most turtles may be found in wet areas, although others prefer upland habitats.

There are 10 amphibian and 15 reptile species that have been observed in Westampton. Some rare species, such as the endangered Bog Turtle and threatened Wood Turtle, have been documented in Westampton. Amphibians are closely associated with wetland habitats, which they require for breeding. Reptiles are not nearly as dependent on water as amphibians, so some may be found in fairly dry environments. Amphibians of some types are abundant, such as Bullfrogs, although others are rare because they depend on vernal ponds, as discussed in the **Surface Waters Resources** section of this document on page 27.

See **Appendix E: Animals Known or Probable in Westampton Township** for a complete list of reptiles and amphibians that have been observed in the township.

Fish

When European settlers arrived in present-day Burlington County, they encountered Algonquin Indians, who regularly fished along the inland streams and gathered shellfish in the Delaware River. Shad fishing was an important industry along the Delaware River until the early twentieth century. Due to the unintended consequences of urban development, industrial advancement, overfishing, and mechanized agriculture, the amount and diversity of aquatic life has decreased dramatically throughout most of New Jersey.

The New Jersey Division of Fish and Wildlife, under the Bureau of Freshwater Fisheries, monitors and actively aids the propagation, protection, and management of the state's freshwater fisheries. The bureau raises several million fish for stocking in suitable waterbodies and conducts research and management surveys.

There are 25 fish species documented in the waterways of Westampton, listed in **Appendix E: Animals Known or Probable in Westampton Township**.

Endangered Vertebrates

According to the Natural Heritage Database, the Landscape Project, and the NJ Audubon Society, a fair amount of rare wildlife has been sighted in Westampton Township over the course of the past 100 years. Unfortunately, a few species have not been recently spotted

N.J. Department of Environmental Protection Freshwater Fish Advisories

Fishing provides enjoyable and relaxing recreation, and many people like to eat the fish they catch. Fish are an excellent source of protein, minerals, and vitamins, are low in fat and cholesterol, and play an important role in maintaining a healthy, well-balanced diet.

Certain fish, however, may contain toxic chemicals, such as polychlorinated biphenyls (PCBs), dioxins, or mercury, which accumulate in water and aquatic life. Chemical contaminants such as dioxin and PCBs are classified by the U.S. Environmental Protection Agency as probably cancer-causing substances in humans. Elevated levels of mercury can pose health risks to the human nervous system. Infants, children, pregnant women, nursing mothers, and women of childbearing age are considered to be at a higher risk from contaminants in fish than other members of the general public. Since 1982, NJDEP catches fish at numerous sampling stations throughout the state and tests for contaminant levels, adopting advisories to guide residents on safe consumption practices.

NJDEP issued a fish advisory for the following species of fish in Burlington County: largemouth bass, smallmouth bass, striped bass, chain pickerel, yellow bullhead, sunfish, brown bullhead, American eel, channel catfish, white catfish, and bluefish. Recreational fishermen and women should check regularly for local fish advisories on NJDEP's Division of Science, Research and Technology website: <http://www.nj.gov/dep/dsr/njmainfish.htm>

in the township. Observations from the Rancocas State Park and Nature Center have found rare birds at various times of the year. The following are brief descriptions of rare species that have been observed in Westampton Township. A complete list of rare wildlife species and habitat found in Westampton is listed in **Appendix F: Rare Plant and Animal Species Found in Westampton Township**.

The **Bald Eagle** (*Haliaeetus leucocephalus*) is an endangered species in New Jersey. Their seven- to eight-foot wingspan, full white heads, and dark brown plumage make the adult Bald Eagle easily identifiable. Their habitat consists of areas of forest near the Delaware River and its tributaries. Bald Eagles choose the largest and tallest trees in a forest to set up their nests. They also prefer these trees to be in close proximity to water. This allows the Bald Eagle to forage for fish from their nest. The Bald Eagle population was depleted in New Jersey through habitat destruction, shootings, intentional poisons, and especially the application of DDT, a pesticide that was widely used in post-World War II New Jersey to control the mosquito population. This chemical accumulated in the bodies of the Bald Eagle, which caused the eggshells of fledgling Bald Eagles to crack easily during the incubation period. By 1970, only one Bald Eagle nest remained in the state. As a direct result, the Bald Eagle was listed as endangered under New Jersey's Endangered Species Act in 1974. New Jersey's Bald Eagle population has improved since the federal government placed a ban on DDT in 1972. In 2008, the New Jersey Endangered and Nongame Species Program recorded 69 Bald Eagle pairs in the state, 63 of which were active (with eggs). One nest is located on the Rancocas Creek, west of Westampton Township. A total of 264 Bald Eagles were observed during NJDEPs midwinter survey in January of 2008.

The **Cooper's Hawk** (*Accipiter cooperii*) is a threatened species in New Jersey. This raptor resides in both wetland and upland forests and is present year-round in the state. The adult has a dark cap and flies with its head extended, exhibiting a cross-shaped silhouette. It has a rounded tail with a white edge and short, rounded wings. The Cooper's Hawk lives in old-growth forests with closed canopies and moderate-to-heavy shrub cover. It prefers nesting in dense woods, such as cedar forests and conifer groves. The population of the Cooper's Hawk began to decline in the 1950s as development encroached upon its habitat. Like the Bald Eagle, the Cooper's Hawk was affected by the application of the pesticide DDT during the 1950s to 1970s. It was placed on the endangered species list for New Jersey in 1974, although it does not have federal endangered species status. Also like the Bald Eagle, the population of the Cooper's Hawk has rebounded greatly after the federal ban on DDT, and its status in New Jersey changed from endangered to threatened in 1999. However, the loss of large, contiguous forest land in the state continues to be a threat to the species.

The **Barred Owl** (*Strix varia*) is a threatened species in New Jersey. It is a large fluffy-looking owl with brown barring on the upper breast and brown streaking on the lower breast and belly. Its eyes are a distinctive dark brown color. Traditionally, the Barred Owl was known as the "swamp owl." This name originated from the Barred Owl's choice habitat in old-growth wetland forests. The owl needs old-growth mature wet woods that contain large trees with cavities for nesting. In southern New Jersey, the Barred Owl inhabits both deciduous wetland forests and Atlantic white cedar swamps associated with stream corridors. Mixed hardwood swamps dominated by red maple and black gum are

also suitable habitats. The destruction of these old-growth wetland forests during the post-World War II building boom is thought to be the main reason for the decline of the Barred Owl. Hunting has also played a part in the Barred Owl's precarious situation. In 1979, the Barred Owl was listed as a threatened species in New Jersey. Currently, the Barred Owl population is declining further as forested lands become developed. However, the Barred Owl has been documented in Westampton Township.

The **Eastern Box Turtle** (*Terrapene carolina*) is listed as a species of special concern in New Jersey. It is known to be currently present in Westampton Township. This small (four-to-six-inch) turtle can be found all over the state and lives in many different habitats. They can be identified by their tall domelike shells and coloration, which ranges from spots of yellow, orange, or olive on a dark brown background. Even though Eastern Box Turtles can live in many different habitats, they are mostly terrestrial. However, Box Turtles enjoy soaking themselves in water or mud during the summer. Continued residential development has limited the habitats available to the eastern box turtle and reduced their number over the years. Also, people encountering these turtles often keep them as pets, which prevents them from breeding.

The **Bog Turtle** (*Clemmys muhlenbergii*) is an endangered species in New Jersey, and a threatened species in the United States. Adult Bog Turtles are very small and grow to only about 3.0 to 3.9 inches in length. The shell, head, and limbs are dark brown or black, and there are distinctive orange patches on both sides of the head. Bog Turtles inhabit calcareous (limestone) fens, sphagnum bogs, and wet, grassy pastures that are characterized by soft, muddy bottoms and perennial groundwater. Bog Turtle habitats are potentially drained and the water depth rarely exceeds four inches above the surface. Due to population declines, restricted habitat preference, habitat loss, and collecting, the Bog Turtle was placed on the endangered species list in New Jersey in 1974. In 1997, the U.S. Fish and Wildlife Service placed the Bog Turtle on the federal list of threatened and endangered species. Current conservation efforts include habitat management, population monitoring, land acquisition, and landowner outreach. Since most Bog Turtle populations occur on private lands, biologists devote substantial amounts of time educating private landowners about Bog

*Federal Endangered Species Act**

An “**Endangered**” species is in danger of extinction throughout all or a significant portion of its range.

A “**Threatened**” species is one that is likely to become endangered in the near future.

*New Jersey Endangered Species Act***

An “**Endangered**” species is in danger of immediate extinction within the state due to one of several factors: loss or degradation of habitat, overexploitation, predation, competition, disease, or environmental pollution.

A “**Threatened**” species is one that may become endangered if environment conditions continue to deteriorate. It is vulnerable due to one of several factors: small population size, restricted range, narrow habitat affinities, or significant population decline.

A species of “**Special Concern**” is one that warrants special attention because of the evidence of population decline, environmental deterioration, or habitat modification that would result in it becoming **Threatened**. Special Concern status also extends to species whose population size is unknown or unstudied.

*Definitions adapted from the U.S. Fish and Wildlife Service, “Listing a Species and Threatened or Endangered: Section 4 of the Endangered Species Act.” Washington, DC: February 2001.

**Definitions adapted from N.J. Division of Fish, Game, and Wildlife, Endangered and Non-Game Species Program, “Status Definition.” Trenton, NJ: April 2002.

Turtle conservation. Private landowners can benefit from having Bog Turtles on their land through various federal cost-sharing programs, which provide funding for habitat management and enhancement. Biologists from the New Jersey Endangered and Nongame Species Program (ENSP) are currently implementing a watershed-based management strategy for the protection of critical Bog Turtle areas.

The **Wood Turtle** (*Clemmys insculpta*) is a threatened species in New Jersey, although not listed federally. Each season a new annulus, or ridge, is formed, giving its shell a distinctive pyramid-shaped appearance. The Wood Turtle occupies a variety of aquatic and terrestrial environments that contain few roads and tend to be at least one-half of a mile from development. The Wood Turtle prefers remote freshwater waterways for mating, feeding, and hibernation. Remote terrestrial habitats such as open or agricultural fields, thickets, lowland forests, abandoned railroad beds, and pastures are preferred for egg laying, foraging, or basking. The Wood Turtle was once fairly common in New Jersey, although population decline was noted in the 1970s due to habitat fragmentation and stream degradation. The species was listed as threatened in New Jersey in 1979. Wood Turtle sites in the state have been surveyed and monitored by biologists since the 1970s, providing extensive data on the species. As with all endangered species, the collection and possession of Wood Turtles is prohibited in New Jersey.

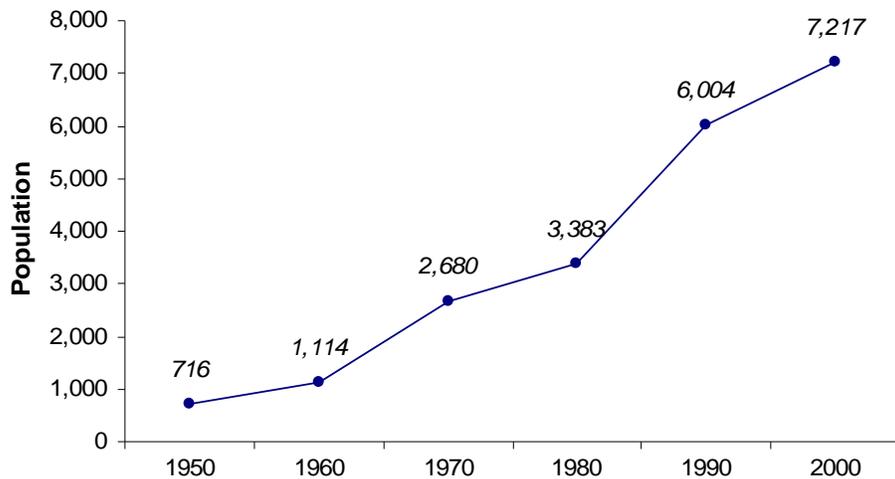
See **Appendix E: Animals Known or Probable in Westampton Township** for a complete list.

The Built Environment

Population and Housing

Like many towns in Southern New Jersey, Westampton experienced exponential population growth during the second half of the twentieth century. In fact, the population of Westampton in 2000 (7,217) was 10 times that of 1950 (716). Much of this growth occurred during the 1980s, when the population increased from 3,383 in 1980 to 6,004 in 1990. The U.S. Census Bureau estimates that the population of Westampton in 2008 was 8,626, a 20 percent increase from 2000.

Figure 11: Population of Westampton Township, 1950 – 2000



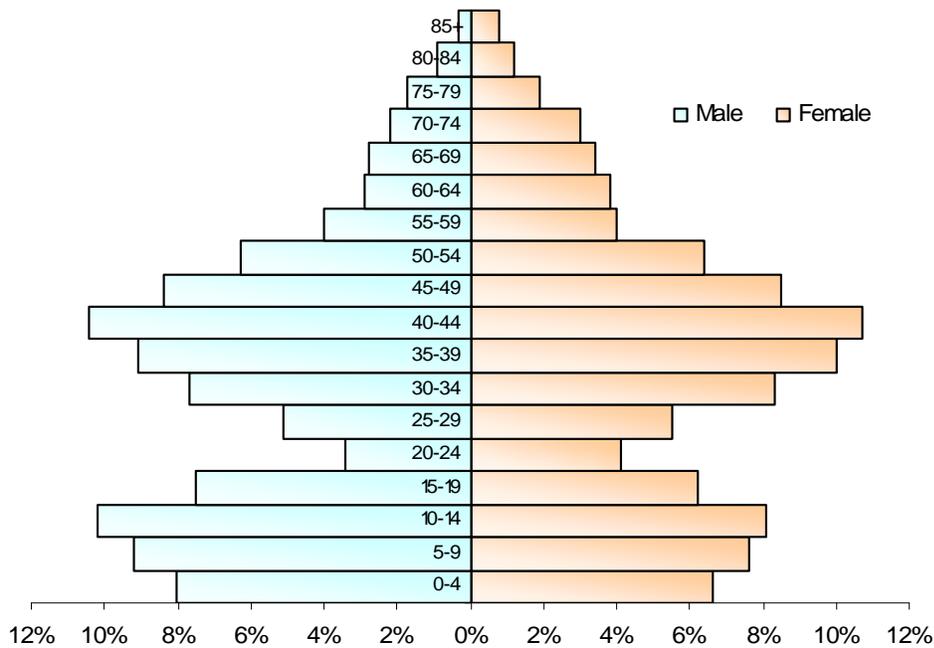
Source: U.S. Census Bureau, 1950 – 2000

In 2000, according to the U.S. Census, 3,813 individuals in Westampton were in the labor force, and 3,604 (96 percent) were currently employed. Approximately 36 percent of jobs were held in management, professional, and related occupations. An additional 33 percent were in sales and office occupations. Service occupations constituted about 14 percent of industry jobs, and less than one percent of the workforce was engaged in farming, fishing, or forestry.

According to the 2000 U.S. Census, the majority of Westampton's population is over age 21 (approximately 68 percent, or 4,888 residents). In addition, the percentage of

Westampton's population over age 65 is nine percent (659 residents), slightly lower than the national average of 12 percent. Elder communities in Westampton Township include Clare Bridge, Fernbrooke, Shady Rest Manor, and age-restricted housing on Kings Road. The median age in Westampton is 36, similar to the national average of 35. Approximately 22 percent of Westampton's residents are between the ages of 5 and 18. This represents the age group that is most likely to generate demand for public schools, community facilities, and recreational opportunities.

Figure 12: Westampton Township Population by Age and Gender



Source: U.S. Census Bureau, 2000

Westampton's population is ethnically diverse, with 71 percent of the population identifying as White, 21 percent identifying as Black or African American, and 6 percent identifying as Hispanic or Latino. The percentage of individuals (2.5 percent) and families (2.7 percent) in Westampton Township that are below the poverty level is significantly less than the national average (12.4 percent and 9.2 percent, respectively).

According to U.S. Census data from 2000, Westampton had 2,581 housing units. Of these housing units, two percent (56) were classified as vacant, which is much lower than the national average of nine percent. Of the 2,581 housing units, 93 percent (2,350 units) were owner-occupied, much higher than the national average of 66 percent. The amount of rental properties is quite low at seven percent (175 units), significantly lower than the national rate of 34 percent. The median value of a single-family home in Westampton Township in 2000 was \$127,300, slightly higher than the U.S. average of \$119,600, and the majority of homes were constructed between 1960 and 1990.

Transportation

Westampton Township is located in a highly accessible part of Burlington County. It is located approximately 25 miles from Philadelphia and 20 miles from Trenton. Westampton contains exits for both the New Jersey Turnpike and I-295, which run relatively parallel to each other within the township. Both of these limited-access highways cross the township in a northeast to southwest direction. Historically, the modern transportation corridors that cross Westampton have fostered its development. The New Jersey Turnpike has been a significant transportation corridor for the entire region for over half a century. The first 44-mile segment of the original 118-mile long highway opened in November of 1951, spanning from Exit 1 in Carneys Point Township through Exit 5 in Westampton Township. Interstate 295, designed as a bypass around Philadelphia, was designated in 1958 and was mostly completed by the 1980s. Interstate 295 runs from the Delaware Memorial Bridge to Hamilton, NJ, north of Trenton.

Interstate 295 has one main interchange in the township (Exit 45) and has a length of approximately 2.5 miles in the township. The New Jersey Turnpike runs for a length of about four miles in the township, and the four-lane tollgate of Exit 5 is located in the northern area of the township. In addition to these two major highways, County Route 541 (Burlington-Mount Holly Road) crosses Westampton from the northwest to the southeast and is the principal commercial corridor in the township. County Route 626 (Rancocas Road), connecting Beverly with Mount Holly, runs west to east in the southern portion of the township. Rancocas Road was once known as "Oyster Shell Road," named for its original paving material. Other main county routes in Westampton provide access to commercial centers in Willingboro, Mount Holly, and Burlington, as well as connecting to smaller residential streets within the township.

The proximity to major highways and roads is integral to the quality of life in Westampton. Approximately 95 percent of the township's employed population commutes to work by automobile, according to the 2000 U.S. Census. The mean travel time to work for Westampton residents is 27 minutes, similar to the New Jersey average of 30 minutes. Only one percent of Westampton residents rely on public transportation for their work commute.

New Jersey Transit Bus 413 serves Westampton Township and travels between Camden and Burlington Township. The bus stops along Woodlane Road at the Burlington County Social Services Building before continuing along Route 541. In addition, New Jersey Transit offers a connecting bus service to Philadelphia via transfer from Bus 413's stop in Camden. In Camden, commuters can also access the Greyhound bus service and the PATCO rail service. In Philadelphia, travelers also have access to various bus service providers, SEPTA rail and bus service, and Amtrak rail service.

Burlington County offers the BurLink bus service, which connects with NJ Transit bus routes and River Line stations. BurLink Routes 1 and 2 both have stops in Westampton Township. In addition, Academy Bus offers frequent weekday and weekend bus service from Westampton's Exit 5 Park and Ride facility to New York City.

There is no direct access to NJ Transit's commuter rail in Westampton Township. While there are no active passenger or freight rail lines in the township, historically, the Burlington & Mount Holly Railroad was in operation from the late 1840's through the late 1920's. This eventually became the site of Burlington Mount Holly Road (County Route 541), which was a stagecoach and toll road during its early years. However, the original road was located north of the current road on the northern side of the Hancock House.

The closest major airports to Westampton are in Philadelphia, Newark, and Atlantic City, all within an hour and a half drive. The South Jersey Regional Airport located in Lumberton, approximately six miles southwest of Westampton Township, is one of the largest private airport facilities in the country, and is also available for public use. There is also a private airfield at the Inductotherm complex located to the northeast of Exit 45 of I-295.

There are no official boat launches within Rancocas State Park; however, recreational boating is common along the Rancocas Creek west of I-295 to the Delaware River. Canoeing is also common on the Rancocas Creek, and advocates are trying to create an unobstructed 16-mile route from Medford Township to the Delaware River.

Historic Resources

Protection and preservation of historic structures, lands, and views are of high importance to Westampton Township residents. Westampton has two sites—Peachfield and the Rancocas Village Historic District—which are listed on both the State and National Registers of Historic Places. See [Table 23: Historic Sites](#) and [Map 18: Historic and Cultural Resources](#).

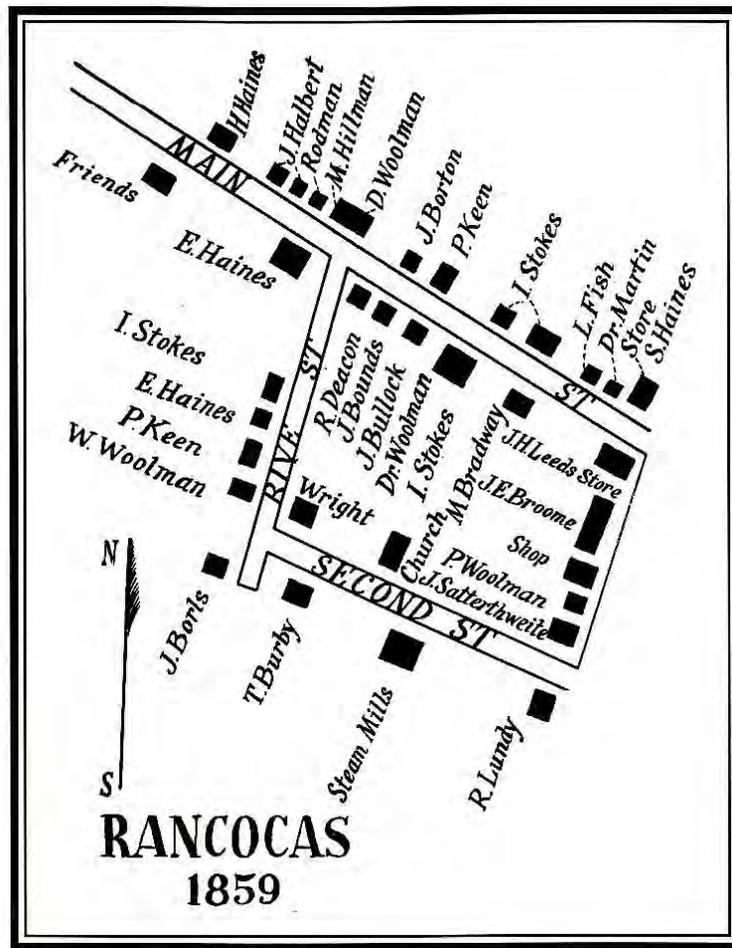
Peachfield Plantation contains one of the oldest structures in Westampton. The original 300-acre property was purchased in 1674 by John Skene, a Quaker from Scotland. Henry Burr purchased the property in 1695 from the widow of Skene. The earliest part of the house was built in 1725 by Burr from South Jersey bog ironstone. An east wing was added by Burr's son in 1732. Peachfield was distinct from other early houses in the county because it was built of stone instead of brick or a wood frame. The property remained in the Burr family for over 200 years. A fire in 1929 destroyed the interior of the house, leaving portions of the exterior walls and chimney. The house was restored in 1932 by the prominent Philadelphia architect R. Brognard Okie, who was known for his reconstruction of Pennsbury, William Penn's manor house on the Delaware River. Peachfield Plantation, located at 180 Burrs Road, is currently maintained by the Daughters of the American Revolution (DAR).

Rancocas Village is a small historic district located along the western border of Westampton Township, bounded roughly by Valley Farm Road, a ditch north of Main Street, the Willingboro Township boundary and Rancocas Road (Rancocas Bypass). Characterized as a nineteenth century village, it is distinct from other villages due to the predominance of brick construction along its Main Street. According to Burlington County historical information, other small towns with large lots typically used wood as a building

material, while only larger cities used brick due to the fear of fire in crowded living conditions. Known for its historic homes and pedestrian scale, the oldest brick building in Rancocas Village is the Friends Meeting House, the earliest portion of which was built in 1722. The oldest house in Rancocas Village is thought to be the Samuel Wills House, located on Main Street and built circa 1790. The village began to develop significantly after the construction of the Centerton Bridge across the Rancocas Creek in 1832. At this point, Rancocas Village became a destination for surrounding rural areas in Burlington County, offering the goods and services of a grist mill, blacksmith, cigar manufacturer, general store, carpenters, and doctors.

The majority of the homes in Rancocas Village were constructed during the 1830's and are characterized by having common bond walls, gable roofs with dormers, and doorways often with sidelights and transom windows. Beyond the main streets, however, many of the later nineteenth-century houses that line the side streets of Rancocas are wood frame rather than brick.

Figure 13: Map of Rancocas Village, 1859



Source: Robertson, Mark, "Westampton Township, 1850-2000."

Three other sites – two archaeological sites and the Hogan Farmstead – have been issued State Historic Preservation Office (SHPO) opinions, which review a site's eligibility

for inclusion on the State Register of Historic Places. A SHPO Opinion is usually issued in response to the filing of an Environmental Impact Statement (EIS) associated with a federally funded activity which will have an effect on historic properties not listed on the National Register. These properties and historic districts all meet the New Jersey and National Register criteria for significance in American history, archaeology, architecture, engineering or culture, and possess integrity of location, design, setting, materials, workmanship, feeling, and association. Other sites may have the potential to be listed as local, state, or national landmarks, but have not been nominated by local citizens or identified by SHPO for such a designation.

The Hogan Farmstead, located south of County Route 541, is an historic farm that is still in operation and owned by the Hogan family. Burlington County would like to preserve the historic farmstead and has made some efforts to do so. The two archeological sites are not identified or mapped to protect these sites from vandalism or theft.

Timbuctoo was settled by freed slaves and was a haven for fugitive slaves. Thought to be a stop on the Underground Railroad, the cemetery at Timbuctoo contains the graves of African American Civil War veterans. An ongoing archeological dig led by a professor at Temple University has uncovered evidence of at least 18 structures and potentially millions of objects buried beneath the site.

The former property of Henry Rowan, the industrialist and donor to Rowan University (formerly Glassboro State College), was purchased by Burlington County in 2007. The founder of Inductotherm, Rowan lived at the 83-acre estate for 40 years.

Table 23: Historic Sites

Name	Location	State ID#	Register
State and National Registers of Historic Places			
Peachfield	Burr Road	879	NR:6/19/1973 SR: 2/14/1973
Rancocas Village Historic District	Main, Bridge, Wills, and Second Streets	880	NR:6/5/1975 SR:9/6/1973
Eligible Sites for State and National Registers of Historic Places			
Archaeological Site (28-Bu-240)	Archaeological Site	878	SHPO Opinion: 4/24/1992
Archaeological Site (28-Bu-393)	Archaeological Site	3016	SHPO Opinion: 4/30/1990
Hogan Farmstead	Between County Route 541 and Woodlane Road	3895	SHPO Opinion: 7/15/1997
Additional Historic Places			
Timbuctoo Civil War Cemetery	Church Street		
Former Henry Rowan Property	Bridge Street		

Source: New Jersey State Historic Preservation Office, 2009



Timbuctoo Civil War Cemetery

New Jersey municipalities are permitted to identify, designate, and regulate their own historic resources through the adoption of historic preservation ordinances (which are recognized as zoning laws under the New Jersey Municipal Land Use law). The Historic Preservation Commission of the Township of Westampton was established in 1986 to help maintain the character of the historic properties within the Township. As an official body of the Township, the Commission is responsible for conducting research on and nominating significant buildings and sites to the State and National Registers of Historic Places. The Commission also advises the Planning and Zoning Boards of the Township on how development and zoning applications affect historic landmarks or districts.

The Westampton Historic Preservation Commission is also responsible for overseeing changes to historic properties. In order to maintain the general appearance and character of the township's historic buildings, residents are required to complete and submit a Certificate of Appropriateness to the Historic Preservation Commission before beginning any work on an historic property that will change the exterior appearance. The Commission then reviews and either approves or denies the application, using guidelines established in the municipal Historic Preservation Ordinance (Chapter 36 of the Township Code).

Failure to comply with the Certificate of Appropriateness process is a violation of the Township code and can carry a fine. The ordinance is designed to maintain the historic significance of the homes throughout Westampton Township.

The Westampton Township Historical Society collects and holds information about the community's historic resources. Bi-monthly meetings are open to the public and are held at the Rancocas Community Center. The Historical Society is located at 203 Main Street in Rancocas, NJ.

The National Park Service and the New Jersey SHPO jointly administer the Certified Local Governments (CLG) program, which provides technical assistance and funding for community-based preservation efforts. As of January 2009, only three municipalities in Burlington County – Burlington City, Evesham Township, and Mount Holly Township – were CLGs. To participate, municipalities must maintain a historic preservation commission, survey local historic properties, provide opportunities for public participation in preservation activities, and develop and enforce local preservation laws. If Westampton Township were to become a CLG, it would be eligible to draw on an exclusive pool of matching federal and state funds for program implementation or rehabilitation work.

There are also federal incentives for individuals, organizations, or firms that own historic properties and are interested in historic preservation. Interested parties can take advantage of the Rehabilitation Investment Tax Credit, a federal tax incentive to encourage the preservation and reuse of older income-producing properties, including offices, apartment buildings, and retail stores.

Investing in historic preservation efforts can provide a municipality with important and impressive returns. Private and public efforts to preserve and rehabilitate historic districts create attractive places to live, work, and play, and stimulate new investment in older residential and commercial centers. An historic district, like that in nearby Mount Holly, can become a regional draw for tourists and boutique customers. Furthermore, historic preservation maintains a municipality's character, distinctly separating it from other rural and suburban communities, for both new and established residents.

Cultural Resources and Open Space

The headquarters of the Burlington County Library system is located in Westampton Township off of Woodlane Road. In addition to this library, the Burlington County Library System operates seven branch libraries. There are nine additional member libraries that maintain an association with the County Library System. The Burlington County Library System was the first county library in New Jersey and began in a Mount Holly YMCA in 1921.

The Rancocas Nature Center, located on Rancocas Road within Rancocas State Park, is an educational environmental center operated by the New Jersey Audubon Society. At the visitor's center, there is a natural history museum with a classroom, gift shop, exhibits, as well as a live wildlife viewing area. The Rancocas Nature Center offers a variety of programs and events, including a children's nature series, day camps, bird-watching walks, stargazing, botanical tours, and other opportunities. There are also four different marked trails through woods, open fields, and marshes.

The Rankokus Indian Reservation, also located within Rancocas State Park, is a 350-acre site dedicated to the Powhatan Renape nation. Members of the Powhatan Renape tribe are descendants of the Powhatan Confederacy and relocated to New Jersey from Virginia in the 1800s. The reservation contains a replica of a traditional Indian village of the 1600s, as well as a museum and gift shop. An American Indian Arts Festival is held on the grounds of the reservation annually, featuring traditional art, music, entertainment, demonstrations, food, and other cultural activities.



Rankokus Indian Reservation

Parks and Recreation

The 1,252-acre Rancocas State Park is located along the southern border of Westampton Township and offers a number of recreational opportunities, including hiking and wildlife observation. Deer hunting is allowed in the park during certain seasons regulated by the NJDEP Division of Fish and Wildlife.

Westampton Township also has seven municipal public parks with over 58 acres of recreational land and facilities, shown on [Map 19: Parks, Recreation, and Open Space \(2010\)](#).

The largest municipally owned park in the township is the new Westampton Sports Complex located on Rancocas Road. When completed, this 34-acre park will contain four baseball fields, four all-purpose fields, practice areas, and a building with a concession stand and restrooms. The Spring Meadows Park is a six-acre recreational park in the Spring Meadows subdivision which offers a soccer/softball field, tennis court, playground, and a basketball half-court. There is also a small playground, or “tot lot,” on another parcel in the Spring Meadows subdivision. The Rolling Hills Park, located in the Rolling Hills subdivision, is a six and one-half acre recreational park with a baseball field, tennis court, and playground. In the same subdivision, the Rolling Hills East Park contains an additional playground. The Club Acres tennis court is located on Manor Drive near Oxmead Road. Tarnsfield Park, located in the Tarnsfield subdivision, is a three-acre park containing a playground and soccer field. Also located in the Tarnsfield subdivision, the formerly private Tarnsfield Swim Club is currently a publically owned facility providing open and competitive swimming and swim lessons.



Burlington County Amphitheater

The Westampton Recreation Department coordinates a range of programs that are open to residents from all townships. Programs include organized sports, before/after school programs, a fishing tournament, and other activities for residents of all ages.

The Burlington County Amphitheater, located behind the County Library, is a new feature of the Burlington County Division of Parks. The Amphitheater is an open air theater with scheduled performances and concerts occurring year round.

Recreation fields on school land owned by the Westampton Township Board of Education are also a part of the community’s recreation amenities and are often used after school hours. On the grounds of the Westampton Township Middle School are two softball fields and two soccer fields. Recreational facilities at the Holly Hills School include a softball field, basketball court, hockey rink, and playground.

There are also a number of privately owned recreational facilities, including a large softball field located on Main Street in Rancocas Village and owned by the Rancocas Society of Friends. At the new Deerwood residential development, there are recreational facilities including four tennis courts, a large swimming pool, and a playground. There are also two privately owned and maintained golf courses in Westampton Township: the Deerwood Country Club and the Burlington Country Club.

To fund the acquisition of open space and recreational resources, Westampton Township has adopted an Open Space, Recreation, Historic Preservation, and Farmland Preservation Tax of four cents per one hundred dollars of assessed value. Through this tax, hundreds of thousands of dollars are raised annually to support new open space and recreational opportunities in the township. In addition to township funding, additional opportunities for preservation are available through the state Green Acres Program, Burlington County's Local Open Space Preservation Land Grant Program, the National Recreational Trails Program, private donations, and conservation easements.



Burlington County Country Club

Township Utilities and Services

Drinking Water

Mount Holly Water Company (MHWC) supplies public drinking water to residences in the more developed sections of Westampton. In addition, the Willingboro Municipal Utilities Authority (WMUA) supplies water to Westampton Township, including the historic Rancocas Village. WMUA has been supplying water and sewer service to the Rancocas section and other delineated service areas of Westampton Township since 1968, with the contract renewed every 10 years. Drinking water is derived primarily from public supply wells that tap the PRM aquifer (see the **Aquifers** section on page 51). Additional information on water supply wells is available in the **Water Supply Wells** section on page 56.

Drinking water wells in Westampton Township are listed in

Table 18: Public Community Water Supply Wells and **Table 19: Public Noncommunity Water Supply Wells** and shown on **Map 15: Public Water Supply Wells**.

Sewer Service

As with public water, sewer service is provided to the more-developed sections of Westampton, including the larger residential developments in the township. Public sewage treatment is provided through both the Willingboro Municipal Utilities Authority (WMUA) and the Mount Holly Municipal Utilities Authority (MHMUA). Approved sewer service areas cover most of the township, with the exceptions of the northeast portion of the township where several horse farms are located, much of Rancocas State Park, an area of wetlands south of Exit 5 of the New Jersey Turnpike, and a few other smaller areas of the township.

The WMUA started providing sewer service to Rancocas Village and other developed areas of western Westampton in 1968. The WMUA wastewater treatment plan is capable of treating 5.2 million gallons of wastewater per day, and the treated wastewater is discharged into the Rancocas Creek. Biosolids, or sludge, are taken to the Burlington County composting facility, where the material is turned into compost for potential reuse as a fertilizing agent. A solar voltaic system was installed at the WMUA plant in 2009.

MHMUA's wastewater treatment plant, located on Rancocas Road in Mount Holly, discharges treated wastewater to the north branch of the Rancocas Creek. MHMUA's Water Pollution Control Facility won the 2005 U.S. Environmental Protection Agency (USEPA) National First Place Clean Water Act Recognition Award for Operations and Maintenance Excellence for Medium-Sized Advanced Treatment Plants. The MHMUA is currently undertaking an expansion project and a complete update of its wastewater management plan. MHMUA broke ground on a new water treatment facility in Lumberton in June of 2009, and plans to upgrade its existing plant on Rancocas Road in Mount Holly. MHMUA currently serves Mount Holly, Lumberton, Westampton, Eastampton, Hainesport, and the eastern part of Moorestown.

See [Map 20: Sewer Service Area and NJPDES Permits](#) for the location of the currently approved sewer service areas.

Trash and Recycling

The Westampton Township Public Works Department is responsible for road maintenance, street sweeping, snow removal, leaf and brush collection, maintenance of all township buildings and recreation areas, and mowing and maintenance of all township open space. Curbside municipal trash service is available in Westampton on a weekly basis. Residents must schedule pickup for appliances. Recycling – including glass bottles and jars, aluminum and steel food and beverage cans, empty aerosol cans, plastic bottles, newspaper, and cardboard – picked up by Burlington County twice a month. There is also a recycling depot at the Westampton Municipal Building. Sealed containers of used oil and hazardous household waste can also be disposed of at the Municipal Building.

In addition, Westampton has a fall leaf pick-up from the beginning of November through the end of December and a one-time spring loose leaf pick-up during the week of April 15th. During these times, residents are able to rake leaves to the curb then to be vacuumed on a continuing rotation by the township's two leaf vacuums. NJDEP storm water regulations forbid the placement of leaves within 10 feet of a storm drain. At other times of the year, residents can dispose of leaves and yard waste by securing them in bags and taking them to the Municipal Building's recycling area.



Rancocas Village

Hazardous materials, such as paints, oil, asbestos, gasoline, pesticides, and fertilizer, can also be disposed of at the Resource Recovery Center (EcoComplex), a specially equipped landfill in Florence Township, Burlington County.

Education

Westampton Township has two public schools – Holly Hills Elementary School and Westampton Middle School. Holly Hills Elementary School educates approximately 500 students from kindergarten through fourth grade. Westampton Middle School also educates approximately 500 students from fifth through eighth grade.

After finishing eighth grade, students are able to attend the Rancocas Valley Regional High School, a comprehensive regional public high school that serves students from grades nine through twelve from five municipalities: Eastampton, Hainesport, Lumberton, Mount Holly, and Westampton. The high school is located southeast of Westampton Township in Mount Holly.

The Burlington County Special Services School is also located in Westampton and educates over 1,000 students from kindergarten through twelfth grade with special needs. Hampton Academy, located off of Burrs Road in the center of the township, is a private day school that provides education to students with special needs in grades seven through twelve. There are also two private Quaker schools in Westampton. The Friends Academy of Westampton, located south of Rancocas Avenue, serves students from kindergarten through fifth grade. The Rancocas Friends School, located within Rancocas Village, serves four- and five-year-olds in a one-room historic schoolhouse.

In addition, the Burlington County Institute Technology has one campus in Westampton Township that provides vocational and technical education to students from grades nine through twelve in addition to post-secondary education. The other main campus of the

Burlington County Institute of Technology (BCIT) is located in Medford Township. These two campuses serve students from 20 school districts throughout the county. Admission into the BCIT is competitive and admitted students have access to apprenticeship and job training programs with local businesses and institutions.

New Jersey State Plan

The New Jersey State Development and Redevelopment Plan (the State Plan) is a policy guide to be used by state, regional, and local agencies to increase the consistency of planning efforts. The State Plan provides a vision for the comprehensive development of the state. Municipal, county, and regional plans are reviewed by the State Planning Commission to evaluate consistency with the State Plan. The state is divided into six Planning Areas, each of which reflects varying levels of development, infrastructure capacity, and presence of natural resources.

According to the 2008 Draft Final Plan, the majority of Westampton Township is identified as a Suburban Planning Area (PA2). New development in the state is intended to occur in Suburban Planning Areas in more compact forms of development than traditional sprawl forms. Within Westampton, there are two areas that are identified as Metropolitan Planning Areas (PA1): Rancocas Village and an area north of Woodlane Road and west of Springside Road. Along with Suburban Planning Areas, much of the state's future development and redevelopment is intended to occur in Metropolitan Planning Areas. Much of the area south of Oxmead Road and east of Burrs Road is identified as Environmentally Sensitive Planning Area (PA5) due to its ecological value. The area north of Oxmead Road is identified as a Rural-Environmentally Sensitive Planning Area (PA4B). Much of the value in both areas stems from the large contiguous wetlands that provide critical habitat for rare species. Development is discouraged in Environmentally Sensitive Planning Areas, and the protection of large contiguous tracts of open space should be a priority. Additionally, Rancocas State Park and areas preserved by the county and township are identified as Park or Natural Areas, where development is prohibited from occurring.

In addition to Planning Areas, the State Plan designates centers where growth should be concentrated. The 2001 State Plan identified a large area of southeastern Westampton Township as being included in the Mount Holly center, although this was removed from the 2008 Draft Final Plan. See [Map 22: State Planning Areas \(2008\)](#) for a depiction of the State Plan Planning Areas in Westampton Township.

Environmental Issues

Known Contaminated Sites

The New Jersey Known Contaminated Sites List includes former factory sites, landfills, locations of current or former leaking underground storage tanks; sites where chemicals or wastes were once routinely discharged; and places where accidents have resulted in spills and pollution. Contamination may have affected soil, groundwater, surface water, or a combination of site conditions. The most dangerous sites, from a human health standpoint, can be listed on the National Priorities List (NPL), under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA is commonly referred to as “Superfund” because sites on the NPL are eligible for federal and state clean-up funds. Other sites may be remediated by state clean-up funds via the New Jersey Spill Compensation and Control Act. The majority of the sites are remediated by the responsible parties as required pursuant to state and federal regulations. Responsible parties may be the current or former owners or users of the site.

As of October 2009, there were 12 active known contaminated sites (KCSs) in Westampton Township. See [Table 24: Known Contaminated Sites \(KCSs\)](#) for a list and also [Map 21: Known Contaminated Sites \(2009\)](#) for the locations of these sites. Addresses of private residences have been removed for confidentiality.

In addition to these active KCSs, there is a pending KCS at a private residence located on Oxmead Road (Site ID #: 390949; PI #: 488754). There are also 54 closed KCS locations in the township where contamination has been remediated. These are listed in [Appendix G: Known Contaminated Sites in Westampton Township](#).

The National Priority List (NPL), commonly referred to as the Superfund, contains sites that pose a major human health hazard and are in need of federal funds for clean-up. Thirty-six hazardous waste sites in Burlington County have been nominated for the NPL, and 14 of these sites are currently on NPL. There are no Superfund sites in Westampton, and the two closest sites are located in Springfield Township and Mount Holly Township.

Table 24: Known Contaminated Sites (KCSs)

Site ID	PI Number	PI Name	Address	Home-owner
10526	010391	56096 Getty	Woodlane Road & Rancocas Springside Rd.	No
166314	218636	Lancaster Court	Lancaster Ct	Yes
394269	493286	Beaumont Place	Beaumont PI	Yes
15699	013329	APCO Westampton	2056 Burlington Mt. Holly Road	No
62660	011019	Burlington County Fire Academy	53 Academy Drive	No
184300	232794	Former Sunnyside Farms	621 Woodlane Road	No
46226	007207	Mobil Service Station #1513y	Burlington Mt. Holly Road	No
23004	004325	Petro USA #56309	487 Woodlane Road	No
40306	011204	Public Safety Facility	1 Academy Drive	No
173963	228204	Shady Rest Manor	111 Kings Road	Yes
14103	007352	Woodlane Exxon	1866 Burlington Mt. Holly Road	No
74071	G000037338	Woodlane Square	798 Woodlane Road	No

Source: NJDEP, 2009

Underground Storage Tanks

There are seven active facilities with regulated underground storage tanks containing hazardous substances, pursuant to N.J.A.C. 7:14B et seq. These sites are listed in **Table 25: Active and Compliant Underground Storage Tanks**. A hazardous material may be motor fuel, petroleum products, toxic pollutants, or other hazardous wastes or substances. If there is a known release to soil and/or groundwater, a site will also be listed on **Table 24: Known Contaminated Sites (KCSs)**. There may also be private residences in Westampton Township that still have underground storage tanks, used primarily to hold home-heating oil. As these tanks age and rust, they often begin to leak, which becomes a serious threat to the groundwater below them. Those private residences are not publicly listed by NJDEP unless they pose a human health hazard. Underground storage tanks are not required to be removed, although removal may reduce any resulting environmental liabilities.

Table 25: Active and Compliant Underground Storage Tanks

Facility ID	Facility Name	Street Address	Expiration Date
24938	541 Amoco	1866 Rte. 541	3/31/2010
10391	56096 Getty	Springside & Woodlane Rds	3/31/2010
14390	Academy Express LLC	2042 Rte. 54 Burlington-Mount Holly Road	3/31/2010
13329	APCO Westampton	2036 Rte. 541 N	3/31/2010
154978	New Century Transportation Inc	45 East Park Drive	3/31/2010
11204	Public Safety Facility	1 Academy Drive	3/31/2010
25218	Tri -State Burlington	Rte. 541 & Western Drive	3/31/2010

Source: NJDEP, 2009

Erosion

Soil erosion is one of the most important, yet least understood, environmental problems. Geologic, or “background,” erosion occurs at approximately the same rate as soil formation, leading to neither a net loss nor a net gain of soil. Background erosion is an important process; erosion from rock is carried and deposited by wind and water. In areas with vegetative cover, the rock mixes with decomposed vegetation and creates more nutrient-rich soil.

Erosion caused by human activity has greatly increased the amount, and the rate, of soils lost (accelerated erosion). Unfortunately, human activity cannot significantly contribute to soil formation, a process that takes place over thousands of years. Human-caused erosion



Westampton Farms

is a serious environmental problem across the world. In the United States, the most significant impacts are the loss of prime-agricultural soils (on-site erosion), pollution of stream and rivers (off-site erosion), and increased flooding due to stream siltation.

The immediate environmental impact of on-site erosion is unproductive farmland. Topsoil, which is the most quickly eroded soil, also contains the majority of the nutrients and soil biota required for plant life. In addition, once topsoil is eroded, the water-holding capacity of soil decreases. This further impacts plant life and increases

flooding. The agricultural industry compensates for the loss of soil fertility with the use of chemical fertilizers. However, these fertilizers can wash directly into streams and rivers, causing water pollution downstream before they can be used by plants.

As Westampton has a significant percentage of prime farmland, soil conservation and erosion prevention measures are important considerations for the protection of the agricultural capability of the township. Erosion affects not only the productive quality of the soil, but also the health of Westampton's streams and wetlands.

Construction on or near steep slopes greatly increases the incidence of soil erosion. The loss of tree cover and plant material on steep slopes is especially damaging. Where steep slopes adjoin streams, erosion may contaminate the water and endanger wildlife habitat. In road building, there are numerous means for managing roadside erosion during and after construction, ranging from the highly technical (polyester and steel) to the simple (compost and tree plantings). Most state departments of transportation have best management practices to alleviate and manage roadside erosion, to protect the environment, and ensure the future safety of the road itself.

The New Jersey Department of Agriculture (NJDA) houses the State Soil Conservation Committee (SSCC), which is responsible for the conservation and management of New Jersey's soils. The SSCC administers the natural resources conservation program, which supports the work of 16 local Soil Conservation Districts and the New Jersey Conservation Partnership (NJCP), another diverse group of federal and state regulatory and advocacy organizations. The NJCP and individual soil conservation districts offer a wide range of voluntary conservation, technical assistance, and education programs that focus on agricultural conservation planning assistance, cost-sharing programs, application of organic materials, water supply and management, soil erosion and sediment control, storm water discharge, and soil surveys. More information about NRCS programs is available in [Appendix A: Federal and State Conservation Programs for Farmers](#).

Radon

Radon is a radioactive gas that comes from the natural decay of uranium found in nearly all soils. It is invisible, odorless, and tasteless. It moves up through the ground to the air above, and into all types of homes through cracks and other holes in foundations. A build-up of radon-contaminated air within a home can pose a long-term health hazard to residents, specifically for lung cancer. The only method of detection is to conduct a test of the air within a home. Fortunately, radon testing is inexpensive.

NJDEP classifies municipalities into a three-tier system according to the potential for identifying homes with indoor radon problems. The three categories are high (Tier 1), moderate (Tier 2), or low (Tier 3) potential for indoor radon levels. Westampton Township is classified as a Tier 2 municipality, indicating a moderate risk of high radon levels in homes. The average indoor radon level in the United States is about 1.3 picoCuries per liter (pCi/L). At the guidance level of 4 pCi/L, DEP recommends a homeowner consider steps to reduce long-term exposure to radon gas.

While state law does not require radon testing before a real estate transaction, NJDEP recommends that a contingency clause be included in a sale contract allowing the buyer to have the home tested for radon and requiring the seller fix the home if an elevated level of radon gas is discovered. State law (N.J.A.C. 26:2D-73) does require, at the time of a real estate transaction, that the seller provide the buyer with a copy of the results of any radon testing if such testing was conducted during the seller's tenure in the house.

If radon levels are high in a home, NJDEP suggests that the homeowner take the following actions: (1) prevent radon from entering the house by repairing cracks and insulation; and (2) dilute radon concentrations currently in the house. The latter can be done with an inexpensive pipe-and-fan system that draws radon out from under the foundation and vents it outside.

NJDEP provides information on testing, mitigation, radon's health effects, and additional information on their website at www.njradon.org. They can also be reached for radon-related questions by phone at 800/648-0394.

Sources of Information

Brief History

- Burlington County Cultural Affairs and Tourism. "History of Westampton Township." *Burlington County*. <http://www.co.burlington.nj.us/info/history/township/westamptontownship.htm>.
- Burlington County Historical Society. <http://www.burlingtoncountyhistoricalsociety.org>.
- Cammarota, Ann Marie T. *Pavements in the Garden: the Suburbanization of Southern New Jersey, Adjacent to the City of Philadelphia, 1769 - to the present*. Madison: FDU Press, 2001.
- Griscom, Lloyd E. "Historic County of Burlington." *The Burlington County Cultural & Heritage Commission*. <http://www.bcls.lib.nj.us/county/history>.
- "History of Westampton Township." Westampton Township, official website. <http://www.westampton.com/administration/content/History.asp>.
- McMahon, William. *South Jersey Towns*. New Brunswick, NJ: Rutgers University Press, 1973.
- "Rancocas: Where Dreams Were Born." *Village of Rancocas*. <http://www.rancocasnj.org/Reference/WhereDreams.html>
- Rizzo, D.C. *Mount Holly New Jersey: A Hometown Reinvented*. Charleston, SC: The History Press, 2007.
- Robertson, Mark. *Westampton Township, 1850-2000*. Westampton Township Anniversary Committee.
- Rubincam, Milton. "A Little Known Adventure of Thomas Stokes: 1665." *Genealogy of the Stokes Family*. <http://home.comcast.net/~jameslstokes/advent.htm>.
- Watson, Buck. "Address to the Women's Club of Rancocas." *Village of Rancocas*. <http://www.rancocasnj.org/Reference/WatsonBuck.html>.
- Widmer, Kemble. *The New Jersey Historical Series, Vol. 19: The Geology and Geography of New Jersey*. Princeton, NJ: D. Van Nostrand Company, 1964.
- Zimmaro, Mark. "Trying to Unearth a Piece of Timbuctoo History." *Burlington County Times*, October 4, 2009.

Location, Size and Land Use

- Association of New Jersey Environmental Commissions (ANJEC). *Acting Locally: Municipal Tools for Environmental Protection*. Mendham, NJ: ANJEC, 2002.
- Burlington County Department of Resource Conservation. "Farmland Preservation Municipal Master Plan: Zoning Profiles – Westampton Township." *Burlington County*.
- Honachefsky, William B. *Ecologically Based Municipal Land Use Planning*. Boca Raton, FL: Lewis Publishers (CRC Press), 2000.
- U.S. Census Bureau. <http://factfinder.census.gov>.

Westampton Township, official website. <http://www.westampton.com>.

Natural Resources

Burlington County. "Fact Sheet on the Rancocas Watershed."

<http://www.co.burlington.nj.us/rancocas/media/pdf/Watershed%2019.pdf>.

Center for Watershed Protection. *Rapid Watershed Planning Handbook: A Comprehensive Guide for Managing Urbanizing Watersheds*. (Produced for the U.S. EPA, Office of Wetlands, Oceans, and Watersheds.) Ellicott City, MD: Center for Watershed Protection, Inc., 1998.

Delaware Valley Regional Planning Commission (DVRPC). *Rancocas Main Branches Greenway Plan*. Philadelphia: DVRPC, 2002.

Endreny, T. A. , 2003, Fluvial Geomorphology Module, UCAR COMET Program and NOAA River Forecast Center, <http://www.fgmorph.com>, Syracuse, NY.

Grant F. Walton Center for Remote Sensing and Spatial Analysis at Rutgers University. "Mapping New Jersey's Vernal Ponds." *New Jersey Department of Environmental Protection (NJDEP)*. National Oceanic and Atmospheric Administration. 6 July 2009 www.ncdc.noaa.gov/oa/ncdc.html.

Koss, Walter J., et al. *Freeze/Frost Data*. Asheville, NC: National Climatic Data Center, 1988.

Land Engineering & Surveying Co., Inc. "Westampton Township Municipal Stormwater Management Plan." *Westampton Township*. <http://www.westampton.com/administration/content/files/West%20stormwater%20mgmt%20plan.pdf>

Lewis, J.C., Hochreiter, J.J., Jr., Barton, G.J., Kozinski, Jane, Spitz, F.J. *Water-Resources Investigations Report* (Report No. 90-4142). West Trenton, NJ, 1991.

Ludlum, David. *The New Jersey Weather Book*. New Brunswick: Rutgers University Press, 1983.

National Water Information System "NJWIS Mapper." USGS. <http://wdr.water.usgs.gov/nwisgmap>.

Natural Resources Conservation Service (NRCS). "Important NJ Soils." USDA. www.nj.nrcs.usda.gov/technical/soils/njfarmindex.html.

Nelson, Daniel. "Overview of the Clean Water Act." *Rangelands West*. <http://ag.arizona.edu/agric/policy/cwahome.html>.

New Jersey Department of Environment Protection (NJDEP)

- Bureau of Freshwater and Biological Monitoring. <http://www.state.nj.us/dep/wmm/bfbml>.
- Bureau of Water Quality Standards and Assessment. <http://www.state.nj.us/dep/wms/bwqsa>.
- Division of Land Use Regulation. www.state.nj.us/dep/landuse.
- Division of Parks and Forestry. <http://www.state.nj.us/dep/parksandforests>.
- Division of Water Supply. <http://www.state.nj.us/dep/watersupply>.
- Division of Water Quality. www.state.nj.us/dep/dwq.
- Division of Watershed Management. <http://www.state.nj.us/dep/watershedmgmt>.

- Open Public Records Act (OPRA) Record Access Program (“Data Miner”). <http://www.state.nj.us/dep//opra/online.html>
- New Jersey Department of Environmental Protection, and New Jersey Department of Health and Senior Services. *Fish Smart, Eat Smart: A Guide to Health Advisories for Eating Fish and Crabs Caught in New Jersey Waters*. Trenton: NJDEP, 2009.
- New Jersey Water Science Center. “Water Resources of New Jersey.” USGS. <http://nj.usgs.gov>.
- Natural Resource Conservation Service (NRCS).
 - Environmental Quality Incentives Program. www.nrcs.usda.gov/programs/eqip/.
 - Soil Data Mart. <http://soildatamart.nrcs.usda.gov>.
 - Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.
- Office of the New Jersey State Climatologist, Rutgers University. <http://climate.rutgers.edu/stateclim/>.
- United States Environmental Protection Agency (USEPA). eWatershed Assessments, Tracking, and Environmental Results. “Water Quality Assessment and Total Maximum Daily Loads Information (ATTAINS).” <http://www.epa.gov/waters/ir/index.html>.
- United States Geological Society (USGS). “USGS Water-Data Site Information for the Nation.” <http://waterdata.usgs.gov/nwis/si>.
- United States National Arboretum. “USDA Plant Hardiness Zone Map.” <http://www.usna.usda.gov/Hardzone/ushzmap.html>.
- Watt, Martha K. *A Hydrologic Primer for New Jersey Watershed Management*. (WRIR 00-4140). West Trenton, NJ: USGS, 2000.
- Winter, Thomas, et al. *Ground Water and Surface Water: A Single Resource*. Denver, CO: USGS, 1998.
- Zapeczka, Otto S. *Hydrogeologic Framework of the New Jersey Coastal Plain*. (USGS Professional Paper 1404-B) Washington D.C: United States Government Printing Office, 1989.

Biological Resources

- Arndt, Rudolf G. “Annotated Checklist and Distribution of New Jersey Freshwater Fishes, with Comments on Abundance.” *The Bulletin [of the] New Jersey Academy of Science*, 49, no. 1 (2004).
- Britton, Nathaniel, and Addison Brown. *An Illustrated Flora of the Northern United States and Canada*. New York: Dover, 1970.
- Brown, Lauren. *Grasses: An Identification Guide*. New York: Houghton Mifflin, 1979.
- Burton, Maurice, and Robert Burton, eds. *The International Wildlife Encyclopedia: Vol. 5*. New York: Marshall Cavendish, 1969.
- Caduto, Michael. *Pond and Brook: A Guide to Nature in Freshwater Environments*. Hanover, NH: University Press of New England, 1990.
- Collins, Beryl Robichaud, and Karl H. Anderson. *Plant Communities of New Jersey: A Study in Landscape Diversity*. New Brunswick, NJ: Rutgers University Press, 1994.

- Dahl, T.E. *Status and Trends of Wetlands in the Conterminous United States 1986 to 1997*. Washington DC: U.S. Department of the Interior, US Fish and Wildlife Service, 1991.
- Delaware Riverkeeper. "Delaware Riverkeeper Network." <http://www.delawariverkeeper.org>.
- Division of Fish & Wildlife. "Checklists of NJ Wildlife: Birds, Mammals, Reptiles, Amphibians, Freshwater Fish, Saltwater Fish." *NJDEP*. <http://www.state.nj.us/dep/fgw/chklists.htm>.
- Division of Fish, Game, and Wildlife. Governors Report on Deer Management in New Jersey. *NJDEP*. <http://www.state.nj.us/dep/fgw/pdf/govdrrpt.pdf>.
- Division of Watershed Management. "Management of Canada Geese in Suburban Areas: A Guide to the Basics". *NJDEP*. http://www.state.nj.us/dep/watershedmgt/DOCS/BMP_DOCS/Goosedraft.pdf.
- Martine, Christopher T. *Trees of New Jersey and the Mid-Atlantic States*. Jackson, NJ: NJ Department of Environmental Protection, Division of Parks and Forestry, New Jersey Forest Service, 2003.
- New Jersey Audubon Society. Birds of Rancocas State Park and Nature Center, 2007.
- New Jersey Audubon Society. Amphibians, Reptiles, and Mammals of the NJA Rancocas Nature Center, 2010.
- Niles, L. J., M. Valent, J. Tash, and J. Myers. *New Jersey's The Landscape Project: Wildlife Habitat Mapping for Community Land Use Planning and Endangered Species Conservation. Project Report*. Endangered and Nongame Species Program, New Jersey Division of Fish & Wildlife, NJ Department of Environmental Protection, 2001.
- Rutgers and New Jersey Agricultural Experiment Station. "Deer and People in New Jersey." *Rutgers University*. <http://www.deer.rutgers.edu/>.
- Tyning, Thomas F. *Stokes Nature Guides: A Guide to Amphibians and Reptiles*. Boston, MA: Little, Brown, and Company, 1990.
- Walsh, Joan, Vince Elia, Rich Kane, and Thomas Halliwell. *Birds of New Jersey*. New Jersey Audubon Society, 1999.
- Zim, Herbert, and Alexander Martin. *Trees: A Guide to Familiar American Trees*. New York: Simon and Schuster, 1956.

The Built Environment

- Burlington County. <http://www.co.burlington.nj.us/>.
- Burlington County Cultural & Heritage Commission. "The Historic County of Burlington," <http://www.bcls.lib.nj.us/county/history/>.
- Burlington County Department of Transportation. <http://www.co.burlington.nj.us/departments/transportation/index.htm>.
- Burlington County Division of Parks. <http://www.co.burlington.nj.us/parks>.
- Mathis, Mike. "County Acquires Rowan Property." *Burlington County Times*, 23 August 2007.
- Mount Holly Municipal Utilities Authority. <http://www.mhmua.com>.
- "New Jersey Turnpike (I-95): Historic Overview." *The Roads of Metro Philadelphia*. <http://www.nycroads.com/roads/nj-turnpike/>.

NJDEP Division of Parks and Forestry. "Rancocas State Park."
<http://www.state.nj.us/dep/parksandforests/parks/rancocas.html>
NJDEP Historic Preservation Office. <http://www.state.nj.us/dep/hpo>.
Westampton Township School District. <http://www.westamptonschools.org/>.
Willingboro Municipal Utilities Authority. <http://www.wmua.info>.
Zimmaro, Mark. "Archeologists Dig Westampton." *Burlington County Times*, 18
December 2009.

Environmental Issues

NJDEP Bureau of Air Monitoring. <http://www.njaqinow.net>
Site Remediation Program. <http://www.state.nj.us/dep/srp>.
USEPA. National Priorities List (NPL). "National Priorities List Sites in New Jersey."
EPA. <http://www.epa.gov/superfund/sites/npl/nj.htm>.

Citations

N.J.A.C 7:15 et seq. Water Quality Management Planning Rule
N.J.A.C 7:8 et seq. Stormwater Management Rules
N.J.A.C. 10:1B. Open Public Records Act of 2002
N.J.A.C. 7:13 et seq. New Jersey Flood Hazard Area Control
N.J.A.C. 7:14A-2 et seq. New Jersey Pollution Discharge Elimination System -
General Program Requirements
N.J.A.C. 7:7A et seq. New Jersey Freshwater Wetlands Protection Act Rules
N.J.A.C. 7:9B-1.12. New Jersey Surface Water Quality Standards
N.J.A.C. 7:9E. Private Well Testing Act
N.J.S.A 58:16A-50 et seq. New Jersey Flood Hazard Area Control Act
N.J.S.A. 13:1B-15.151 et seq. New Jersey Endangered Plant Species Act
N.J.S.A. 23:2A et seq. New Jersey Endangered and Nongame Species Conservation
Act of 1973
N.J.S.A. 58:10A-1 et seq. New Jersey Water Pollution Control Act
P.L. 105-312. Federal Migratory Bird Treaty Act of 1918
P.L. 93-205. Federal Endangered Species Act of 1973 (ESA)
P.L. 95-217. Federal Clean Water Act
P.L. 96-510. Federal Comprehensive, Environmental Response, Compensations and
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Federal and State Conservation Programs for Farmers

Federal Programs

The **Conservation Reserve Program (CRP)** is offered by NRCS and administered by the Farm Service Agency. It provides technical and financial aid and gives farmers assistance in complying with federal, state, and tribal environmental laws. The program encourages farmers to convert highly erodible or environmentally sensitive cropland to vegetative cover, such as native grasses, filter strips, or riparian buffers. In exchange, farmers receive rental payments for enrolled land as well as financial assistance for implementing and maintaining conservation practices. Website: www.nrcs.usda.gov/programs/crp/.

The State of New Jersey partnered with the USDA to help farmers protect water quality by establishing a \$100 million **Conservation Reserve Enhancement Program (CREP)**, which is the New Jersey version of the federal program. Under a joint agreement between the USDA and State of New Jersey, \$100 million in funding has been provided for New Jersey farmers to install stream buffers in order to reduce the flow of nonpoint source pollution into the state's waterways. Types of buffers to be installed include trees, shrubs, vegetative filter strips, contour grass strips, and grass waterways. Under the program, a landowner installs and maintains approved practices through a 10- or 15-year rental contract agreement. A landowner entering the state Farmland Preservation Program or Green Acres Program also may opt for a permanent easement under the Conservation Reserve Enhancement Program. This would provide additional payment for permanent maintenance of approved conservation practices. The program will pay landowners annual rental and incentive payments for participating in the program, as well as 100 percent of the cost to establish approved practices. Additional information can be found at www.fsa.usda.gov or contact the local Farm Services Agency (FSA) Office or Soil and Water Conservation District Office.

Another program targeted for wetlands preservation is called the **Wetlands Reserve Program (WRP)**. WRP is a voluntary resource conservation program that provides landowners with the opportunity to receive financial incentive to restore, protect, and enhance wetlands in exchange for returning marginal land from agriculture. WRP is made possible by a reauthorization in the Food, Conservation and Energy Act of 2008, known as the Farm Bill. The program has three enrollment options: permanent easement, 30-year easement, or restoration cost-share agreement, which has a minimum 10-year commitment. Applications are accepted on a continuous basis and may be obtained and

filed at any time. Please see the website for more details: www.nrcs.usda.gov/programs/wrp/.

The **Grassland Reserve Program (GRP)** is another conservation program authorized by the 2008 Farm Bill. GRP is a voluntary program that protects grasslands, pasturelands, and rangelands without prohibiting grazing. Participants voluntarily put limitations on the future use of their land while retaining the ability and right to conduct grazing practices, produce hay, mow or harvest for seed production, conduct fire rehabilitation, and construct firebreaks and fences. There are four enrollment options: permanent easement; 30-year easement; rental agreement, which is available in 10-, 15-, 20-, or 30-year contracts; and restoration agreement. Participants are compensated in different ways according to the enrollment option. For more information and application procedures, visit the GRP website: www.nrcs.usda.gov/programs/grp/.

The **Wildlife Habitat Incentives Program (WHIP)** is another USDA voluntary program that targets landowners who want to preserve and protect fish and wildlife habitat on nonfederal lands. WHIP applicants develop a plan of operations outlining conservation practices and implementation schedules. The NJ State Conservationist, in conjunction with the State Technical Committee, identifies and prioritizes plans that complement the goals and objectives of relevant fish and wildlife conservation initiatives at the state, regional, and national levels. If selected, a plan forms the basis of a cost-share agreement, lasting between 1 to 10 years. NRCS will pay for up to 75 percent of costs of implementing conservation practices that protect fish and wildlife habitat. For beginning farmers, socially disadvantaged or limited resource producers, NRCS will pay for up to 90 percent of costs. In New Jersey, a state plan has been developed that targets a number of priority habitat areas: pollinator habitat, grasslands habitat, disturbance-dependent habitat, bog turtle priority species habitat, wetland habitat and Delaware Bay priority habitat. For more information and application procedures, visit the NJ WHIP website: www.nj.nrcs.usda.gov/programs/whip/.

The **Environmental Quality Incentives Program (EQIP)** is also a part of the reauthorized Farm Bill of 2008. EQIP is a voluntary program that focuses on conservation that promotes both agricultural production and environmental quality. The program itself offers technical and financial assistance with installation and implementation of structural and management practices on agricultural land. EQIP features a minimum contract term compared to other programs, lasting a maximum of 10 years. Landowners are eligible for incentive and cost-share payments of up to 75 percent and sometimes up to 90 percent, while still engaging in livestock or agricultural production activities. For more information please visit the website: www.nrcs.usda.gov/programs/eqip/.

The **Conservation Stewardship Program (CSP)** is a voluntary program administered by the NRCS that replaces the Conservation Security Program. This program is intended to promote conservation and improvement of soil, water, air, energy, plant and animal life, etc. on tribal and private working lands. Working lands refer to a variety of land types, including cropland, grassland, prairie land, improved pasture, and rangeland. In some cases, forested lands would also be included in this category. CSP is available in 50 states, as well as the Caribbean and Pacific Basin areas, and provides equal access to

funding. For more information please visit the website: www.nrcs.usda.gov/programs/new_csp/csp.html.

The **Farm and Ranch Lands Protection Program (FRPP)** is a voluntary land conservation program that assists farmers in keeping their lands for agricultural purposes. FRPP provides matching funds to those provided by state, tribal, local government, or nongovernment organizations, offering farm and ranch protection programs designed to purchase conservation easements. The FRPP is managed by the NRCS. Conservation easements are purchased by the state, tribal, or local entity. A participating landowner agrees not to convert their land to nonagricultural uses, and to develop a conservation plan for any highly erodible lands. Landowners do, however, maintain all of their rights to utilize their land for agricultural purposes. For more information about FRPP, please visit the website: www.nrcs.usda.gov/programs/frpp/.

The federal Environmental Protection Agency (EPA) offers the **Strategic Agricultural Initiative**, an outreach program designed to demonstrate and facilitate the adoption of agricultural management practices that will enable growers to transition away from the use of high-risk pesticides. Funds are provided to projects that develop agricultural management practices that offer risk reductions to human health and the environment. For additional information visit: www.epa.gov/region02.

The EPA also offers the **Source Reduction Assistance Program**, which prioritizes water conservation and the minimization of chemicals of concern, such as pesticides, endocrine disruptors, and fertilizers. For additional information visit: www.epa.gov/region02.

The U.S. Fish and Wildlife offers technical and financial assistance to private landowners through the **Partners for Fish and Wildlife** Program. The owners restore wetlands, streams, and river conditions, as well as other important fish and wildlife habitat, for federal trust species. More information is available at: <http://njfieldoffice.fws.gov/partners>.

State Programs

The **Landowner Incentive Program (LIP)** is a preservation program for private landowners who wish to protect and conserve rare wildlife habitat and species. LIP is funded by the U.S. Fish and Wildlife Service and is administered by NJDEP's Division of Fish and Wildlife Endangered Nongame Species Program. Participating landowners receive both technical and financial assistance through this competitive grant program. Generally, a five-year minimum commitment is required and longer terms are preferred. A 25 percent cost-share is required of the landowner. While the LIP is seeking funding for additional habitat protection projects, it may be another year before grants are available. To learn more about the program in general visit the website: www.state.nj.us/dep/fgw/ensp/lip_prog.htm.

The **State Agricultural Development Committee (SADC)** in New Jersey has made soil and water conservation grants available as part of the Farmland Preservation Program. The grants gives landowners up to 50 percent of the funds required for approved soil and water conservation projects. Farms are only eligible if they are already enrolled in a

permanent or eight-year easement program. Soil projects can include measures to prevent or control erosion, control pollution on agricultural land, and improve water management for agricultural purposes. Projects must be completed within three years of SADC funding approval. However, under special circumstances, the grant may be renewed for an additional year. For more information, contact the local Soil Conservation District or the State Agricultural Development Committee at (609) 984-2504 or visit the website: www.state.nj.us/agriculture/sadc/sadc.htm for additional details.

NJDEP's 319(h) Non-Point Source Pollution Control Pass-Through Grant Program provides financial assistance to reduce nonpoint source pollution through riparian buffers, manufactured treatment devices, and other methods. Applicant must be a government entity or a non-profit organization, but can partner with farmers.

APPENDIX B

Vernal Pools in Westampton Township

Id#	X Coordinate	Y Coordinate	Old Id
10262	515230.884	4430418.789	1701
10266	515294.384	4430384.393	1702
10274	515331.436	4431666.488	1704
10286	512775.141	4430737.660	1707
10333	514483.312	4429090.363	1718
10337	514267.632	4428235.619	1719
10344	512846.595	4430944.076	1720
10348	512871.731	4431015.514	1721
10352	513064.877	4430945.399	1722
10356	513087.367	4430879.253	1723
10420	518454.248	4430261.525	1739
10443	517316.582	4431169.243	1744
10447	517533.541	4431159.982	1745
10451	517583.812	4431059.440	1746

Source: Center for Remote Sensing and Spatial Analysis (CRSS), 2008

Monitoring Schedules for Public Water Supply Wells

2009 Monitoring Schedule of Public Community Water Supply Systems

Water Facility	Contaminant	SDWIS Code	Monitoring Frequency	Population
NJ American Water Company - Mount Holly (PWS ID: NJ0323001)				
Distribution System (DS)	Total Coliform bacteria	3100	month	Residential: 42,040 From 1/1 To 12/31
	Iron-Manganese		annual	
	Lead/Copper		triennial	
	Total THM-HAA5STAE1			
Green St. Plant (TP001002)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		9 years	
	Secondaries		triennial	
	Volatile Organic Compounds		annual	
Woodlane Plant/ Woodlane Road (TP002007)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		9 years	
	Secondaries		triennial	
	Volatile Organic Compounds		triennial	
Mansfield TP (TP006015)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		9 years	
	Secondaries		triennial	
	Volatile Organic Compounds		triennial	

Water Facility	Contaminant	SDWIS Code	Monitoring Frequency	Population
Willingboro MUA (PWS ID: NJ0338001)				
Distribution System (DS)	Asbestos	1094	triennial	Residential: 40,000 From 1/1 To 12/31
	Total Coliform Bacteria	3100	month	
	Iron-Manganese		annual	
	Lead/Copper		triennial	
	Total THM-HAA5(Stage1)			
Merribrook TP (TP001002)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		triennial	
	Radiological Compounds		9 years	
	Secondaries		triennial	
	Volatile Organic Compounds		annual	
Well No. 1/Sylvan Treatment Plant (TP002006)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		triennial	
	Secondaries		triennial	
	Volatile Organic Compounds		annual	
Well 6/Treatment House (TP003010)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		triennial	
	Radiological Compounds		9 years	
	Secondaries		triennial	
	Volatile Organic Compounds		triennial	
Baldwin Lane TP/ Well 5a (TP007018)	Inorganics		triennial	
	Nitrate	1040	annual	
	Radiological Compounds		6 years	
	Secondaries		triennial	
	Volatile Organic Compounds		triennial	

Source: NJDEP, 2009

The 2009 monitoring schedules for the public noncommunity water supply systems in Westampton are listed in the table below. However, the schedule for the Academy Bus Lines well (PWS ID: 0337302) was not available.

2009 Monitoring Schedule of Public Noncommunity Water Supply Wells

Water Facility	Contaminant	SDWIS Code	Monitoring Frequency	Population
Burlington County Country Club (PWS ID: NJ0337306)				
Distribution System (DS)	Total Coliform Bacteria	3100	quarter	Nontransient: 15 Transient: 30 From 1/1 to 12/31
Treatment Plant (TP001001)	Nitrate	1040	annual	
Mobil Service Station #15FTF (PWS ID: NJ0337307)				
Distribution System (DS)	Total Coliform Bacteria	3100	quarter	Nontransient: 5 Transient: 25 From 1/1 to 12/31
Treatment Plant (TP001001)	Nitrate	1040	annual	
Inductotherm Corp (PWS ID: NJ0338300)				
Distribution System (DS)	Total Coliform Bacteria	3100	quarter	Nontransient: 480 Transient: 150 From 1/1 to 12/31
	Lead/Copper		semiannual	
Treatment Plant (TP001001)	Inorganics		triennial	
	Nitrate	1040	annual	
	Volatile Organic Compounds		triennial	
Gasway (Getty Station) (PWS IID: NJ0305300)				
Distribution System (DS)	Total Coliform Bacteria	3100	quarter	Nontransient: 10 Transient: 25 From 1/1 to 12/31
Well 1 (WL001001)	Nitrate	1040	annual	

Source: NJDEP, 2009

Air Emission Statements

2008 Air Emission Statements

Pollutant Name	Ozone – Pounds Per Day	Tons Per Year	CO – Pounds Per Day
PI Number	Facility Name	Facility Address	Facility City
45061	Pemberton Fabricators, Inc.	30 Indel Avenue	Rancocas
CO	1.32	0.34	5.66
Nox (Total)	1.58	0.4	
VOC (Total)	32.14	1.82	

2005 Air Emission Statements

Pollutant Name	Ozone – Pounds Per Day	Tons Per Year	CO – Pounds Per Day
PI Number	Facility Name	Facility Address	Facility City
45163	Inductotherm Corp.	10 Indel Avenue	Rancocas
Ammonia		0	
CO	138.85	11.3	138.8
CO2		2980	
Methane		0	
NOx (Total)	1,030.25	84.55	
Pb		0	
PM-10 (Total)		0.16	
PM-2.5 (Total)		8.00E-05	
SO2		4.14	
TSP		4.36	
VOC (Total)	21.22	2.64	
PI Number	Facility Name	Facility Address	Facility City

Pollutant Name	Ozone – Pounds Per Day	Tons Per Year	CO – Pounds Per Day
45061	Pemberton Fabricators, Inc.	30 Indel Ave	Rancocas
CO	0.31	0.18	2.63
Nox (Total)	0.36	0.21	
VOC (Total)	28.11	1.54	

Source: NJDEP, 2009

Animals Known or Probable in Westampton Township

Invertebrates

Common Name	Scientific Name
Black Swallowtail	<i>Papilio polyxenes</i>
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>
Spicebush Swallowtail	<i>Papilio Troilus</i>
Cabbage White	<i>Pieris rapae</i>
Clouded Sulfur	<i>Colias philodice</i>
Orange Sulfur	<i>Colias eurytheme</i>
American Copper	<i>Lycaena phlaeas</i>
Banded Hairstreak	<i>Satyrium calanus</i>
Olive Hairstreak	<i>Callophrys gryneus</i>
Gray Hairstreak	<i>Strymon melinus</i>
Eastern Tailed Blue	<i>Everes comyntas</i>
Summer Azure	<i>Celastrina neglecta</i>
Variiegated Fritillary	<i>Euptoieta Claudia</i>
Pearl Crescent	<i>Phyciodes tharos</i>
Question Mark	<i>Polygonia interrogationis</i>
American Lady	<i>Vanessa virginiensis</i>
Painted Lady	<i>Vanessa cardui</i>
Red Admiral	<i>Vanessa atalanta</i>
Common Buckeye	<i>Junonia coenia</i>
Red-Spotted Purple	<i>Limenitis a. astyanax</i>
Viceroy	<i>Limenitis archippus</i>
Hackberry Emperor	<i>Asterocampa celtis</i>
Little Wood Satyr	<i>Megisto cymela</i>

Common Name	Scientific Name
Common Wood Nymph	<i>Cercyonis Pegala</i>
Monarch	<i>Danaus plexippus</i>
Silver-Spotted Skipper	<i>Epargyreus clarus</i>
Horace's Duskywing	<i>Erynnis horatius</i>
Common Sootywing	<i>Pholisora catullus</i>
Swarthy Skipper	<i>Nastra Iherminier</i>
Least Skipper	<i>Thymelicus lineola</i>
Peck's Skipper	<i>Polites peckius</i>
Tawny-Edged Skipper	<i>Polites</i>
Northern Broken Dash	<i>Wallengrenia egeremet</i>
Little Glassy Wing	<i>Pompeius verna</i>
Delaware Skipper	<i>Anatrytone logan</i>
Broad-Winged Skipper	<i>Poanes viator</i>
Dun Skipper	<i>Euphyes vestries</i>

Source: NJ Audubon Society, Common Butterflies in Western Burlington County, New Jersey in August, 2010

Fish

Common Name	Scientific Name	Historical Presence
American Eel	<i>Anguilla rostrata</i>	Native
Gizzard Shad	<i>Drosoma cepedianum</i>	Native
Satinfin Shiner	<i>Cyprinella analostana</i>	Native
Common Carp	<i>Cyprinus carpio</i>	Exotic
Eastern Silvery Minnow	<i>Hybognathus regius</i>	Native
Golden Shiner	<i>Notemigonus crysoleucas</i>	Native
Spottail Shiner	<i>Notropis husdonius</i>	Native
Creek Chub	<i>Semotilus atromaculatus</i>	Native
White Sucker	<i>Catostomus commersoni</i>	Native
Creek Chubsucker	<i>Erimyzon oblongus</i>	Native
White Catfish	<i>Ameiurus catus</i>	Native
Brown Bullhead	<i>Ameiurus nebulosus</i>	Native
Channel Catfish	<i>Ictalurus punctatus</i>	Introduced
Chain Pickerel	<i>Esox niger</i>	Native

Common Name	Scientific Name	Historical Presence
Pirate Perch	<i>Aphredoderus sayanus</i>	Native
Banded Killifish	<i>Fundulus diaphanus</i>	Native
Mummichog	<i>Fundulus heteroclitus</i>	Native
White Perch	<i>Morone americana</i>	Native
Striped Bass	<i>Morone saxatilis</i>	Native
Pumpkinseed	<i>Lepomis gibbosus</i>	Native
Bluegill	<i>Lepomis macrochirus</i>	Introduced
Largemouth Bass	<i>Micropterus salmoides</i>	Introduced
Black Crappie	<i>Pomoxis nigromaculatus</i>	Introduced
Tessellated Darter	<i>Etheostoma olmstedii</i>	Native
Yellow Perch	<i>Perca flavescens</i>	Native

Source: Arndt, 2004

Birds

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Pied-Billed Grebe				X	X								
Double-Crested Cormorant					X	X				X	X	X	
American Bittern					X								
Least Bittern													
Great Blue Heron		X	X	X	X	X	X	X	X	X	X	X	X
Great Egret				X									
Green Heron	B					X	X	X	X	X			
Tundra Swan		X											
Mute Swan		X	X	X									
Snow Goose													
Canada Goose	B	X	X	X	X	X	X	X	X	X	X	X	X
Wood Duck	B		X	X	X	X	X	X	X	X	X	X	
Green-Winged Teal			X	X									
American Black Duck		X	X	X	X	X	X	X		X	X	X	X
Mallard	B	X	X	X	X	X	X	X	X	X	X	X	X
Northern Pintail		X	X	X	X								
Blue-Winged Teal					X					X			

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Gadwall		X											
Ring-Necked Duck				X									
Hooded Merganser			X	X									
Common Merganser		X	X	X									
Red-Breasted Merganser													
Black Vulture		X	X	X	X	X				X	X	X	X
Turkey Vulture	PB	X	X	X	X	X	X	X	X	X	X	X	X
Osprey					X	X				X	X		
Bald Eagle		X											
Northern Harrier		X	X	X							X	X	X
Sharp-Shinned Hawk		X	X	X	X	X		X		X	X	X	X
Cooper's Hawk	B	X	X	X	X	X	X	X	X	X	X	X	X
Red-Shouldered Hawk		X	X	X	X	X				X			X
Broad-Winged Hawk					X	X				X	X		
Red-Tailed Hawk	B	X	X	X	X	X	X	X	X	X	X	X	X
Rough-Legged Hawk		X											
American Kestrel	B	X	X	X	X	X	X	X	X	X	X	X	X
Merlin			X	X	X						X	X	X
Peregrine Falcon												X	
Wild Turkey		X											X
Northern Bobwhite	FB	X	X	X	X	X	X	X	X	X	X	X	X
American Coot				X	X								
Semi-Palmated Plover						X							
Killdeer		X	X	X	X	X	X	X	X	X	X	X	
Greater Yellowlegs		X			X	X					X		
Lesser Yellowlegs					X	X							
Solitary Sandpiper						X			X	X			
Spotted Sandpiper					X	X							
Least Sandpiper						X							
Wilson's Snipe				X	X								
American Woodcock	B		X	X	X	X	X	X	X	X		X	X
Laughing Gull					X	X	X	X	X	X	X		
Ring-Billed Gull		X	X	X	X	X				X	X	X	X

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Herring Gull		X	X	X	X	X				X	X	X	X
Great Black-Backed Gull		X		X						X			
Rock Pigeon	B	X	X	X	X	X	X	X	X	X	X	X	X
Mourning Dove	B	X	X	X	X	X	X	X	X	X	X	X	X
Black-Billed Cuckoo	PB					X	X						
Yellow-Billed Cuckoo	B					X	X	X	X	X			
Eastern Screech-Owl	B	X	X	X	X	X	X	X	X	X	X	X	X
Great Horned Owl	B	X	X	X	X	X	X	X	X	X	X	X	X
Barred Owl	PB			X	X	X	X	X	X			X	X
Long-Eared Owl		X		X									X
Northern Saw-Whet Owl		X		X							X	X	X
Common Nighthawk											X		
Whip-Poor-Will									X	X			
Chimney Swift	FB				X	X	X	X	X	X			
Ruby-Throated Hummingbird	B					X	X	X	X	X			
Belted Kingfisher	B	X	X	X	X	X	X	X	X	X	X	X	X
Red-Bellied Woodpecker	B	X	X	X	X	X	X	X	X	X	X	X	X
Yellow-Bellied Sapsucker		X			X	X				X	X	X	X
Downy Woodpecker	B	X	X	X	X	X	X	X	X	X	X	X	X
Hairy Woodpecker	B	X	X	X	X	X	X	X	X	X	X	X	X
Northern Flicker	B	X	X	X	X	X	X	X	X	X	X	X	X
Pileated Woodpecker				X				X			X		
Olive-Sided Flycatcher									X				
Eastern Wood-Pewee	B					X	X		X	X	X		
Yellow-Bellied Flycatcher										X			
Acadian Flycatcher													
Alder Flycatcher										X			
Willow Flycatcher													
Least Flycatcher						X				X			
Eastern Phoebe	B			X	X	X	X	X	X	X	X	X	X
Great Crested Flycatcher	B				X	X	X	X	X	X			
Eastern Kingbird	B				X	X	X	X	X	X			
Horned Lark		X											X

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Purple Martin					X	X	X	X	X				
Tree Swallow	B			X	X	X	X	X	X	X	X		
N. Rough-Winged Swallow	B				X	X	X	X	X	X			
Bank Swallow					X	X	X	X	X	X			
Barn Swallow	B				X	X	X	X	X	X			
Blue Jay	B	X	X	X	X	X	X	X	X	X	X	X	X
American Crow	B	X	X	X	X	X	X	X	X	X	X	X	X
Fish Crow	B	X	X	X	X	X	X	X	X	X	X	X	X
Carolina Chickadee	B	X	X	X	X	X	X	X	X	X	X	X	X
Black-Capped Chickadee		X	X	X	X					X		X	X
Tufted Titmouse	B	X	X	X	X	X	X	X	X	X	X	X	X
Red-Breasted Nuthatch		X	X	X	X	X			X	X	X	X	X
White-Breasted Nuthatch	B	X	X	X	X	X	X	X	X	X	X	X	X
Brown Creeper		X	X	X	X	X					X	X	X
Carolina Wren	B	X	X	X	X	X	X	X	X	X	X	X	X
House Wren	B				X	X	X	X	X	X	X	X	
Winter Wren		X	X	X	X					X	X	X	X
Marsh Wren													
Golden-Crowned Kinglet		X	X	X	X					X	X	X	X
Ruby-Crowned Kinglet		X	X	X	X					X	X	X	X
Blue-Gray Gnatcatcher	PB				X	X	X			X			
Eastern Bluebird		X	X	X									X
Veery						X				X			
Gray-Cheeked Thrush										X			
Swainson's Thrush						X				X	X		
Hermit Thrush		X	X	X	X	X				X	X	X	X
Wood Thrush	B				X	X	X	X	X	X			
American Robin	B	X	X	X	X	X	X	X	X	X	X	X	X
Gray Catbird	B	X	X			X	X	X	X	X	X	X	X
Northern Mockingbird	B	X	X	X	X	X	X	X	X	X	X	X	X
Brown Thrasher	B	X			X	X	X	X	X	X	X	X	X
Cedar Waxwing	B	X	X	X		X	X	X	X	X	X	X	X
Northern Shrike			X										

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
European Starling	B	X	X	X	X	X	X	X	X	X	X	X	X
White-Eyed Vireo						X				X			
Blue-Headed Vireo					X	X				X	X	X	
Yellow-Throated Vireo						X		X		X			
Warbling Vireo	B					X	X		X	X			
Philadelphia Vireo										X	X		
Red-Eyed Vireo	B				X	X	X	X	X	X	X		
Blue-Winged Warbler					X	X				X			
Tennessee Warbler						X				X	X		
Orange-Crowned Warbler												X	
Nashville Warbler						X				X			
Northern Parula					X	X				X	X		
Yellow Warbler	B					X	X	X	X	X			
Chestnut-Sided Warbler					X	X			X	X			
Magnolia Warbler						X			X	X	X		
Cape May Warbler						X				X	X		
Black-Throated Blue Warbler						X				X	X		
Yellow-Rumped Warbler		X	X	X	X	X	X	X	X	X	X	X	X
Black-Throated Green Warbler						X				X	X		
Blackburnian Warbler						X			X	X			
Pine Warbler	B	X	X	X	X	X	X		X	X		X	X
Prairie Warbler	B				X	X	X	X	X	X	X	X	
Palm Warbler					X	X				X	X	X	
Bay-Breasted Warbler						X				X	X		
Blackpoll Warbler						X				X	X	X	
Black-and-White Warbler	PB				X	X	X	X	X	X	X	X	
American Redstart						X			X	X	X		
Prothonotary Warbler						X				X			
Worm-Eating Warbler						X							
Ovenbird	B				X	X	X	X	X	X			
Northern Waterthrush					X	X			X	X			
Louisiana Waterthrush													

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Kentucky Warbler							X			X			
Connecticut Warbler										X			
Mourning Warbler						X				X			
Common Yellowthroat	B				X	X	X	X	X	X	X		
Hooded Warbler					X			X					
Wilson's Warbler										X			
Canada Warbler						X		X	X	X			
Yellow-Breasted Chat	B					X	X	X					
Summer Tanager		X											X
Scarlet Tanager	B				X	X	X	X	X	X	X		
Northern Cardinal	B	X	X	X	X	X	X	X	X	X	X	X	X
Rose-Breasted Grosbeak						X				X	X		
Blue Grosbeak	B					X	X	X	X	X			
Indigo Bunting	B					X	X	X	X	X	X		
Eastern Towhee	B	X	X	X	X	X	X	X	X	X	X	X	X
American Tree Sparrow		X	X	X									X
Chipping Sparrow	PB			X	X	X	X	X	X	X	X	X	X
Clay-Colored Sparrow									X		X		X
Field Sparrow	B	X	X	X	X	X	X	X	X	X	X	X	X
Savannah Sparrow											X	X	
Fox Sparrow		X	X	X								X	X
Song Sparrow	B	X	X	X	X	X	X	X	X	X	X	X	X
Lincoln's Sparrow										X	X		
Swamp Sparrow	PB	X	X	X	X	X	X			X	X	X	X
White-Throated Sparrow		X	X	X	X	X				X	X	X	X
White-Crowned Sparrow		X	X	X	X	X					X	X	X
Dark-Eyed Junco		X	X	X	X	X					X	X	X
Bobolink						X		X	X	X	X		
Red-Winged Blackbird	B	X	X	X	X	X	X	X	X	X	X	X	X
Eastern Meadowlark				X		X	X	X					X
Rusty Blackbird			X	X	X						X	X	X
Common Grackle	B	X	X	X	X	X	X	X	X	X	X	X	X
Brown-Headed Cowbird	B	X	X	X	X	X	X	X	X	X	X	X	X

Common Name	Breeding Status	Month Observed											
		Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Orchard Oriole	B					X	X		X				
Baltimore Oriole	B	X	X			X	X	X	X	X			X
Purple Finch		X	X	X	X	X				X	X	X	X
House Finch	B	X	X	X	X	X	X	X	X	X	X	X	X
Red-Crossbill			X										X
White-Winged Crossbill		X	X										
Common Redpoll		X	X		X								
Pine Siskin		X	X									X	X
American Goldfinch	B	X	X	X	X	X	X	X	X	X	X	X	X
House Sparrow	B	X	X	X	X	X	X	X	X	X	X	X	X

Source: NJ Audubon Society, Birds of Rancocas State Park and Nature Center, 2007

Breeding Status	
B	current breeder
PB	possible breeder
FB	former breeder

Amphibians

Common Name	Scientific Name	State Status
Eastern Spadefoot	<i>Scaphiopus h. holbrookii</i>	D
Northern Spring Peeper	<i>Hyla c. crucifer</i>	S
Gray Treefrog	<i>Hyla versicolor</i>	S
Bullfrog	<i>Rana catesbeiana</i>	S
Green Frog	<i>Rana clamitans melanota</i>	S
Southern Leopard Frog	<i>Rana spenocephala</i>	S
Wood Frog	<i>Rana sylvatica</i>	S
Red-Backed Salamander	<i>Plethodon c. cinereus</i>	S
Four-Toed Salamander	<i>Hemidactylum scutatum</i>	D
Red-Spotted Newt	<i>Notophthalmus v. viridescens</i>	S

Source: NJ Audubon, Amphibians, Reptiles, and Mammals of the NJA Rancocas Nature Center, 2010

Reptiles

Common Name	Scientific Name	State Status
Northern Water Snake	<i>Nerodia s. sipedon</i>	S
Northern Brown Snake	<i>Storeria d. dekayi</i>	S
Eastern Garter Snake	<i>Thamnophis s. sirtalis</i>	S
Northern Black Racer	<i>Coluber c. constrictor</i>	U
Black Rat Snake	<i>Elaphe o. obsoleta</i>	U
Eastern Milk Snake	<i>Lampropeltis t. triangulum</i>	S
Common Snapping Turtle	<i>Chelydra s. serpentina</i>	S
Musk Turtle (Stinkpot)	<i>Sternotherus odoratus</i>	S
Common Mud Turtle	<i>Kinosternon s. subrubrum</i>	U
Spotted Turtle	<i>Clemmys guttata</i>	U
Eastern Box Turtle	<i>Terrapene c. carolina</i>	S
Eastern Painted Turtle	<i>Chrysemys p. picta</i>	S
Red-Bellied Turtle	<i>Pseudemys rubriventris</i>	U
Bog Turtle	<i>Clemmys muhlenbergi</i>	E
Wood Turtle	<i>Clemmys insculpta</i>	T

Sources: NJ Audubon, Amphibians, Reptiles, and Mammals of the NJA Rancocas Nature Center, 2010 and NJDEP Natural Heritage Database, 2009

Mammals

Common Name	Scientific Name	General Habitat	State Status
Opossum	<i>Didelphis marsupialis</i>	All habitats	S
Short-Tailed Shrew	<i>Blarina brevicauda</i>	Woodlands	S
Eastern Mole	<i>Scalopus aquaticus</i>	Uplands	S
Star-Nosed Mole	<i>Condylura cristata</i>	Uplands	U
Little Brown Bat	<i>Myotis lucifugus</i>	Uplands	S
Big Brown Bat	<i>Eptesicus fuscus</i>	Uplands	S
Red Bat	<i>Lasiurus borealis</i>	Uplands	S
Eastern Cottontail	<i>Sylvilagus floridanus</i>	All habitats	S
Eastern Chipmunk	<i>Tamias striatus</i>	Woodlands	S
Woodchuck	<i>Marmota monax</i>	Woodlands and fields	S
Flying Squirrel	<i>Glaucomys</i>	Woodlands	U

Common Name	Scientific Name	General Habitat	State Status
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Woodlands	S
Gray Squirrel	<i>Sciurus carolinensis</i>	Woodlands	S
Beaver	<i>Castor canadensis</i>		INC
Brown Rat (Norway Rat)	<i>Rattus norvegicus</i>	Wetlands, residential, fields	I
House Mouse	<i>Mus musculus</i>	Residential	I
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	Fields	U
White-Footed Mouse	<i>Peromyscus leucopus</i>	Woodlands	S
Meadow Vole	<i>Microtus pennsylvanicus</i>	Open Fields	S
Muskrat	<i>Ondatra zibethicus</i>	Wetlands	S
Coyote	<i>Canis latrans, var.</i>	Woodlands and fields	INC
Gray Fox	<i>Urocyon cinereoargenteus</i>	Woodlands	S
Red Fox	<i>Vulpes vulpes</i>	All habitats	S
Raccoon	<i>Procyon lotor</i>	All habitats	S
Long-Tailed Weasel	<i>Mustela frenata</i>	Wetlands	S
Mink	<i>Mustela vison</i>	Wetlands	S
Striped Skunk	<i>Mephitis mephitis</i>	Uplands	S
White-Tailed Deer	<i>Odocoileus virginianus</i>	All habitats	D

Source: NJ Audubon, Amphibians, Reptiles, and Mammals of the NJA Rancocas Nature Center, 2010

State Status		
Code	Status	Definition
E	Endangered	Applies to a species whose prospects for survival within the state are in immediate danger due to one or several factors, such as loss or degradation of habitat, overexploitation, predation, competition, disease, or environmental pollution, etc. An endangered species likely requires immediate action to avoid extinction within NJ.
T	Threatened	Applies to species that may become Endangered if conditions surrounding it begin to or continue to deteriorate. Thus, a Threatened species is one that is already vulnerable as a result of, for example, small population size, restricted range, narrow habitat affinities, significant population decline, etc.
SC	Species of Special Concern	Applies to 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.
RP	Regional Priority	Applies to species in regional conservation plans, such as Partners in Flight Bird Conservation Plans, North American Waterbird Conservation Plans, United States Shorebird Conservation Plan, and others.
D	Decreasing	Applies to species that appear to be insecure in NJ and in danger of falling into any of the preceding categories in the near future.
U	Undetermined	A species about which there is not enough information available to determine the status.
I	Introduced	A species not native to New Jersey that could not have established itself here without the assistance of man.
P	Peripheral	A species whose occurrence in New Jersey is at the extreme edge of its present natural range.
S	Stable	A species whose population is not undergoing any long-term increase/decrease within its natural cycle.
INC	Increasing	A species whose population has exhibited a significant increase, beyond the normal range of its life cycle, over a long term period.

Rare Plant and Animal Species Found in Westampton Township

Rare Plant Species and Ecological Communities

Common Name	Scientific Name	State Status	Regional Status	G / S Rank	Date Observed	Identified?
Freshwater Tidal Marsh Complex	<i>Freshwater Tidal Marsh Complex</i>			G4?	1972-09-08	Y
Smooth Beardtongue	<i>Penstemon laevigatus</i>	E	LP, HL	G5 / S1	1938-06-19	Y
Awl-Leaf Arrowhead	<i>Sagittaria subulata</i>		HL	G4 / S2	1974-07-11	Y

Source: NJDEP Natural Heritage Database, 2009

Rare Wildlife Species and Habitat

Common Name	Scientific Name	Federal Status	State Status	G Rank	S Rank
Bald Eagle Foraging	<i>Haliaeetus leucocephalus</i>		E	G4	S1B,S1N
Barred Owl	<i>Strix varia</i>		T/T	G5	S2B,S2N
Bog Turtle	<i>Glyptemys muhlenbergii</i>	LT	E	G3	S1
Cooper's Hawk	<i>Accipiter cooperii</i>		T/S	G5	S2B,S4N
Eastern Box Turtle	<i>Terrapene carolina carolina</i>		SC	G5T5	S3
Great Blue Heron	<i>Ardea Herodias</i>		SC/S	G5	S3B,S4N
Wood Turtle	<i>Glyptemys insculpta</i>		T	G4	S2

Source: NJDEP Natural Heritage Database, 2009

Federal Status

LT Taxa formally listed as threatened.

State Status

T	Threatened species – may become endangered if conditions surrounding the species begin to or continue to deteriorate.
E	Endangered species – one whose prospects for survival within the state are in immediate danger due to one or many factors – a loss of habitat, overexploitation, predation, competition, disease. An endangered species requires immediate assistance or extinction will probably follow.
SC	Special Concern species – 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.
S	Stable species – a species whose population is not undergoing any long-term increase/decrease within its natural cycle.

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

Global (G Rank) and State (S Rank) Element Rank

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.
T	T Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species.
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.
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.

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).

CAUTIONS AND RESTRICTIONS ON NATURAL HERITAGE DATA

The quantity and quality of data collected by the Natural Heritage Program is dependent on the research and observations of many individuals and organizations. Not all of this information is the result of comprehensive or site-specific field surveys. Some natural areas in New Jersey have never been thoroughly surveyed. As a result, new locations for plant and animal species are continuously added to the database. Since data acquisition is a dynamic, ongoing process, the Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of New Jersey. Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. The attached data is provided as one source of information to assist others in the preservation of natural diversity.

This office cannot provide a letter of interpretation or a statement addressing the classification of wetlands as defined by the Freshwater Wetlands Act. Requests for such determination should be sent to the DEP Land Use Regulation Program, P.O. Box 401, Trenton, NJ 08625-0401.

The Landscape Project was developed by the Division of Fish & Wildlife, Endangered and Nongame Species Program to map critical habitat for rare animal species. Some of the rare species data in the Landscape Project is in the Natural Heritage Database, while other records were obtained from other sources. Natural Heritage Database response letters will list all species (if any) found during a search of the Landscape Project. However, any reports that are included with the response letter will only reference specific records if they are in the Natural Heritage Database. This office cannot answer any inquiries about the Landscape Project. All questions should be directed to the DEP Division of Fish and Wildlife, Endangered and Nongame Species Program, P.O. Box 400, Trenton, NJ 08625-0400.

This cautions and restrictions notice must be included whenever information provided by the Natural Heritage Database is published.



NJ Department of Environmental Protection
Division of Parks and Forestry

Natural Lands Management

Rare or Declining Bird Species Observed at Rancocas State Park and Nature Center

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Pied-billed Grebe	<i>Podilymbus podiceps</i>	E	Migrant	Uncommon	Usually found on the more open bodies of water, especially with emergent vegetation, when passing through in the spring. Expect from the beginning of March through the last few days of April. Check for possible breeding activity for any seen into May.
American Bittern	<i>Botaurus lentiginosus</i>	E	Migrant	Rare	Can be spotted in April during its spring movement north. This species is quite possibly around in the fall also, but its secretive nature makes it hard to detect in its preferred habitat of dense vegetation in freshwater marshes.
Great Blue Heron	<i>Ardea herodias</i>	SC	Visitor	Fairly Common	This large heron can usually be found year-round feeding quietly in the marshes or flying overhead. Peak numbers are encountered in September and April as this species migrates. Extended periods of below freezing weather in the winter will force this species to move on to find areas to feed.
Great Egret	<i>Ardea alba</i>	RP	Migrant	Rare	This species is surprisingly rare at Rancocas. Check the marsh areas along Rancocas Avenue during March, the peak spring migration month, from the 12th until the end of the month, where one might be found feeding.
Green Heron	<i>Butorides virescens</i>	RP	Breeder	Uncommon	This tree nester can be expected from mid-April until mid-October. Look for it foraging along the edges of the marsh and creek along the Marsh Trail and the pond area along Rancocas Avenue.
Wood Duck	<i>Aix sponsa</i>	RP	Breeder	Uncommon	Expect to see flying birds along the Marsh Trail and Rancocas Avenue as they flush at the approach of people. Scan the marshes closely as farther birds may still be visible. Flocks of up to 20 can be expected here in March and October–November during migration. During the breeding season the birds are much harder to spot. Keep an eye on any wood duck boxes around.
American Black Duck	<i>Anas rubripes</i>	RP	Visitor	Uncommon	This species breeds sporadically around the surrounding area and at times can be seen both flying overhead and in the marshes along the Marsh Trail and Rancocas Avenue at any season.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Northern Pintail	<i>Anas acuta</i>	RP	Migrant	Uncommon	This species is one of North America's earliest nesting ducks and hence staging flocks can be seen quite early around the marsh areas as they prepare for their spring migration north. Keep a careful eye out for them as they prefer the grassy marshes to open water and can be hard to spot unless they fly. Best area is the Marsh Trail from early February until the end of March. Some Pintails may be seen in January depending on open water availability and some linger in the area through mid-April.
Osprey	<i>Pandion haliaetus</i>	T	Migrant	Rare	Osprey do not nest in the vicinity and the few sightings in April, early May, and September are of wayward migrants. Try the Field Loop and the end of Rancocas Avenue for soaring birds overhead.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	E	Visitor	Very Rare	Bald Eagles have only been recorded once at the State Park. Keep an eye out overhead for flying birds. Bald Eagles need extensive tracts of undeveloped land near extensive open water and marsh areas for nesting and Rancocas might fit that. The State Park seems to have the nesting trees an eagle would need, but whether it has marsh and water areas that are open enough for foraging birds could be the question.
Northern Harrier	<i>Circus cyaneus</i>	E	Visitor	Uncommon	The fields by the Leaf Dump in the late afternoon are the best spot for a sighting of this species. Expect them fairly regularly come October, through the winter, and into the following spring. Watch for them couring the fields hunting for their preferred prey of small mammals.
Sharp-Shinned Hawk	<i>Accipiter striatus</i>	SC	Visitor	Uncommon	Watch for this species near woodland edges as it hunts its favorite prey of small songbirds. Expect sightings from September through April. Very rarely have birds been seen after these dates. These individuals probably represent birds that won't head north for breeding or even failed breeders moving around early.
Cooper's Hawk	<i>Accipiter Cooperii</i>	T	Resident	Uncommon	Cooper's Hawk breeds in the State Park, but even so, a sighting of a secretive breeder is rare. More likely is a sighting come September through April when migrant birds are around also. Keep an eye out over the fields and along the woodland edges.
Red-Shouldered Hawk	<i>Buteo lineatus</i>	E	Visitor	Occasional	Most sightings of this buteo are in the winter. Red-Shouldered Hawks breed sporadically in the general area, so sightings are rare but possible come the summer months also. Keep an eye overhead birding the fields.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Broad-Winged Hawk	<i>Buteo platypterus</i>	SC	Migrant	Occasional	Broad-winged Hawks usually migrate in big kettles through NJ, but occasionally one or two individuals are seen overhead at Rancocas in April and May and again in September and October. This species does nest irregularly in the eastern part of the county, but since it is only seen in the spring and fall around the State Park, it is most likely a stray migrant and not a breeder.
Rough-Legged Hawk	<i>Buteo lagopus</i>	D	Irruptive	Very Rare	This buteo is more common in New Jersey some winters and absent in others. During an irruption year in the state, try the fields in back of the leaf dump for a sighting, but its status around the area is always extremely rare. It has only been recorded around the State Park in January, but a watch should be made in February and March also.
American Kestrel	<i>Falco sparverius</i>	SC	Resident	Occasional	American Kestrel has been declining as a breeder throughout NJ and Rancocas is no exception. No recent records of nests have been recorded in the State Park, but nests could be overlooked because of the secretive nature of this species. Kestrels are seen at all seasons, with a slight increase in abundance in the fall with the migrants coming through.
Peregrine Falcon	<i>Falco peregrinus</i>	E	Visitor	Very Rare	This falcon is slowly expanding its breeding range in NJ, but is still very rare at inland locations. The one report on the Rancocas list is from November 2005. With the four or five breeding pairs along the Delaware River, sightings of wandering young especially could possibly be expected again in the near future.
Ring-Necked Pheasant	<i>Phasianus colchius</i>	D	Extirpated	-	The Ring-Necked Pheasant is a native to Asia and was introduced in the 1890s to NJ for hunting. It did do well maintaining a sustainable population, but with the continuing loss of its preferred breeding habitats of farms, fields, and marsh edges seeing one has become rare in the State Park. Those that are seen around are recent releases by the NJ State Wildlife Service and/or escapes from private game farms in the area. The Rancocas area does still have some larger parcels of suitable habitat for the Ring-Necked Pheasant to breed in, so perhaps a sustainable nesting population will again occur here.
Ruffed Grouse	<i>Bonasa umbellus</i>	D	Extirpated	-	The last breeding bird atlas survey conducted by the New Jersey Audubon Society from 1993 through 1997 did not find any sign of Ruffed Grouse around the State Park lands. As far as is known, Ruffed Grouse was last seen on the property in the 1970s. This species has undergone a major range contraction in the state and is not expected to recover to its former breeding areas unless restocking measures are undertaken by the state which is not in the foreseeable future.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Northern Bobwhite	<i>Colinus virginianus</i>	RP	Visitor	Rare	Northern Bobwhite used to breed at Rancocas and probably will again with the current population increase from recent NJ restocking efforts. The semi-open habitat around areas of the State Park is perfect for this species. Expect sightings to increase in the coming years.
American Coot	<i>Fulica Americana</i>	U	Visitor	Uncommon	This species prefers open, somewhat shallow freshwater and can be seen along the Rancocas Creek in March and April as it starts to migrate back to more northern breeding areas. Coot has yet to be recorded in the State Park in the fall or winter.
Greater Yellowlegs	<i>Tringa melanoleuca</i>	RP	Visitor	Occasional	Greater Yellowlegs is another shorebird that migrates through NJ primarily along the coast. It's more common inland in the spring as it heads back north, yet is still only occasional around the State Park then. Rancocas Avenue in April and May is the best spot for a sighting.
Solitary Sandpiper	<i>Tringa solitaria</i>	U	Migrant	Occasional	Solitary Sandpiper prefers freshwater ponds and streams surrounded by dense vegetation such as Phragmites and trees. Solitary Sandpipers are also heard quite often in night migration with its distinctive call note. Watch and listen the first three weeks of May during spring migration and August and the first half of September during the fall migration.
Spotted Sandpiper	<i>Actitis macularia</i>	SC	Migrant	Occasional	This sandpiper is found the last week in April and throughout May in the same habitats as Solitary, but Spotted also likes more open areas.
Least Sandpiper	<i>Calidris minutilla</i>	U	Migrant	Occasional	This small sandpiper prefers fresher water and grassier habitats than do the other peeps we see in NJ. They are fairly common inland both in the spring and fall, but have only been recorded around the State Park in May.
American Woodcock	<i>Scolopax minor</i>	RP	Resident	Occasional	Breeding pairs of American Woodcock have declined at Rancocas over the last 20 years with the loss of their breeding display habitat of brushy fields. With the current effort to preserve the remaining brushy fields and create new ones, numbers should rebound and sightings become more common. Try the Field Loop at dusk on warmish, calm nights in late March, April, and May for sightings of birds displaying. During hard winters with deeper snow cover, birds can be seen feeding on trail and field edges where the snow has melted somewhat. Come the rest of the year, the birds are still around, but very secretive and hard to spot.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Great Black-Backed Gull	<i>Larus marinus</i>	D	Visitor	Occasional	This gull is not as common as American Herring at some inland locations, hence is not seen that often flying over the State Park grounds. Like the American Herring, the Great Black-Backed breeds in the coastal salt marshes along the Atlantic but is not seen often inland at trash dump sites until the fall. The same timing and locations for American Herring also apply for this species so try for a sighting.
Black-Billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	RP	Migrant	Occasional	This Cuckoo prefers wetter, denser habitat than the Yellow-Billed and consequently is heard more often than seen. It can also be difficult to determine if nesting in an area as it moves around quite frequently during the breeding season.
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	RP	Breeder	Uncommon	Yellow-Billed Cuckoo are a bit more visible than the Black-Billed, but can still be hard to spot. Careful searching of trees near where one is heard might result in a sighting. Try the thickets around the Leaf Dump area and the dense second growth along the Loop Trail come May through September. Best success is probably May and June with the breeding birds as they are calling even though numbers around the State Park are augmented by southbound migrants come August.
Eastern Screech-Owl	<i>Otus asio</i>	RP	Resident	Uncommon	This owl is a permanent breeding resident around the State Park and can be heard often, but is almost impossible to see. Screech-Owls call fairly regularly year-round, but do get quiet when they are with young—usually late May, June, and July.
Barred Owl	<i>Strix varia</i>	T	Breeder(P)	Occasional	This owl probably breeds around the State Park but since it is strictly nocturnal and a cavity nester confirmed breeding is difficult. They can be heard most times of the year, but April and May are the best months as these owls call more while setting up breeding territories.
Long-Eared Owl	<i>Asio otus</i>	T	Irruptive	Rare	Long-Eared Owls irrupt occasionally into NJ every few winters. During one of these winters, when they are being reported around the state in good numbers, one or two are probably around the State Park.
Common Nighthawk	<i>Chordeiles minor</i>	SC	Migrant	Rare	Common Nighthawk has only been recorded around the State Park in early October during its fall migration. Common Nighthawks usually roost during the day, but are active come dusk until dawn as they feed over fields, near lights, near water—anywhere the insects are.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Whip-Poor-Will	<i>Caprimulgus vociferus</i>	RP	Migrant	Rare	This is another species that has only been recorded around the State Park in its fall migration even though they breed very close by. Whip-Poor-Will's are strictly nocturnal and are difficult to detect when not calling which they rarely do in the fall.
Chimney Swift	<i>Chaetura pelagica</i>	RP	Visitor	Common	Chimney Swifts used to breed around the Nature Center grounds and might again, but at present sightings are of birds that nest in the vicinity and end up at the State Park foraging. Watch the skies around the Nature Center area from the last week of April until the end of September for possible sightings of this "cigar with wings."
Ruby-Throated Hummingbird	<i>Archilochus colubris</i>	D	Breeder	Uncommon	This hummingbird arrives back at the State Park to breed at the beginning of May. They are not commonly seen this time of the year though as they are busying nesting. But by August, numbers have increased with migrants and fledged young that time spent around the Rancocas Nature Center garden and areas in the State Park with red tubular flowers should result in sightings.
Yellow-Bellied Sapsucker	<i>Sphyrapicus varius</i>	U	Migrant	Uncommon	Numbers of this woodpecker do fluctuate from year to year, but not like the irruptive species. Yellow-Bellied Sapsuckers can always be found around the State Park in the fall and winter. Try the mixed deciduous-conifer areas and straight conifer groves along the Loop Trail for a sighting. Peak migration is the last week in September through the first week of November.
Hairy Woodpecker	<i>Picoides villosus</i>	D	Resident	Uncommon	On the other hand, the Hairy Woodpecker, is a bigger woodpecker and requires more mature trees for feeding. One or two can be found along the Loop and Marsh Trails all year-round. They do become very quiet from mid-April until the end of June during their nesting season though and a sighting is a lot harder at this time of year.
Northern Flicker	<i>Colaptes auratus</i>	RP	Resident	Fairly Common	The Northern Flicker actually spends a lot of time on the ground hopping about foraging for ants. Hence it can be found in more open habitat like the Field Loop and Leaf Dump areas in addition to the usual woodpecker habitat of woodlands. They are fairly common year-round, but numbers increase dramatically from the last week of September until the end of November during fall migration.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Pileated Woodpecker	<i>Dryocopus pileatus</i>	D	Visitor	Very Rare	The sighting of this woodpecker around the State Park far from their known breeding areas in north Jersey is a surprise. It is theorized that Pileateds might be trying to expand their breeding range into southern NJ, but sightings are so sporadic that any theory is hard to prove. Pileated needs sizable trees to support the big cavities they use for nesting; hence they have been common in the northern part of the state with its older, more intact woodlands.
Olive-Sided Flycatcher	<i>Contopus borealis</i>	U	Migrant	Rare	The last half of August is the time to look for this species around the State Park. They are rare, but conspicuous when around as they like to perch on bare snags overlooking open areas like fields and marshes.
Eastern Wood-Pewee	<i>Contopus virens</i>	RP	Breeder	Fairly Common	This flycatcher arrives back in the State Park about mid-May and is fairly conspicuous. By October though this bird is rare around the grounds but a sighting is usually reported this month. In September during fall migration, Eastern Wood-Pewee can also be found along wood edges.
Yellow-Bellied Flycatcher	<i>Empidonax flaviventris</i>	U	Migrant	Occasional	Yellow-Bellied Flycatchers have only been recorded in September at the State Park as they migrate south. This flycatcher prefers wet, dense woodland and so can be hard to spot. Listen for its call note which will probably be heard long before the bird is seen and don't scan too high as this bird stays low—only up to 6 or 7 feet above the ground.
Acadian Flycatcher	<i>Empidonax virens</i>	RP	Migrant	Very Rare	The Acadian Flycatcher has never been recorded around the State Park. It is basically a southern breeder and hits its northern limits in northern New Jersey, so numbers of migrants passing through each year will be very low. The Acadian breeds in swampy and wet woods, which the State Park has in abundance, so it's possible that a pair might attempt to breed here eventually as it does breed fairly close by.
Willow Flycatcher	<i>Empidonax traillii</i>	RP	Migrant	Very Rare	Willow is another Empidonax that has never been recorded at the State Park and is long overdue. They have even been found breeding only a few miles from Rancocas. Anywhere in the State Park with wet or dry shrubby thickets should be checked from mid-May until the end of August when most of these birds have probably left the state on fall migration. As for Acadian, any sighting in June should be carefully checked for breeding.
Least Flycatcher	<i>Empidonax minimus</i>	SC	Migrant	Occasional	This northern breeder passes through the Rancocas area from early to late May and again from August until mid-September. Least Flycatcher has never been recorded at the State Park in August, but again, this is likely because of a lack of coverage in the area as they are found quite readily in nearby areas in August every year.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	RP	Breeder	Fairly Common	Expect this flycatcher back at the beginning of May with some around occasionally by the last week of April. Great Crested nests in cavities, but often near clearings, so is seen frequently and not just heard. Try the Loop Trail for a sighting until the end of September when this species heads south.
Eastern Kingbird	<i>Tyrannus tyrannus</i>	RP	Breeder	Fairly Common	This Flycatcher is also expected back around the State Park at the beginning of May and is around until the end of September. Occasionally one is found around the area the last week of April like the Great Crested Flycatcher. Eastern Kingbirds hunt insects over clearings, hence are found in a variety of open habitat like clearings in woods, marsh edges, and weedy fields with just a few trees around for nesting.
Horned Lark	<i>Eremophila alpestris</i>	SC	Visitor	Occasional	Horned Larks have been seen in the winter months around the Leaf Dump area. Especially good is a shallow snow cover to force any birds on the fallow fields to the edges where they can be seen more readily. Try from November until the end of February for a sighting even though this species has only been recorded at the State Park in late December and January.
Winter Wren	<i>Troglodytes troglodytes</i>	SC	Visitor	Common	The Rancocas State Park is one of the best areas in New Jersey to see a Winter Wren as they winter in dense tangles and brush, often wet. Migrants are expected back in mid-October and numbers are consistent through the following March if the winter is not too severe. One or two can be found in late September and in April. Peak numbers are in October and November with the migrants passing through.
Marsh Wren	<i>Cistothorus palustris</i>	RP	Visitor	Very Rare	Marsh Wrens have yet to be recorded on the State Park list. They are included in this report though as it has been found along the Rancocas Creek downstream. Marsh Wren will use phragmites to nest in and the State Park has plenty of good stands.
Ruby-Crowned Kinglet	<i>Regulus calendula</i>	D	Visitor	Fairly Common	This Kinglet is a bit less common than the Golden-Crowned, but still should be easily seen around the area. They arrive a week earlier and depart in April when numbers increase from migrants passing through on their way back north.
Veery	<i>Catharus fuscescens</i>	SC	Migrant	Uncommon	Veery has only been recorded around the State Park during migration in May and again in September as the birds head south for the winter. This large thrush can be hard to spot as it keeps to dense woodlands with some undergrowth as it feeds mainly on the forest floor.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Gray-Cheeked Thrush	<i>Catharus minimus</i>	SC	Migrant	Occasional	This thrush is less common as a migrant through New Jersey in general so isn't seen that often around the State Park. It has only been recorded in September during fall migration, but they should also be around in the spring.
Hermit Thrush	<i>Catharus guttatus</i>	D	Visitor	Fairly Common	The Hermit Thrush migrates later than our other thrushes and will winter in the area depending on the severity of the season. This thrush has a tendency to perch in the open on a fallen log and such in the forest when flushed and just stays there watching and slowly raising and lowering its tail.
Wood Thrush	<i>Hylocichla mustelina</i>	RP	Breeder	Common	This breeder is heard often around the State Park in moist, deciduous woodlands—its preferred breeding habitat. Tracking one down is usually not a problem. Dawn is best with every bird seemingly constantly singing. Song does trail off dramatically by mid-morning though.
Gray Catbird	<i>Dumetella carolinensis</i>	RP	Breeder	Common	Gray Catbird breeds in dense but low growth habitat. Small numbers of Catbirds usually try to winter in the area but are forced south with the onset of the severe cold and snow. They return by early May and sightings are common through the following October.
Northern Mockingbird	<i>Mimus polyglottos</i>	D	Resident	Common	The Northern Mockingbird breeds in areas with dense low growth and open ground and hence has adapted quite well to all the man-made changes in the area. This bird is usually quite conspicuous with its obvious white wing patches in flight and its habit of perching out in the open quite frequently when it lands so sightings are quite common.
Brown Thrasher	<i>Toxostoma rufum</i>	RP	Breeder	Fairly Common	Brown Thrasher is a common breeder around the State Park, but sightings are actually easier in migration in the fall and again in April as they return. Numbers increase noticeably in the fall from mid-September through October as northern breeders pass through. Their song is again heard in spring at the beginning of April as breeders return to set up territories and migrants are passing through.
White-Eyed Vireo	<i>Vireo griseus</i>	D	Migrant	Fairly Common	The White-Eyed Vireo is only seen around the State Park in migration during May and September even though it nests in shrubby fields and hedgerows in the vicinity.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Blue-Headed Vireo	<i>Vireo solitarius</i>	SC	Migrant	Uncommon	This Vireo can be seen around the State Park during its bi-annual migration. It shows up the last week of September with peak numbers the first two weeks of October and sightings until the middle of November. In spring, the Blue-Headed returns the last week of April and can be seen through mid-May. It can be seen in any type of woodland.
Yellow-Throated Vireo	<i>Vireo flavifrons</i>	RP	Visitor	Uncommon	The Yellow-Throated Vireo nests in a wide variety of woodland habitats, yet is just a visitor to the State Park at present. This Vireo also forages high in the trees so concentrated scanning is usually required for a sighting.
Blue-Winged Warbler	<i>Vermivora pinus</i>	RP	Migrant	Uncommon	This warbler prefers more open habitat. The Blue-Winged comes through the area in spring starting the last week of April and into mid-May. Fall migration is more protracted with birds arriving in the area in mid-August and being seen through September.
Golden-Winged Warbler	<i>Vermivora chrysoptera</i>	SC	Migrant	Rare	The Golden-Winged Warbler has yet to be recorded on the State Park checklist but is included in this report since it is recorded annually in other nearby locations, even though it is rare in the fall in the immediate South Jersey area. Spring sightings in all of South Jersey are very rare.
Tennessee Warbler	<i>Vermivora peregrina</i>	D	Migrant	Uncommon	The Tennessee Warbler doesn't come through the State Park area much during spring migration, but is seen quite regularly in the fall. In spring, this warbler's status is rare. It is found more often high in tall trees foraging and singing.
Northern Parula	<i>Parula Americana</i>	SC	Migrant	Common	The Northern Parula can be found around the State Park in the spring from about April 10 through the end of May. Its distinctive, buzzy song is readily heard in almost any habitat around the area, but it can be hard to spot as the Parulas tend to stay high as they forage.
Black-Throated Blue Warbler	<i>Dendroica caerulescens</i>	RP	Migrant	Common	This warbler is common in both spring and fall in the woodland interiors around the Park. Black-Throated Blue keeps low when foraging so actual sightings are quite common.
Black-Throated Green Warbler	<i>Dendroica virens</i>	SC	Migrant	Fairly Common	The Black-Throated Green Warbler has an easy song to recognize, but it usually is heard only in May as it likes to perch high in the canopy. This warbler has only been recorded in September and early October around the Park, but is probably around in late August also.
Blackburnian Warbler	<i>Dendroica fusca</i>	RP	Migrant	Uncommon	This migrant can be found high in the treetops both in spring and fall as it forages for insects. Blackburnian can be seen for all of May and from mid-August through the end of September.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Pine Warbler	<i>Dendroica pinus</i>	RP	Breeder	Common	The Pine Warbler nests in open pine woods. They can be found in all seasons around the State Park, but winter sightings and numbers depend on the severity of the season. During migration it will gather with other species and can be found in thickets and along woodland edges.
Prairie Warbler	<i>Dendroica discolor</i>	RP	Breeder	Fairly Common	The Prairie Warbler breeds in forest clearings and edges and thus is somewhat easy to see as this habitat is more open, plus the Prairie stays low to feed. The population around the State Park is always in flux though as this type of habitat is only temporary in an area.
Blackpoll Warbler	<i>Dendroica striata</i>	D	Migrant	Common	This common migrant can be found in almost any habitat around the State Park during migration from early May until the end of the month, and again in September, October, and the first week of November. It can be seen foraging by itself, but is usually in a mixed feeding flock high in the trees. In more open, brushy habitats, the Blackpoll can be found feeding lower.
Black-and-White Warbler	<i>Miniotilta varia</i>	RP	Breeder(P)	Fairly Common	This warbler more than likely breeds at the State Park, but hasn't been confirmed yet. It is seen all breeding season long from mid-April through the end of September with sightings of single birds in October and the beginning of November. In all seasons, it usually keeps to the interior of woods.
Prothonotary Warbler	<i>Protonotaria citrea</i>	RP	Migrant	Rare	The Prothonotary doesn't breed north of Rancocas much, hence migrants are rare. The sightings that are reported in May probably represent northbound overshoots with hopefully some of them being wanderers out looking for new territory as the State Park has a few appropriate nesting areas with its wet woods areas.
Worm-Eating Warbler	<i>Helmitheros vermivorus</i>	RP	Migrant	Rare	The Worm-Eating Warbler is rarely seen around Rancocas as its habitat requirement of dense deciduous woodlands is hard to come by around the State Park as most of the forest areas don't have a dense understory. The Worm-Eating forages very deliberately on the ground and in low trees and shrubs, so it will be heard first and is difficult to spot.
Ovenbird	<i>Seiurus aurocapillus</i>	D	Breeder	Common	The Ovenbird is heard quite frequently around Rancocas, but can be difficult to spot as it is a ground dweller in dry, open, mixed and deciduous woodlands.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	RP	Migrant	Rare	The Louisiana Waterthrush, on the other hand, has never been recorded around the State Park, but since it is recorded annually in nearby areas, it is included in this write-up. This southern breeder's range extends only a few hundred miles to the north of the State Park.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Kentucky Warbler	<i>Oporornis formosus</i>	SC	Migrant	Rare	The Kentucky Warbler is a good find at Rancocas. It has only been recorded in June and September. The Kentucky Warbler needs an extensive, dense understory which Rancocas lacks.
Connecticut Warbler	<i>Oporornis agilis</i>	D	Migrant	Rare	This Warbler is extremely hard to find most anywhere in South Jersey and Rancocas is no exception. It comes through the area in fall migration only, taking a more inland route in the spring, and prefers dense undergrowth where it spends most of its time foraging by walking on the ground in these dense thickets.
Common Yellowthroat	<i>Geothlypis trichas</i>	D	Breeder	Common	This warbler is back by late April and can be seen through October. Its preferred breeding habitat is wet, dense, brushy marshes, fields, open woods, practically anywhere, the key being wet.
Hooded Warbler	<i>Wilsonia citrinia</i>	RP	Migrant	Rare	The Hooded Warbler has only been recorded around Rancocas in late April and July. The April sightings represent migrants and the July sighting could be a wandering post breeder as this species nests somewhat close to the Park. It probably will never nest in the park itself as it needs a dense, wet understory which Rancocas lacks to any great degree.
Canada Warbler	<i>Wilsonia canadensis</i>	SC	Migrant	Uncommon	This warbler likes a dense, usually wet, forest understory with occasional sightings in more open shrub areas. Canada Warblers forage low in the understory, but will pop out into the open unlike some other ground-dwelling warblers.
Yellow-Breasted Chat	<i>Icteria virens</i>	SC	Breeder	Uncommon	This warbler's numbers vary every few years as the field area is periodically mowed and burned altering the Chat's preferred habitat of dense shrubs and hedgerows. When the habitat is proper for breeding, the Chat is back around the State Park in early May and can be seen until mid-July when it is probably still around, but more quiet and secretive then.
Summer Tanager	<i>Piranga rubra</i>	RP	Accidental	Very Rare	The Summer Tanager has been recorded at the State Park in December and January only. No detailed records exist for this sighting which presumably represents a wintering bird during a very warm early winter. This species is not normally expected around the State Park area.
Scarlet Tanager	<i>Piranga olivacea</i>	RP	Breeder	Fairly Common	This tanager breeds at the State Park and is heard quite readily on most trips here. An actual sighting is always hard though as this species stays high and deep in the forest canopy in the spring.
Rose-Breasted Grosbeak	<i>Pheucticus ludovicianus</i>	RP	Migrant	Uncommon	This species has a distinctive metallic chip note, so hearing it is not usually an issue. Seeing it can be though as it stays out of sight high in the forest canopy foraging for insects.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Indigo Bunting	<i>Passerina cyanea</i>	RP	Breeder	Fairly Common	The Indigo Bunting breeds in some of the same areas as the Blue Grosbeak, yet is not as particular about specific habitats. This species is fairly conspicuous with its distinctive song and call note, so actual sightings are usually not a problem.
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	RP	Resident	Common	The Eastern Towhee can be seen year-round at the State Park with most sightings from April through the end of October. With the end of the nesting and migration seasons, sightings become scarce as this species becomes quiet and most of the breeders have left on migration.
American Tree Sparrow	<i>Spizella arborea</i>	U	Visitor	Uncommon	This sparrow heads south from its breeding grounds late and doesn't show up around the State Park until December. Numbers and how long the birds stay depend on the severity of the winter to our north and also here in South Jersey. The Tree Sparrow can be found in wetter habitats than most sparrows.
Field Sparrow	<i>Spizella pusilla</i>	RP	Breeder	Common	The Field Sparrow is a common sight along the Field Loop as it nests in this type of overgrown, brushy habitat. It is found here year-round with numbers fairly steady except for a slight noticeable increase in October and November with the fall migrants coming through from up north.
Savannah Sparrow	<i>Passerculus sandwichensis</i>	T	Migrant	Common	This sparrow has only been recorded at the State Park during fall migration in October and November.
Song Sparrow	<i>Melospiza melodia</i>	D	Resident	Common	The Song Sparrow breeds in a good variety of habitats from woodland clearings to overgrown backyards to dense brushy areas along streams. As a result, it is quite common around the State Park with numbers fairly consistent throughout the year.
Swamp Sparrow	<i>Melospiza georgiana</i>	D	Breeder(P)	Common	The Swamp Sparrow breeds in freshwater areas, mainly marshes but sometimes near ponds and along streams. The nest is built in cattails, Phragmites, and/or bushes. Any sightings in May and June in appropriate habitat like along the Marsh Trail should be watched for breeding activity. Come late September, migrants start pouring through the area again with many staying past November and wintering here.
White-Throated Sparrow	<i>Zonotrichia albicollis</i>	D	Visitor	Common	This common migrant and winter visitor can be found most anywhere around the State Park from the last week in September through the following middle of May.
White-Crowned Sparrow	<i>Zonotrichia leucophrys</i>	D	Visitor	Uncommon	This sparrow is back at the State Park October 7 or thereabouts and can be found through April and into very early May. This species feeds in the mixed sparrow flocks in the winter.

Common Name	Scientific Name	State Status	Occurrence Status	Abundance Status	Notes
Bobolink	<i>Dolichonyx oryzivorus</i>	T	Migrant	Uncommon	The Bobolink comes through in migration in May and again in late July through September with the occasional bird still migrating through mid-October. Most sightings are of flybys. They don't breed here, but do occasionally use the marsh areas as stopover sites for feeding during migration.
Eastern Meadowlark	<i>Sturnella magna</i>	SC	Visitor	Occasional	This species is found year-round throughout South Jersey, hence can occur at any time around the State Park. It doesn't breed at Rancocas, but does breed and winter in the area and has been recorded here in March, May, June, July, and December. Most sightings are of birds in flight, but occasionally they do perch up on Phragmites.
Common Grackle	<i>Quiscalus quiscula</i>	D	Resident	Common	The Common Grackle is seen year-round at the State Park as it breeds here and large flocks will roost in winter in the swamp areas.
Baltimore Oriole	<i>Icterus galbula</i>	RP	Breeder	Fairly Common	The Baltimore Oriole is due back around the State Park at the beginning of May with sightings of breeders through the summer and migrants occurring through the end of September. The sightings on the checklist from December, January, and February are rare but increasing.
Purple Finch	<i>Carpodacus purpureus</i>	RP	Irruptive	Uncommon	The Purple Finch can be seen around the State Park from late September through the following April every year. This species can be found in a wide variety of habitats from brushy fields to woodland edges to woodland interiors.
Common Redpoll	<i>Carduelis flammea</i>	U	Irruptive	Rare	This winter finch has occurred at the State Park in January, February, and very early April. The Common Redpoll eats a variety of tree and grass seeds, hence its habitat requirements are broader than the Crossbills. It can be seen feeding at feeders, woodland edges, areas with extensive Birch trees, and brushy and weedy fields.

Source: NJ Audubon Society, Birds of Rancocas State Park and Nature Center, 2007

State Status		
Code	Status	Definition
E	Endangered	Applies to a species whose prospects for survival within the state are in immediate danger due to one or several factors, such as loss or degradation of habitat, overexploitation, predation, competition, disease, or environmental pollution, etc. An endangered species likely requires immediate action to avoid extinction within NJ.
T	Threatened	Applies to species that may become Endangered if conditions surrounding it begin to or continue to deteriorate. Thus, a Threatened species is one that is already vulnerable as a result of, for example, small population size, restricted range, narrow habitat affinities, significant population decline, etc.
SC	Species of Special Concern	Applies to 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.
RP	Regional Priority	Applies to species in regional conservation plans, such as Partners in Flight Bird Conservation Plans, North American Waterbird Conservation Plans, U.S. Shorebird Conservation Plan, and others.
D	Decreasing	Applies to species that appear to be insecure in NJ and in danger of falling into any of the preceding categories in the near future.
U	Undetermined	A species about which there is not enough information available to determine the status.

Occurrence Status	
Resident	Can be seen or heard year-round and breeds here.
Breeder	Can be seen or heard during the breeding season, but migrates after breeding. A (P) after this term means the species probably breeds around the State Park but hasn't been confirmed. Some species can be difficult to confirm breeding.
Visitor	Can occur at anytime in the appropriate season, but does not breed here.
Migrant	Usually only found passing through the area during migration.
Accidental	A species with one or two records and not likely to reoccur in the foreseeable future.
Irruptive	More common some years than in others when may not even be seen.
Extirpated	A former breeder here, but with no recent (up to 20 years ago) records.

Abundance Status	
Common	Expect 5 or more on almost all field trips here.
Fairly Common	Expect 1 to 4 on most field trips.
Uncommon	Expect one or many individuals, depending on species, but only on half the field trips.
Occasional	Expected only a few times per season even with many field trips here.
Rare	Expected a few times per year.
Very Rare	Not expected every year even with many field trips here.

APPENDIX G

Known Contaminated Sites in Westampton Township

Closed Known Contaminated Sites in Westampton Township, October 2009

Site ID	PI Number	PI Name	Street Address	Home Owner?
377267	467555	Bargain Brakes & Mufflers	1861 Burlington Mt. Holly Road	No
385893	481904	Bridge Street	Bridge Street	No
94326	133037	Brighton Court	Brighton Court	Yes
172618	226590	Brighton Court	Brighton Court	Yes
73741	G000035706	Brighton Road	Brighton Road	No
74716	G000040730	Brighton Road	Brighton Road	No
87454	G000061117	Brighton Road	Brighton Road	Yes
88418	G000062332	Brighton Road	Brighton Road	No
65741	G000031699	Brighton Road	Brighton Road	No
65907	G000032699	Brighton Road	Brighton Road	No
65984	G000033299	Brighton Road	Brighton Road	No
72923	G000028796	Brighton Road	Brighton Road	No
73450	G000034183	Brighton Road	Brighton Road	No
93172	131257	Brighton Road	Brighton Court	Yes
118583	156225	Brighton Road	Brighton Road	Yes
127105	168301	Brighton Road	Brighton Road	Yes
145914	193017	Brighton Road	Brighton Road	Yes
165487	217404	Brighton Road	Brighton Road	Yes
171404	225200	Brighton Road	Brighton Road	Yes
180928	236918	Brighton Road	Brighton Road	Yes
221464	289268	Brighton Road	Brighton Road	Yes

Site ID	PI Number	PI Name	Street Address	Home Owner?
376533	466693	Brighton Road	Brighton Road	Yes
394557	493634	Brighton Road	Brighton Road	No
75206	G000042996	Burrs Road	Burrs Road	No
390640	488334	Burrs Road	Burrs Road	Yes
92709	130757	Devonshire Drive	Devonshire Drive	Yes
147702	195200	Devonshire Drive	Devonshire Drive	Yes
216370	282657	East Stokes Road	E Stokes Road	Yes
10527	007386	Exxon Mobil Corp 35309	575 Rancocas Road	No
55616	026596	H&H Motors	876 Woodlane Rd	No
218694	285505	Kokas Kennels Dog Otel & Cattery	59 Oxmead Road	Yes
71573	G000013518	Lamina Lighting Inc	120 Hancock Ln	No
169039	222144	Lancaster Drive	Lancaster Drive	Yes
259823	332862	Olive Street	Olive Street	Yes
53696	022140	Pumping Station No. 10	Devonshire Drive	No
93498	131632	Rancocas Road	Rancocas Road	No
386632	482949	Rancocas Road	Rancocas Road	Yes
164066	215746	Sunnyside Dairies	621 Woodlane Rd	No
74484	G000039370	Tarnsfield Road	Tarnsfield Road	No
74838	G000041244	Tarnsfield Road	Tarnsfield Road	No
75207	G000042998	Tarnsfield Road	Tarnsfield Road	Yes
64966	G000025437	Tarnsfield Road	Tarnsfield Road d	No
65428	G000029440	Tarnsfield Road	Tarnsfield Road	Yes
93596	131759	Tarnsfield Road	Tarnsfield Road	Yes
191386	251450	Tarnsfield Road	Tarnsfield Road	Yes
49550	025218	Tri -State Burlington	2048 Burlington Mt. Holly Road	No
52615	019800	Westampton	806 Burlington Mt. Holly Road	No
45500	010551	Westampton School	700 Rancocas Rd	No
94620	133379	Whitlow Drive	Whitlow Drive	No
195358	256535	Whitlow Drive	Whitlow Drive	Yes
229879	300832	Whitlow Drive	Whitlow Drive	Yes
392244	490628	Whitlow Drive	Whitlow Drive	Yes

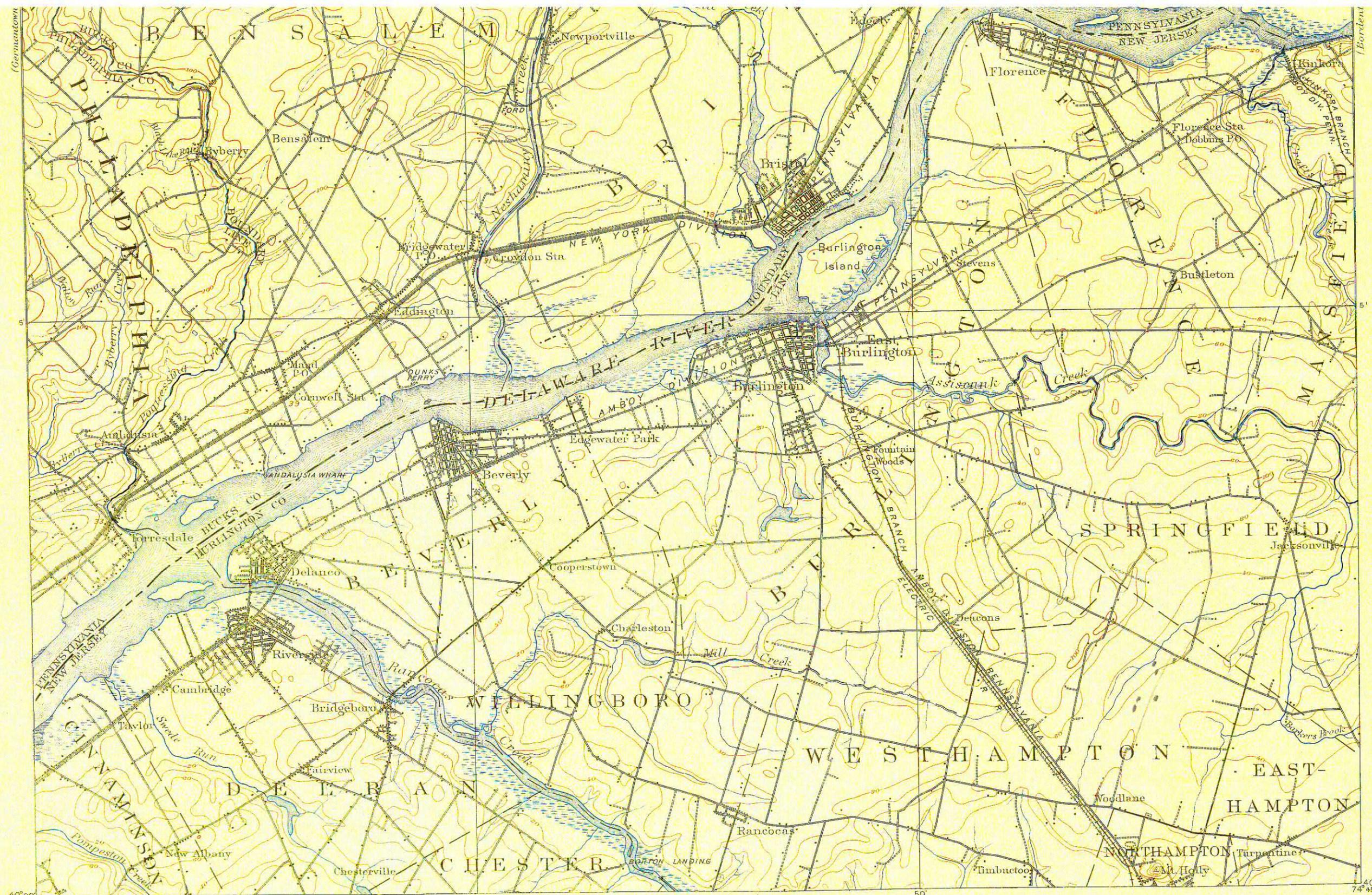
Site ID	PI Number	PI Name	Street Address	Home Owner?
75853	G000060317	Woodlane & Springside Rancocas Road	Woodlane Road & Springside Road	No
227406	297487	Woodlane Road	Woodlane Road	Yes

*Exact addresses of private residences are not shown to protect confidentiality.

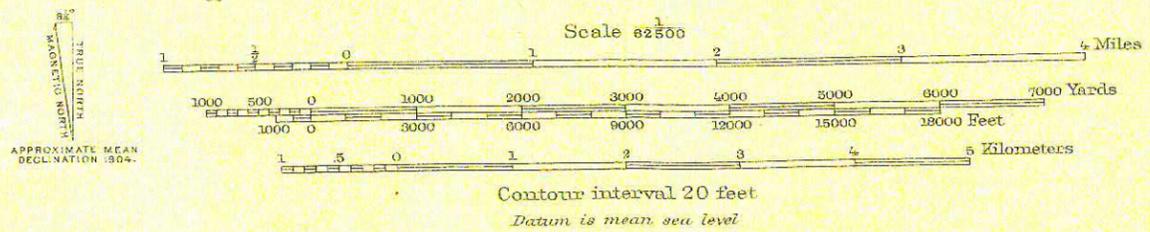
Source: NJDEP, 2009

APPENDIX H

1906 Map of Westampton Township



Henry Gannett, Chief Topographer,
 Marcus Baker, Geographer in charge,
 Triangulation by U. S. Coast and Geodetic
 and New Jersey Geological Surveys,
 Topography by New Jersey Geological Survey and Jeremiah Ahern.
 Surveyed in 1885-88, and accepted in cooperation.
 Revised in 1904 under direction of H. M. Wilson, Geographer,
 by J. M. Whitman.
 Assrs., Chas. Hartman, Jr., J. I. Treidel, and F. J. Mc Maugh.



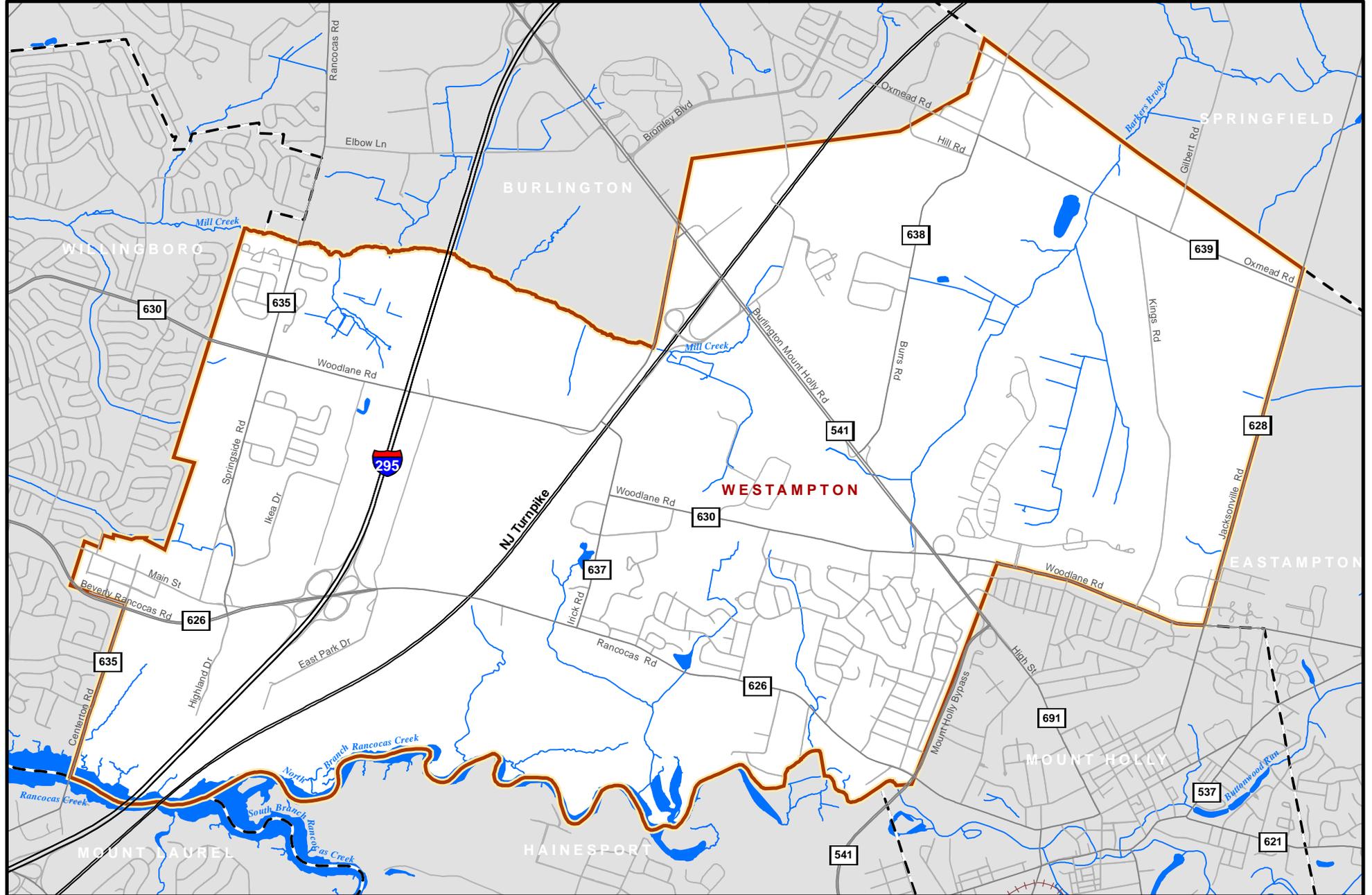
Edition of Aug 1906, reprinted 1945
 Polyconic projection.
 Pennsylvania part
 Surveyed by reconnaissance methods
BURLINGTON, PA-N. J.
 N4000-W7445/15

Maps

- Map 1: Westampton Township
- Map 2: Aerial Photo (2007)
- Map 3: NJDEP Land Cover (2007)
- Map 4: Elevation
- Map 5: Steep Slopes
- Map 6: Soils
- Map 7: Agricultural Quality of Soils
- Map 8: Watersheds
- Map 9: Surface Water, Wetlands, and Vernal Pools
- Map 10: Floodplains
- Map 11: Water Quality (2008)
- Map 12: Percent Impervious by Subwatershed (2002)
- Map 13: Geologic Outcrops
- Map 14: Groundwater Recharge
- Map 15: Public Water Supply Wells
- Map 16: Natural Vegetation (2007)
- Map 17: Landscape Project Priority Habitats (2007)
- Map 18: Historic and Cultural Resources
- Map 19: Parks, Recreation, and Open Space (2010)
- Map 20: Sewer Service Area and NJPDES Permits
- Map 21: Known Contaminated Sites (2009)
- Map 22: State Planning Areas (2008)

WESTAMPTON TOWNSHIP

Map 1: Westampton Township



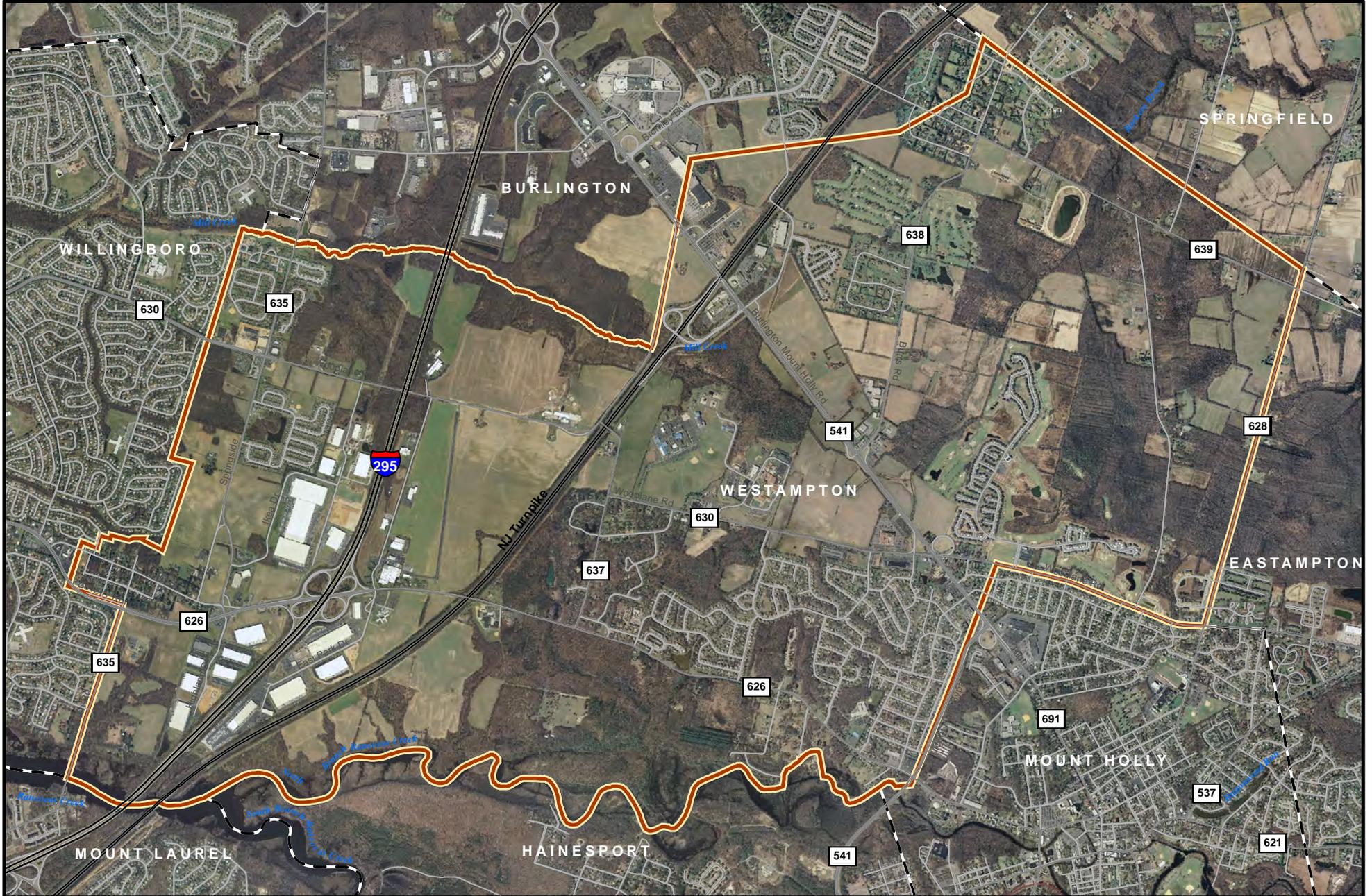
Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- Westampton Township
- Municipal Boundary
- ~ Stream
- Lake



WESTAMPTON TOWNSHIP

Map 2: Aerial Photo (2007)



Sources : NJDEP, NJDOT, DVRPC.
This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

 Westampton Township  Municipal Boundary

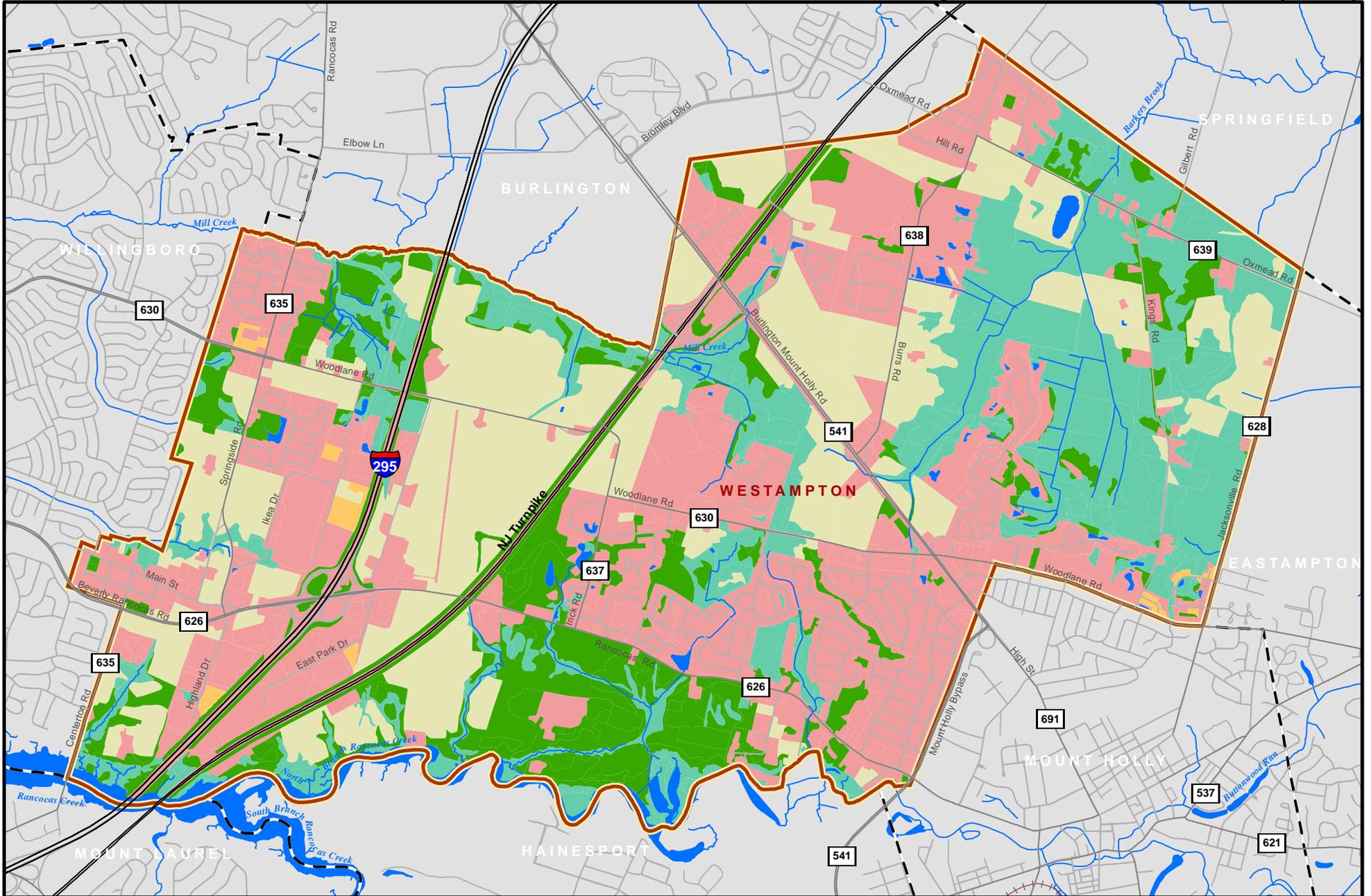


0 0.25 0.5
Miles



WESTAMPTON TOWNSHIP

Map 3: NJDEP Land Cover (2007)



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Land Cover Categories

- | | | |
|---|--|--|
|  Agriculture |  Forest |  Water |
|  Barren Land |  Developed |  Wetlands |

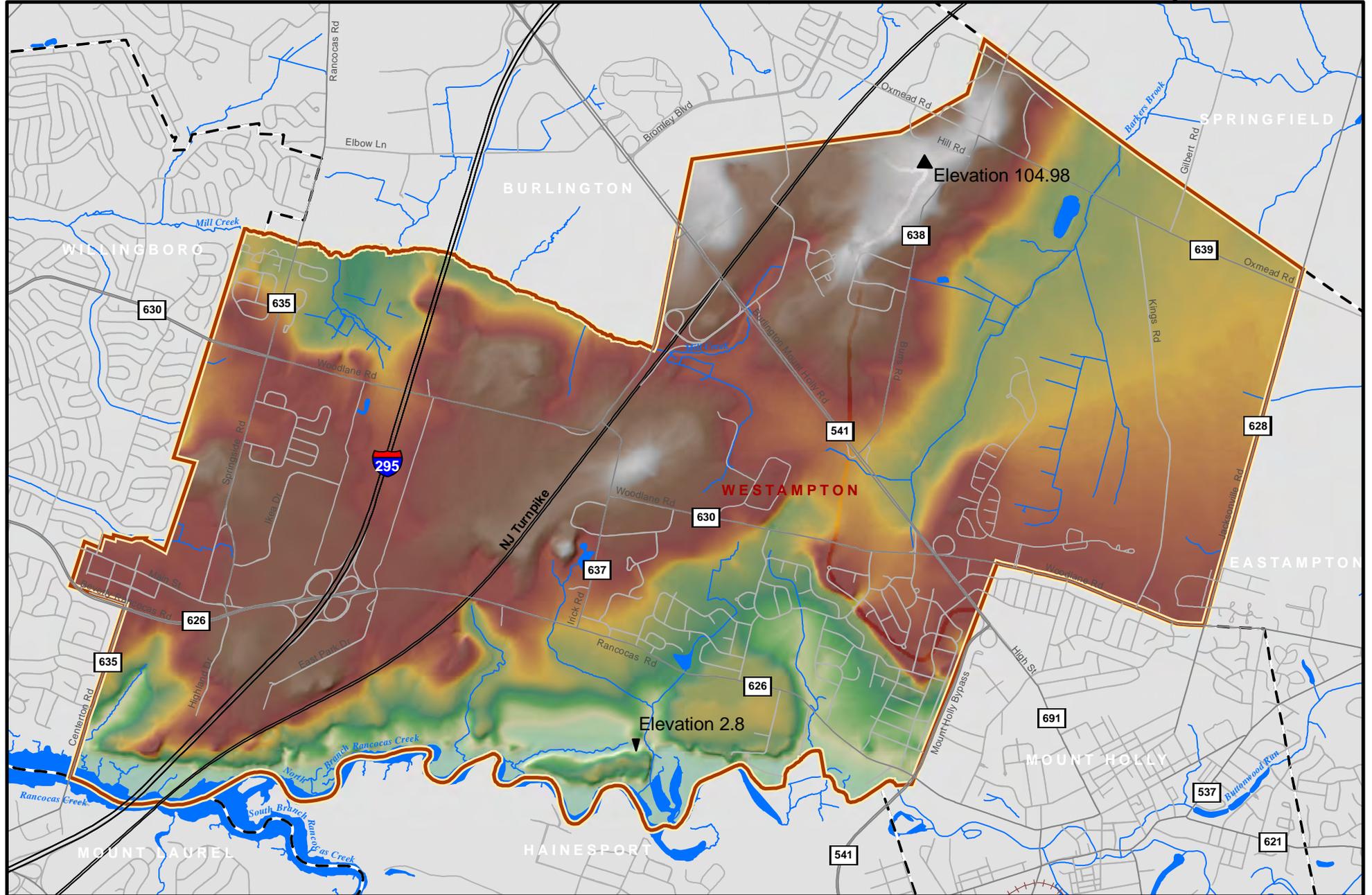


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 Miles



WESTAMPTON TOWNSHIP

Map 4: Elevation



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

 Municipal Boundary

 Stream

 Lake

Value (feet above sea level)

High : 104.98

Low : 2.79977



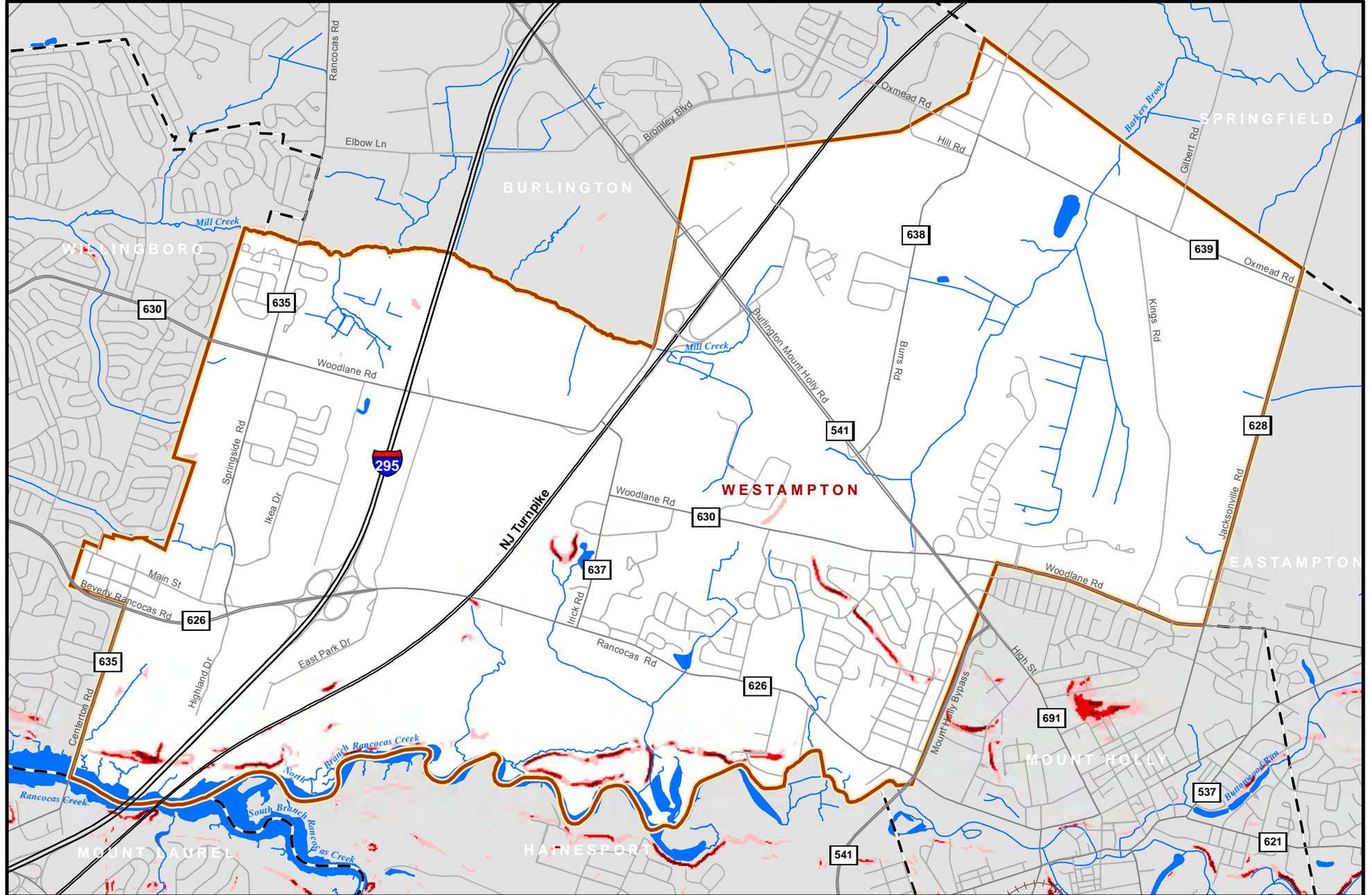
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Miles

DELAWARE VALLEY
dvrpc
 REGIONAL
 PLANNING COMMISSION

WESTAMPTON TOWNSHIP

Map 5: Steep Slopes



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Steep Slopes

- Slope ≤ 10%
- Slope = 15% - 19.99%
- Slope = 10% - 14.99%
- Slope ≥ 20%

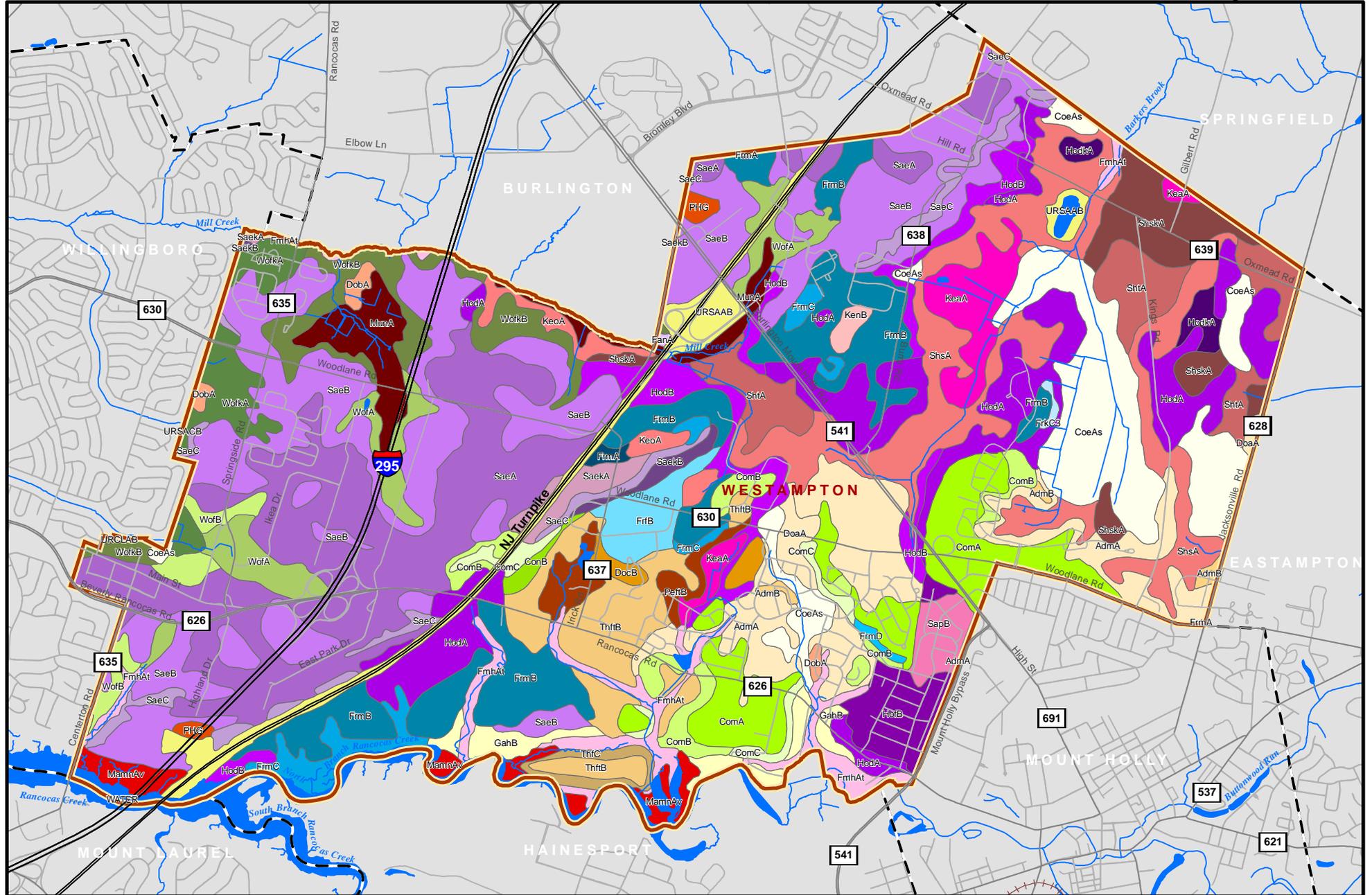


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 Miles



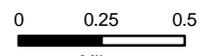
WESTAMPTON TOWNSHIP

Map 6: Soils



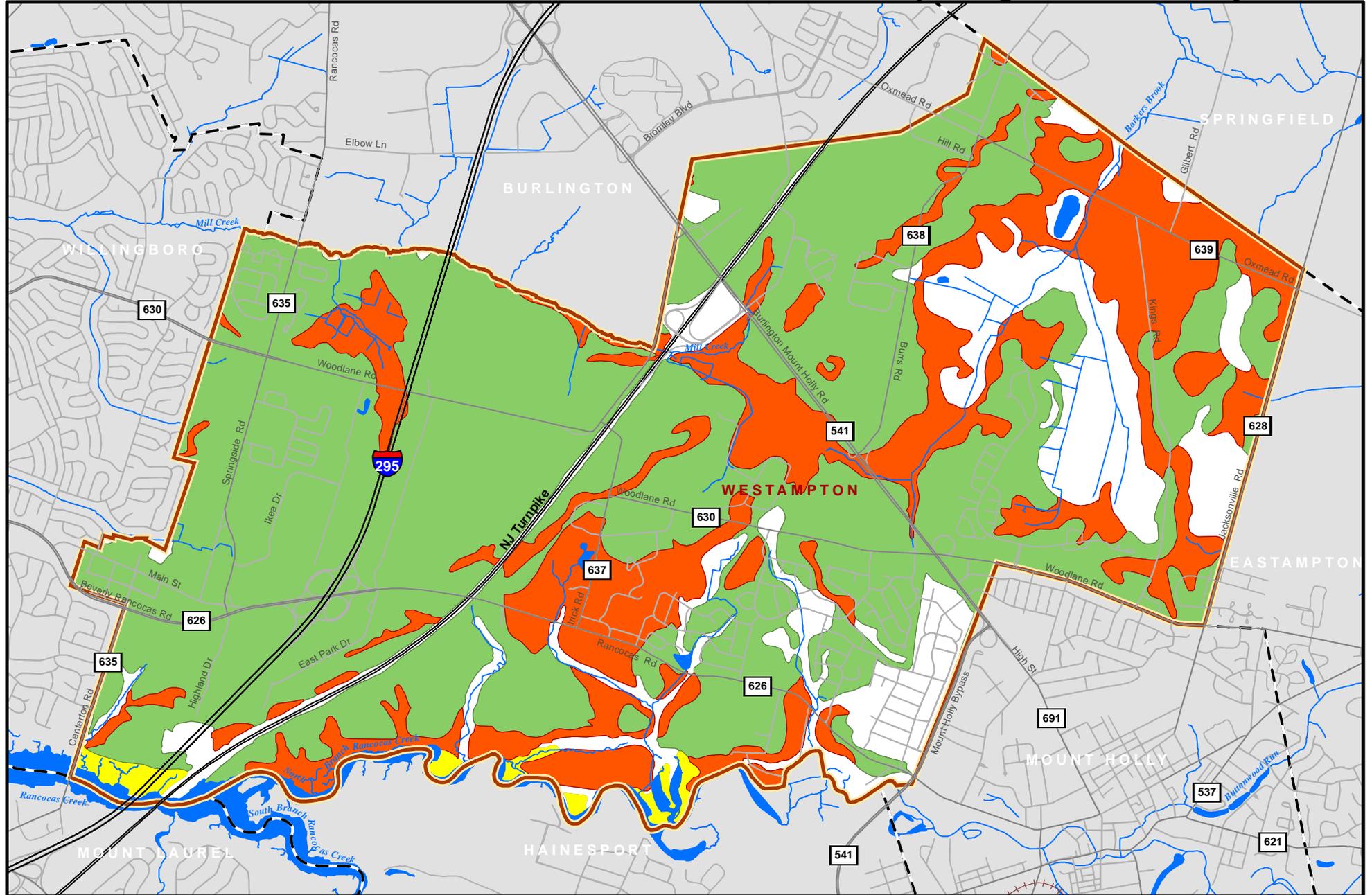
Sources : NJDEP, NJDOT, DVRPC, NRCS.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Adm A	Collington	Donlonton	Fallsington	Freehold	Frm A	Hod A	Keyport	Mullica	Pitts	Sae B	Shsk A	Urban	Water
Adm B	Com C	Doa A	Fan A	Frk C3	Galloway	Hod B	Ken B	Mun A	Peft B	Sae A	Tinton	URSAAB	WATER
Colemantown	Com B	Dob A	Fluauquents	Frf B	Gah B	Hod C	Keo A	Pemberton	Sassafras	Sap B	Thit B	URSAAC	Woodstown
Coe As	Com A	Downer	Fmh At	Frm D	Holmdel	Keansburg	Mannington	PHG	Shrewsbury	Shs A	Thi C	URCLAB	Wof B
	Con B	Doc B		Frm B	Hod B	Kea A	Mann Av		Sae C	Sht A			Wof A
				Frm C					Sae B				Wof B
				Frm B					Sae A				Wof A



WESTAMPTON TOWNSHIP

Map 7: Agricultural Quality of Soils



Sources : NJDEP, NJDOT, DVRPC, NRCS.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Soil Designation

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Not Rated for Agricultural Use

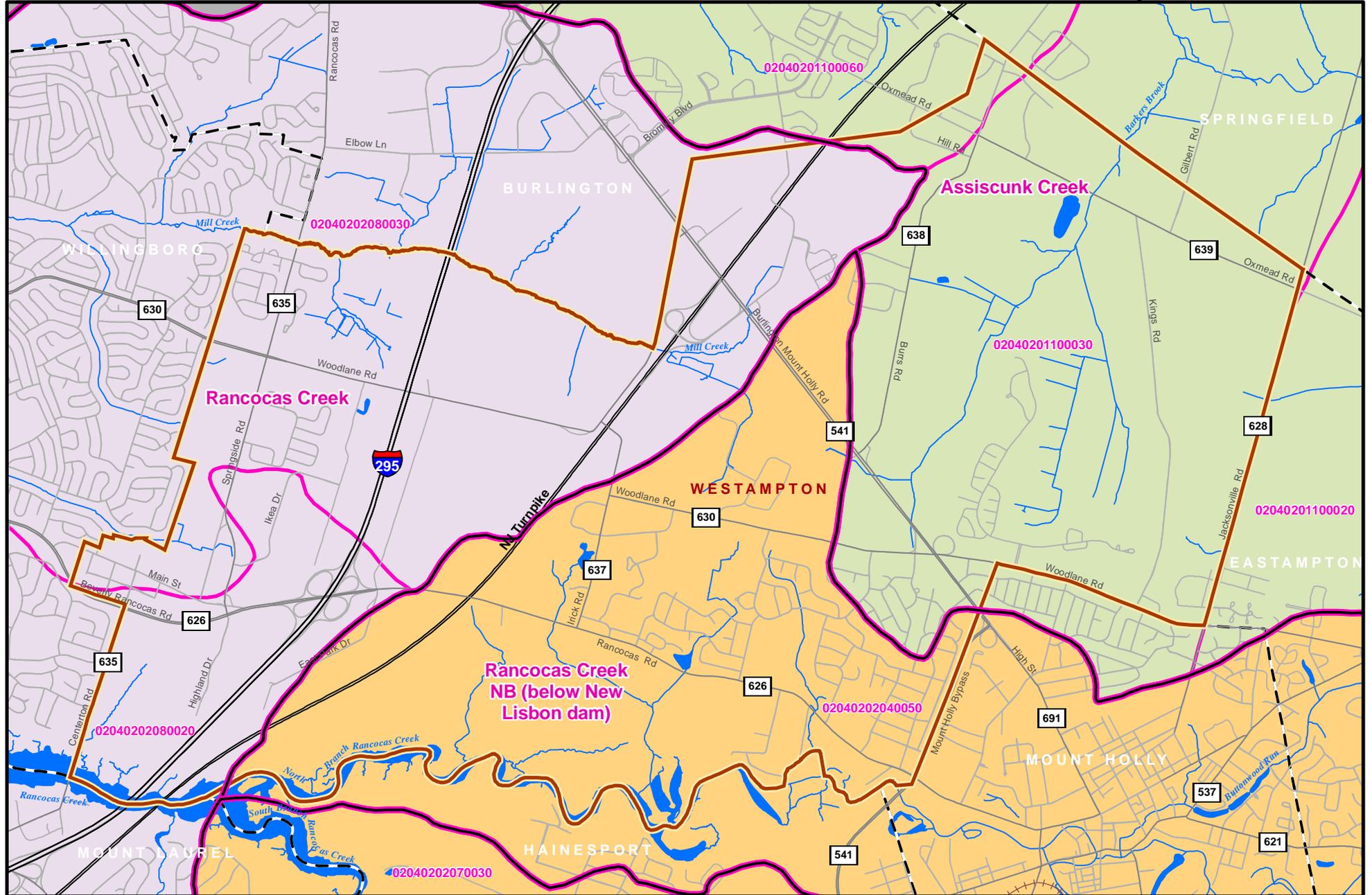


0 0.25 0.5
Miles



WESTAMPTON TOWNSHIP

Map 8: Watersheds



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

-  Westampton Boundary
-  HUC 11 Watershed
-  HUC 14 Subwatershed
-  Stream
-  Lake

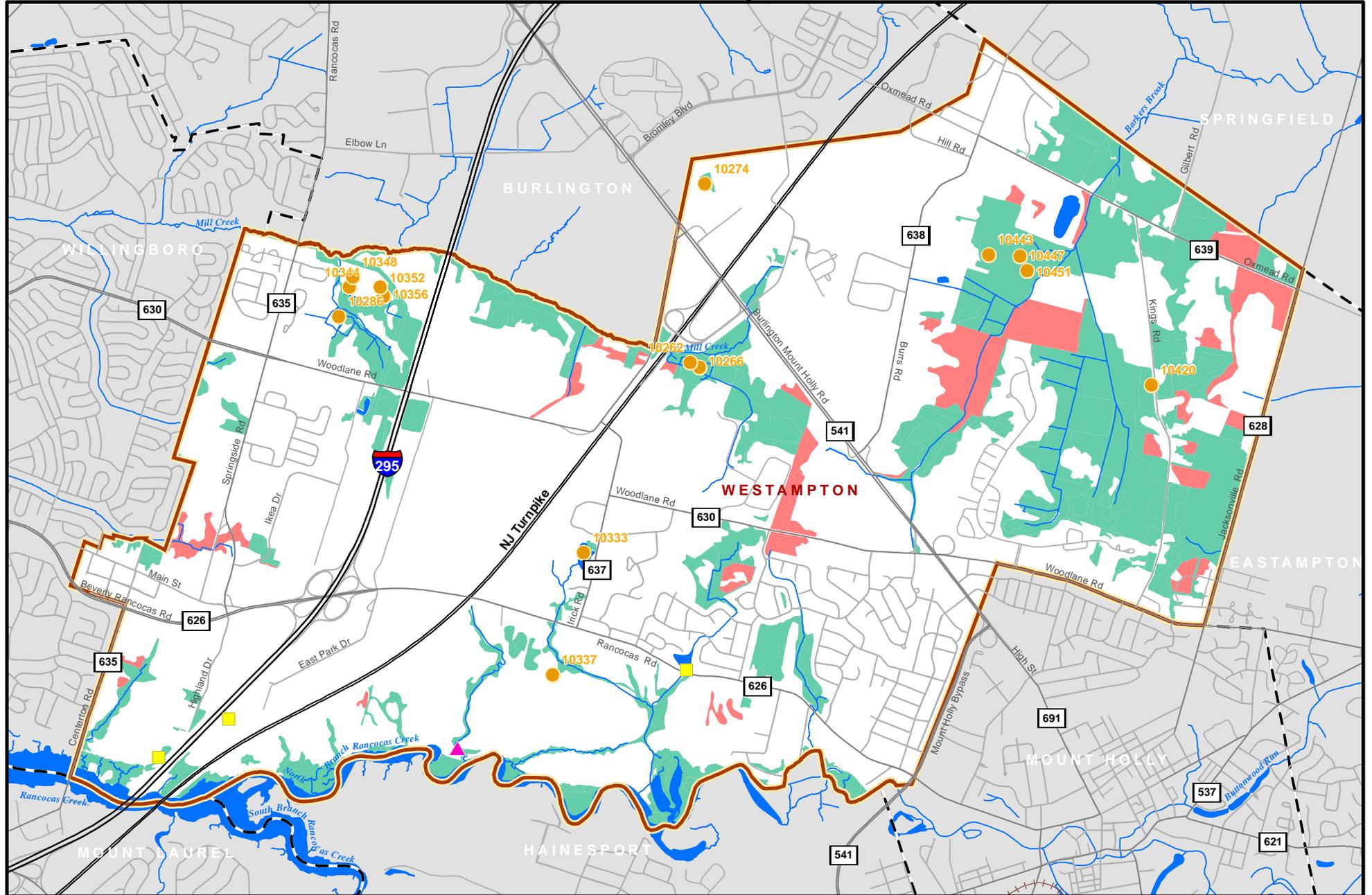


0 0.25 0.5
 Miles



WESTAMPTON TOWNSHIP

Map 9: Surface Water, Wetlands & Vernal Pools



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- ▲ Head of Tide
- Dam
- Potential Vernal Pool
- Agricultural Wetlands
- Wetlands
- ~ Stream
- Lake



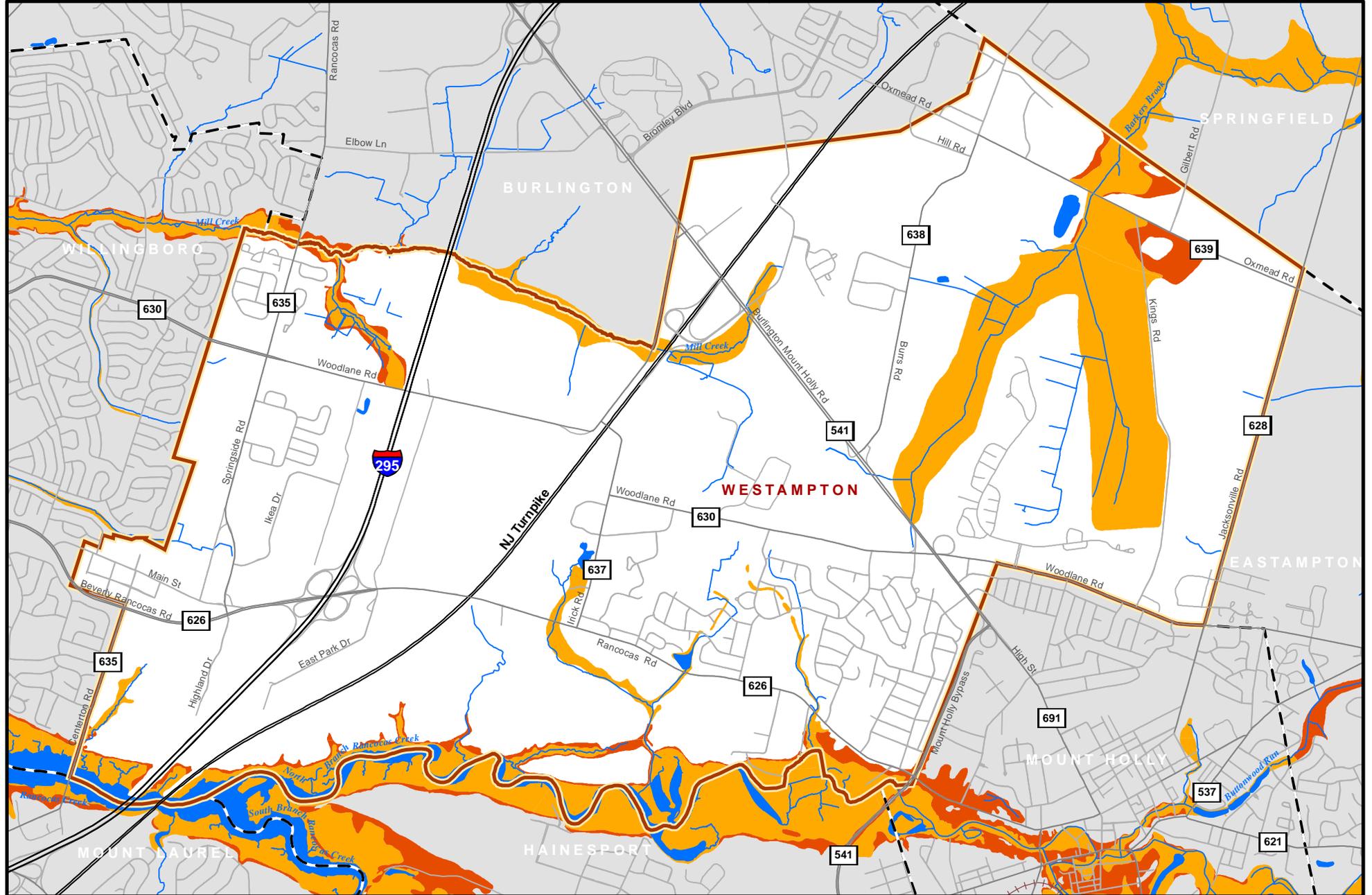
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Miles



WESTAMPTON TOWNSHIP

Map 10: Floodplains



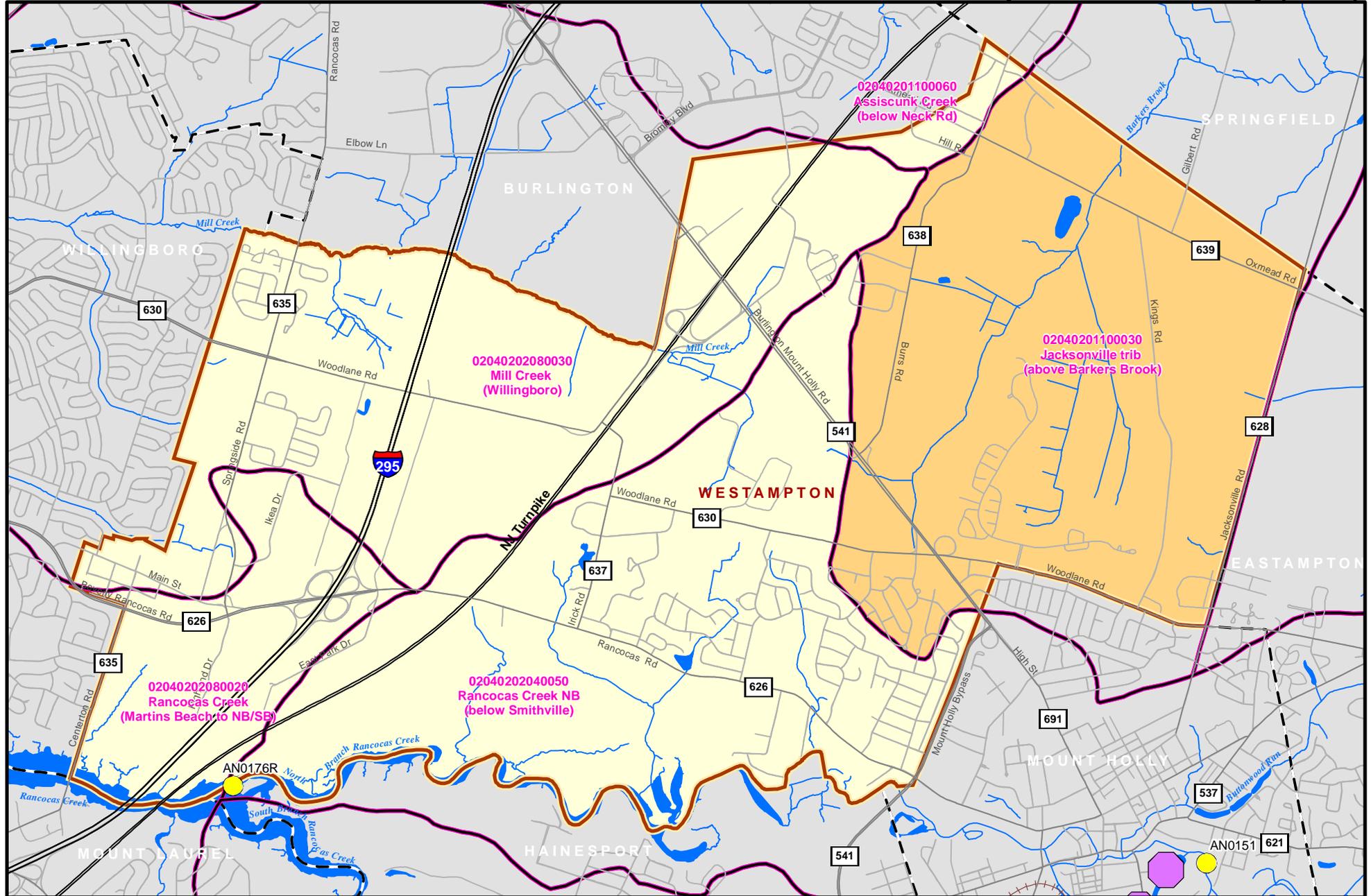
Sources : NJDEP, NJDOT, DVRPC, FEMA.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

	Stream	Flood Zone
	Lake	 100-Year Floodplain
		 500-Year Floodplain



WESTAMPTON TOWNSHIP

Map 11: Water Quality (2008)



-  Subwatershed Boundary (HUC14)
-  USGS/NJDEP Surface Water Quality Gauge (2009)
-  NJDEP Ambient Biomonitoring Network (AMNET) Sampling Site

2008 Integrated Water Quality Report General Aquatic

-  Sublist 3 - Insufficient data to determine if designated use is attaining.
-  Sublist 5 - Does not attain designated use and a TMDL is necessary

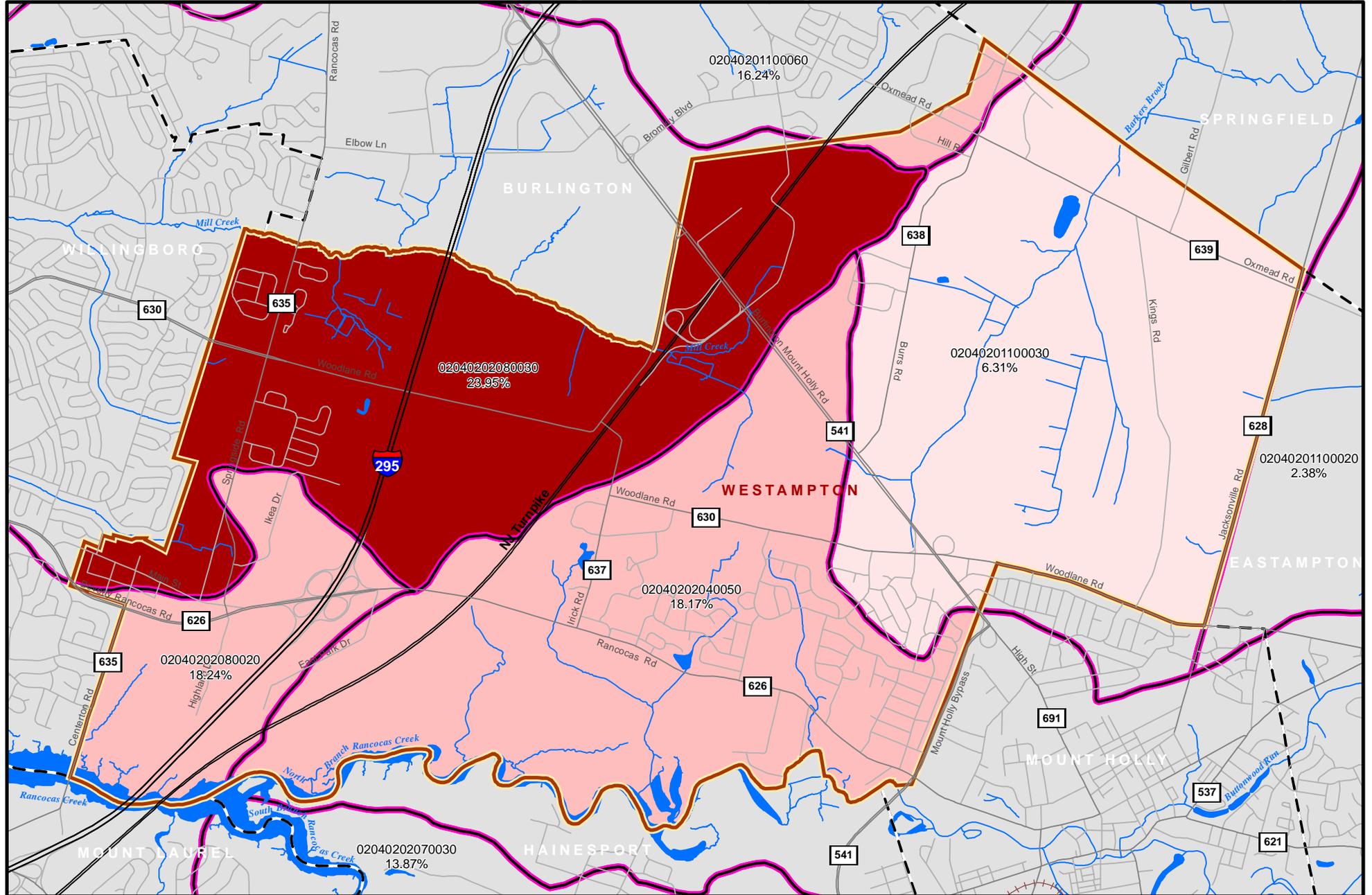


0 0.25 0.5
 Miles



WESTAMPTON TOWNSHIP

Map 12: Percent Impervious Cover by Subwatershed (2002)



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Percent of Impervious Surfaces by Subwatershed

Less than 10%	Low
10% - 20%	Medium
> 20%	High

Subwatershed Boundary (HUC14)

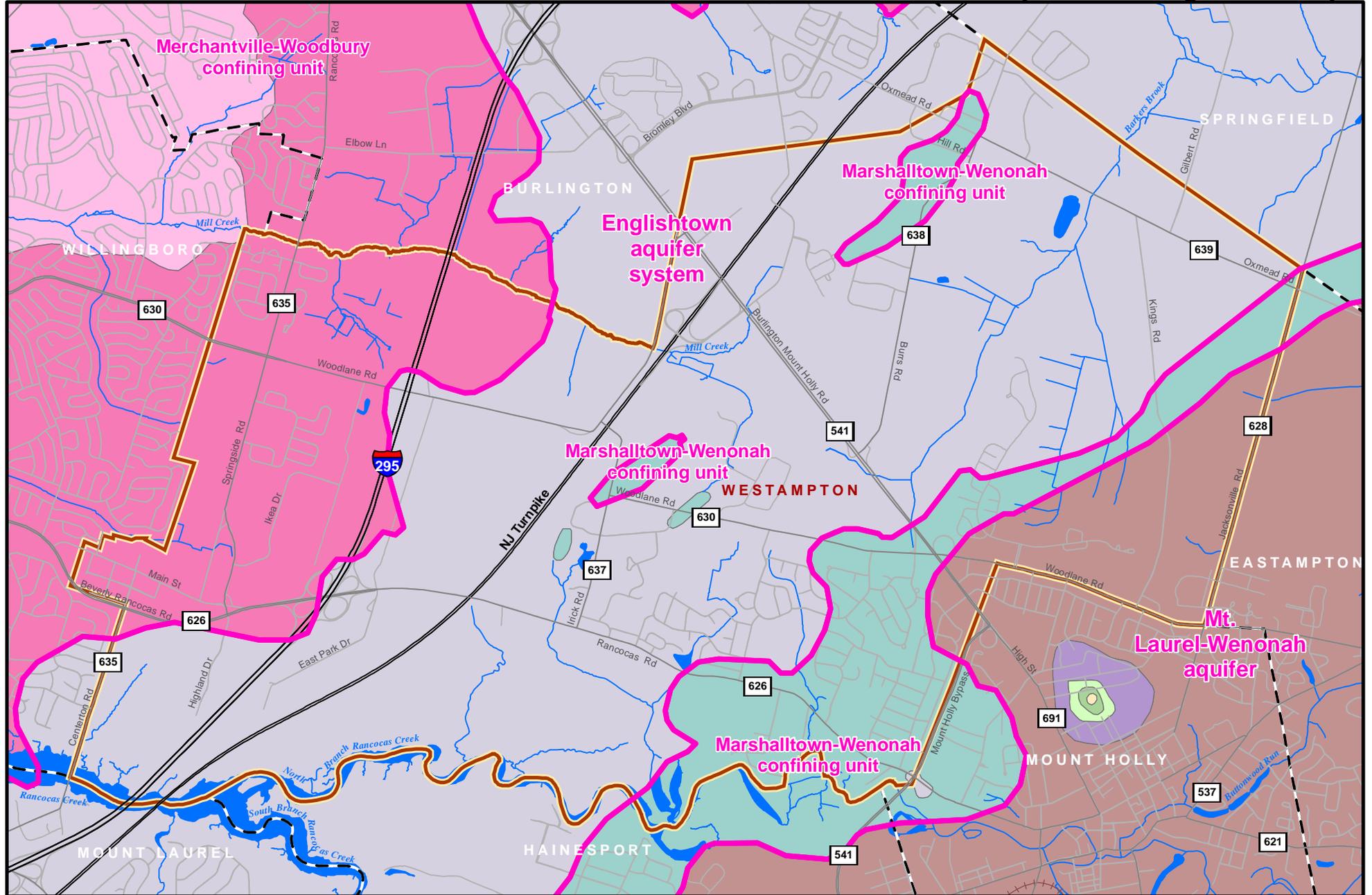


0 0.25 0.5
Miles



WESTAMPTON TOWNSHIP

Map 13: Geologic Outcrops



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

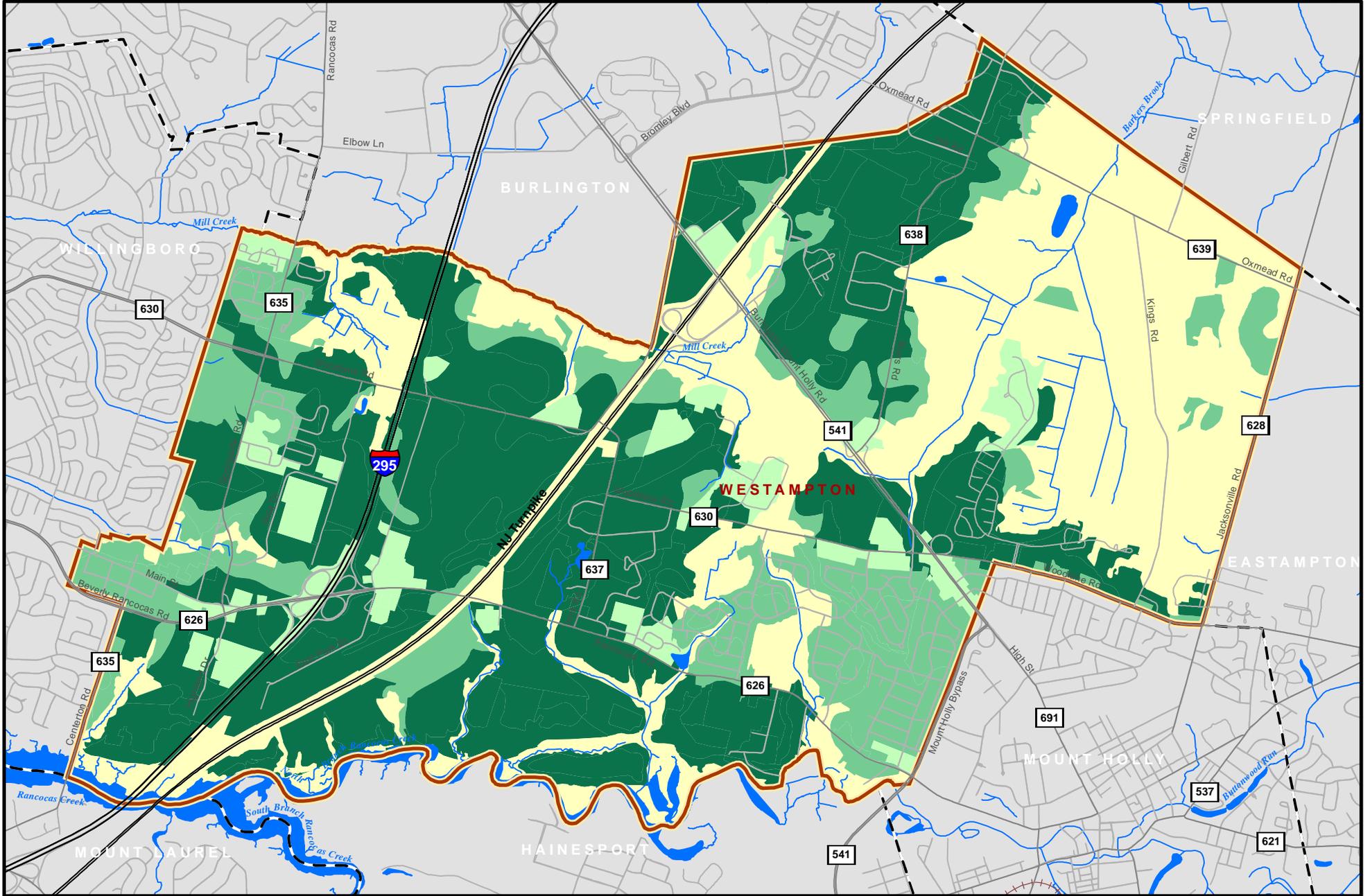
Outcrop Formations

- | | | | | |
|------------------------------|--------------------------|---------------|------------|----------|
| Aquifers and Confining Units | Hornerstown | Marshalltown | Mt. Laurel | Wenonah |
| Englishtown | Lower Member of Kirkwood | Merchantville | Navesink | Woodbury |



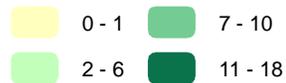
WESTAMPTON TOWNSHIP

Map 14: Groundwater Recharge



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

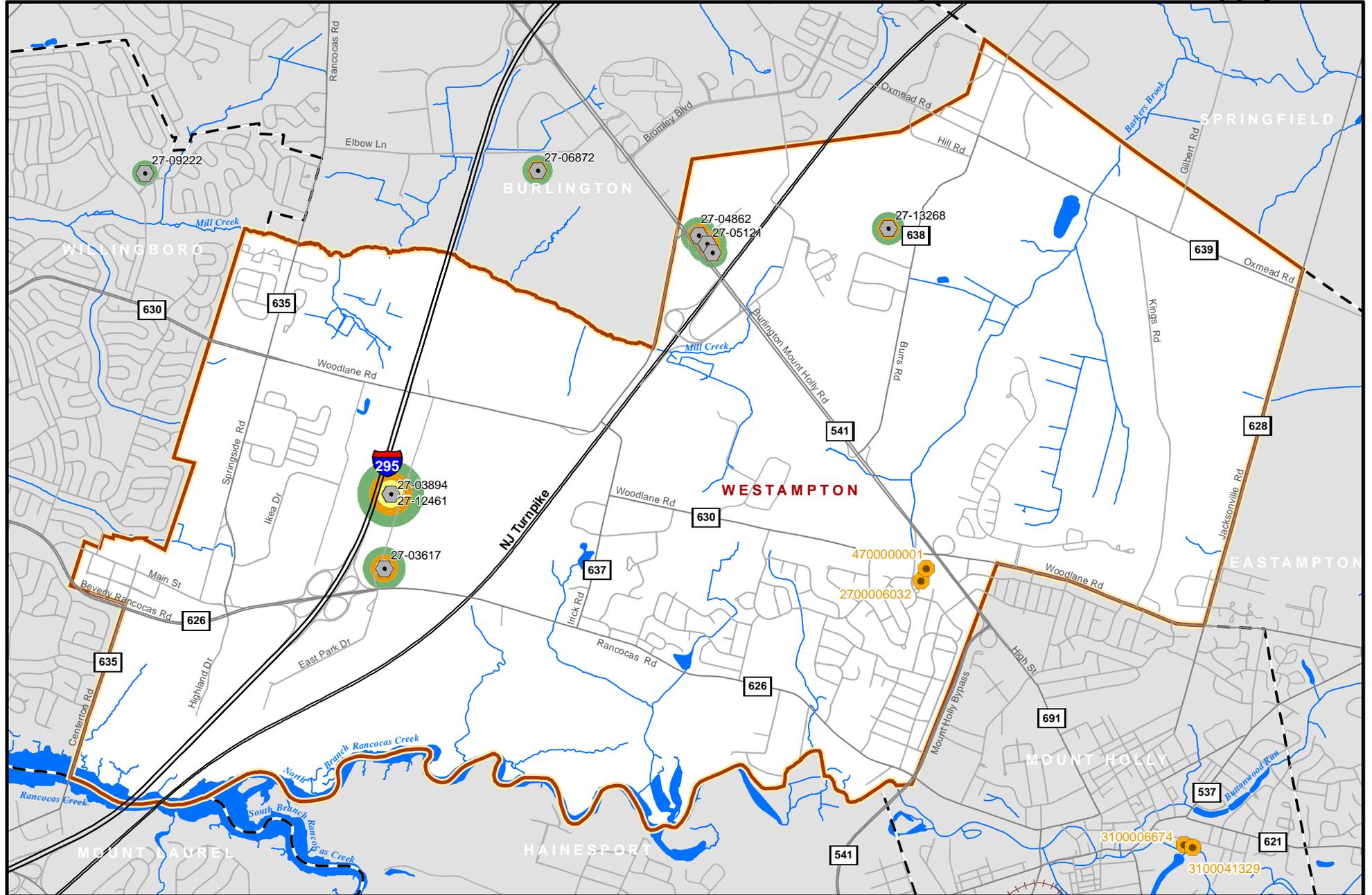
Inches per Year



Miles
 DELAWARE VALLEY
dvrpc
 REGIONAL
 PLANNING COMMISSION

WESTAMPTON TOWNSHIP

Map 15: Public Water Supply Wells



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- Public Non-Community Well
 - Public Community Well
- Wellhead Protection Areas**
- Public Community, 2006
 - Public Non-Community, 2004
 - 2-year time of travel
 - 5-year time of travel
 - 12-year time of travel

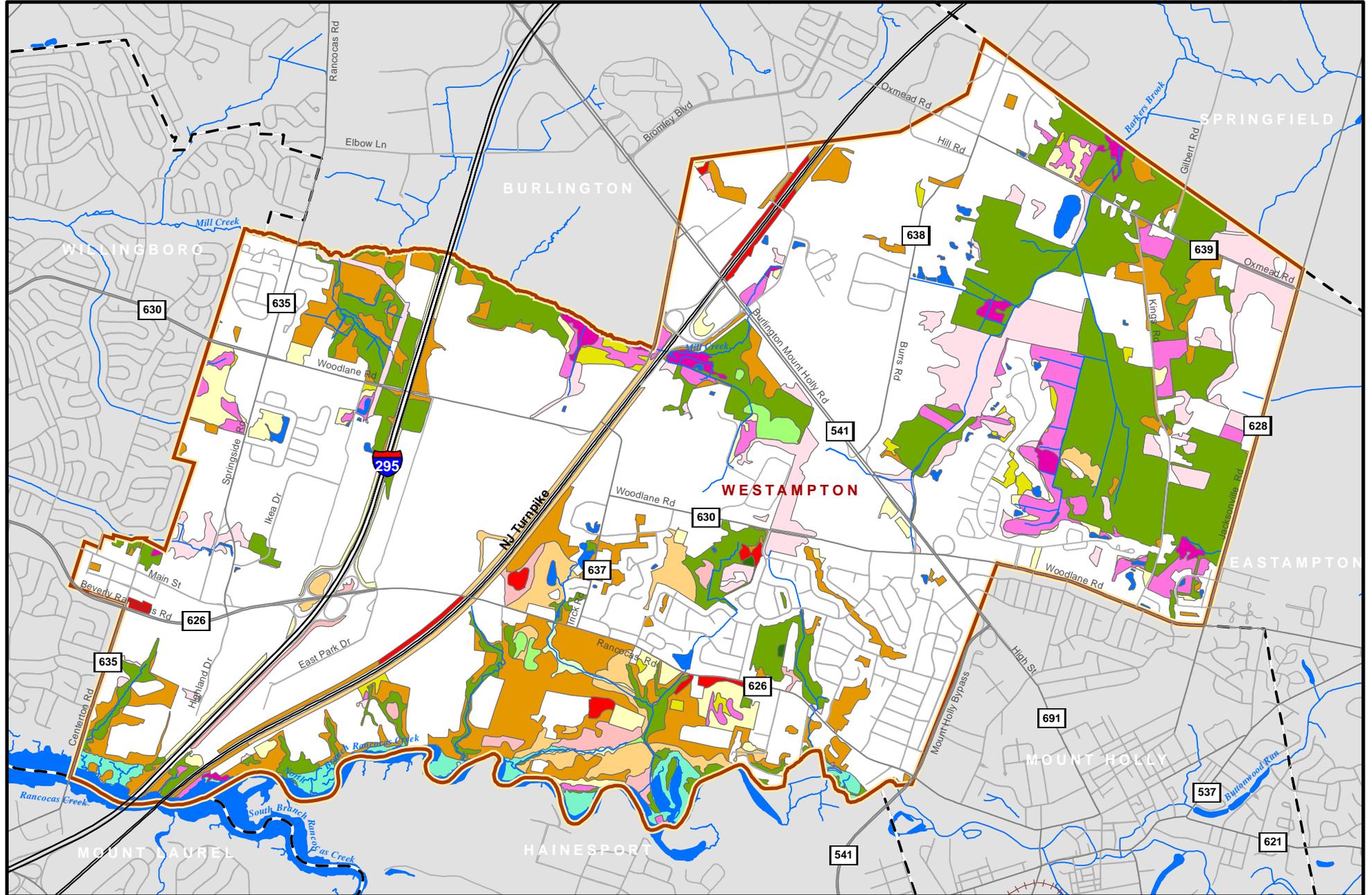


0 0.25 0.5
 Miles



WESTAMPTON TOWNSHIP

Map 16: Natural Vegetation (2007)



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- | | | | |
|-----------------------------------|-------------------------------------|----------------------------|---------------------------------------|
| Brush/Shrubland | Upland Forest - Deciduous | Tidal Marshes - Freshwater | Wetlands - Wooded - Deciduous |
| Brush/Shrubland - Oldfield | Upland Forest - Mixed (Decid. Dom.) | Wetlands - Modified | Wetlands - Wooded Mixed (Decid. Dom.) |
| Upland Forest - Coniferous | Water | Wetlands - Scrub/Shrub | Wetlands - Wooded - Coniferous |
| Upland Forest - Mixed (Con. Dom.) | Tidal Waters | Wetlands - Herbaceous | Wetlands - Wooded Mixed (Con. Dom.) |

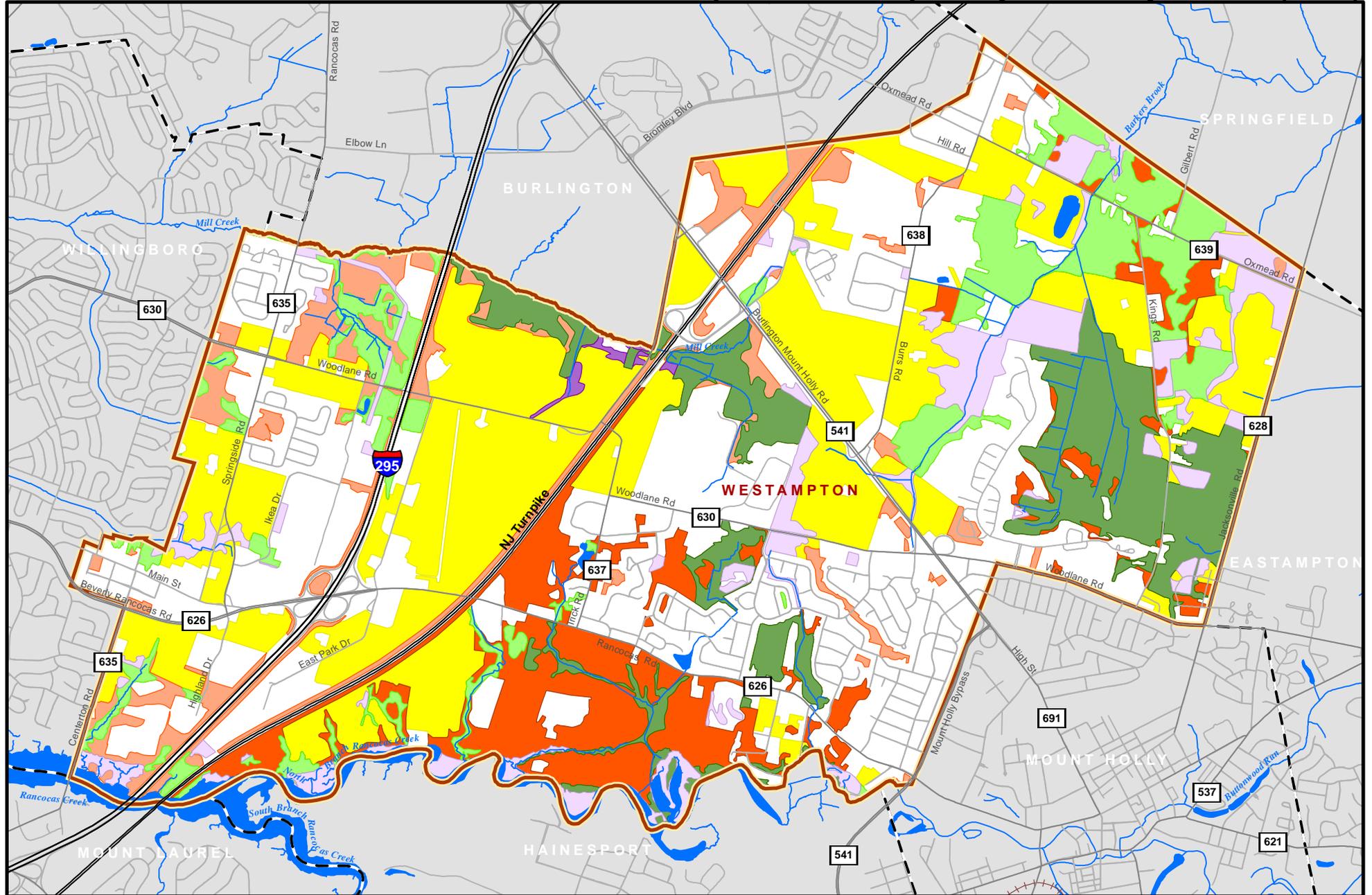


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 Miles



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Map 17: Landscape Project Priority Habitat (2007)



Sources : NJDEP, NJDOT, DVRPC.

This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Conservation Priority Type

Emergent Wetlands	Forested Wetlands	Upland Forest	Grasslands
Critical Habitat	Critical Habitat	Critical Habitat	Suitable Habitat
Suitable Habitat	Suitable Habitat	Suitable Habitat	

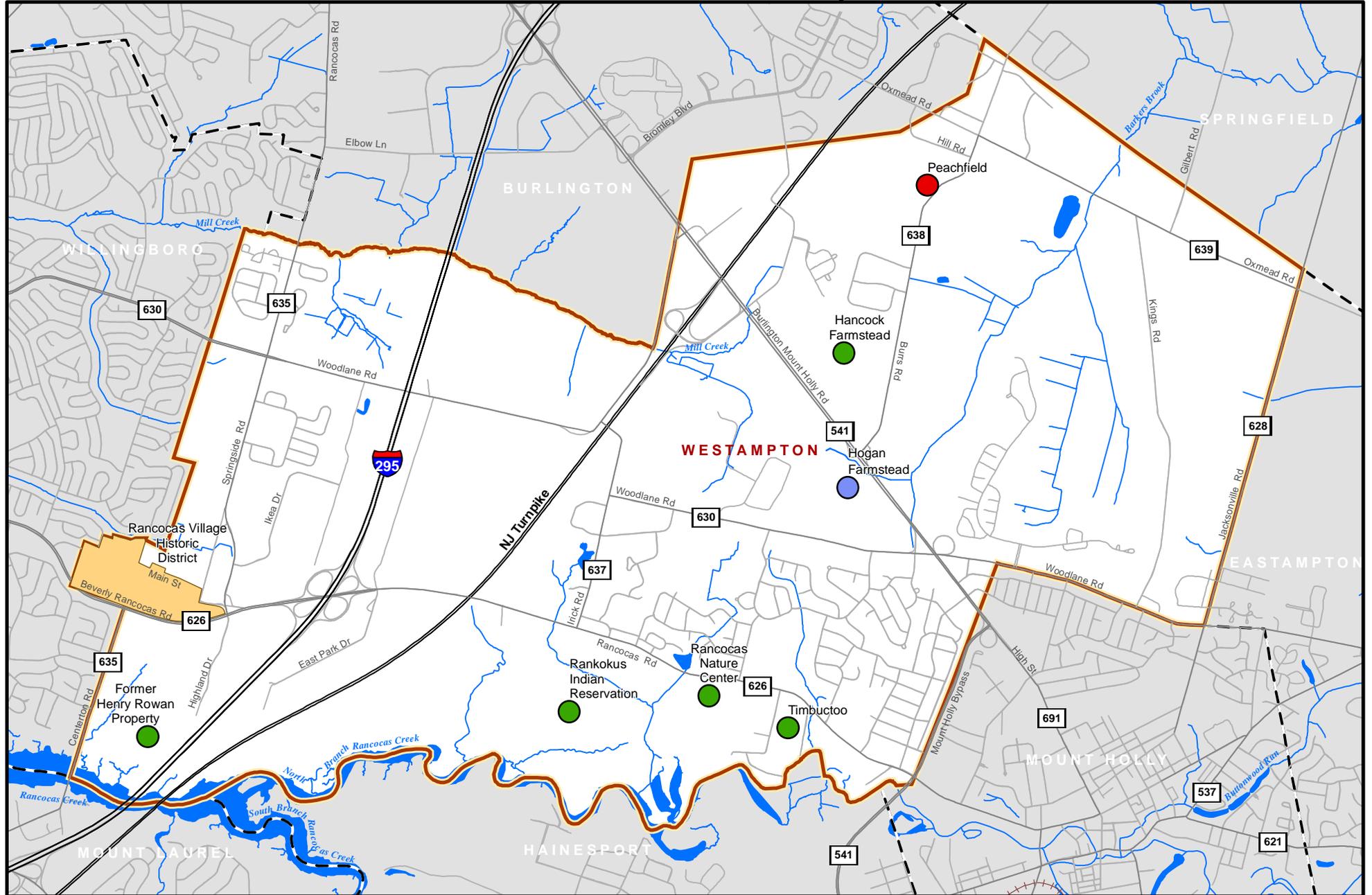


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Miles



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Map 18: Historic and Cultural Resources



Sources : NJDEP, NJDOT, DVRPC, NJHPO.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- District on the NJ & National Registers of Historic Places
- Historic or Cultural Site
- Site on the NJ & National Registers of Historic Places
- Site with SHPO Opinion

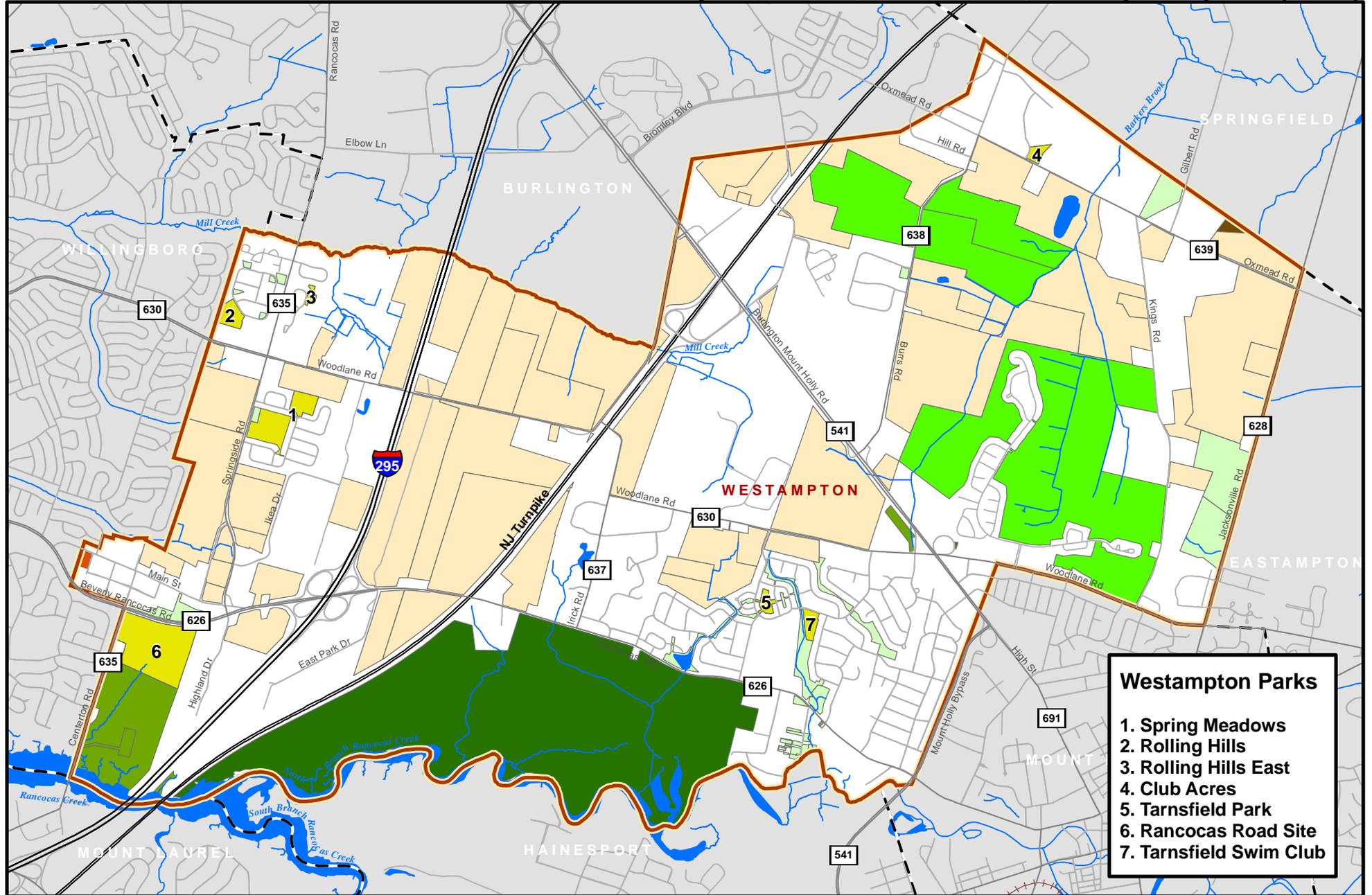


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 Miles



WESTAMPTON TOWNSHIP

Map 19: Parks, Recreation, and Open Space (2010)



- Westampton Parks**
1. Spring Meadows
 2. Rolling Hills
 3. Rolling Hills East
 4. Club Acres
 5. Tarnsfield Park
 6. Rancocas Road Site
 7. Tarnsfield Swim Club

Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Preserved Open Space

- Private
- Preserved Farmland
- Municipal
- Westampton Parks
- County
- Private Golf Course
- State

Farm Assessed (Not Preserved)



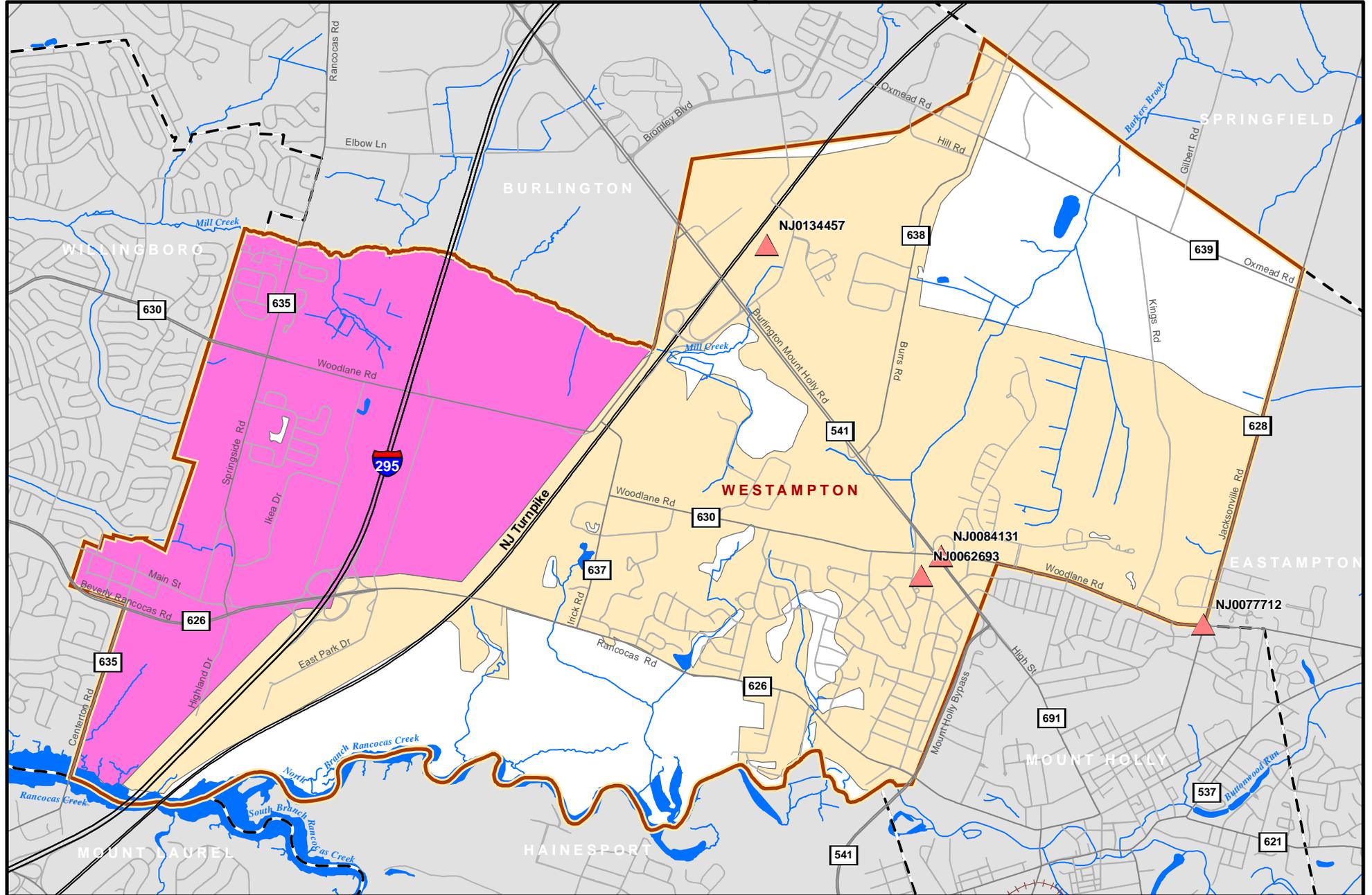
0 0.25 0.5

Miles



WESTAMPTON TOWNSHIP

Map 20: Sewer Service Area and NJPDES Permits



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

- ▲ NJPDES Permit for Discharge to Surface Water (2009)
- Approved Sewer Service Area (2008)
 - Mount Holly MUA STP
 - Willingboro STP

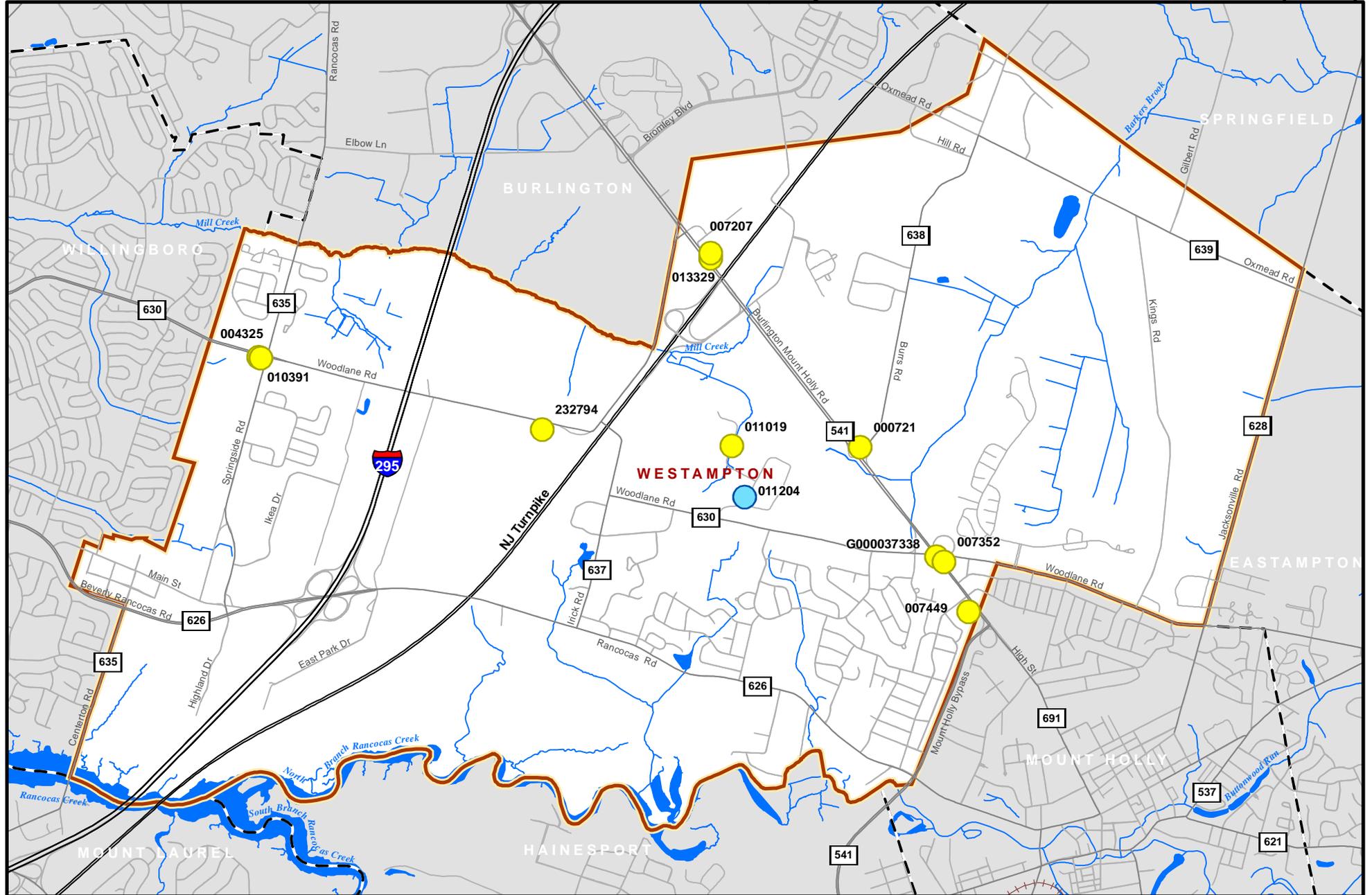


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 Miles



WESTAMPTON TOWNSHIP

Map 21: Known Contaminated Sites (2009)



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Remedial Level

- Active, C1: No Formal Design - Source Known or Identified-Potential GW Contamination
- Active, C2: Formal Design - Known Source or Release with GW Contamination

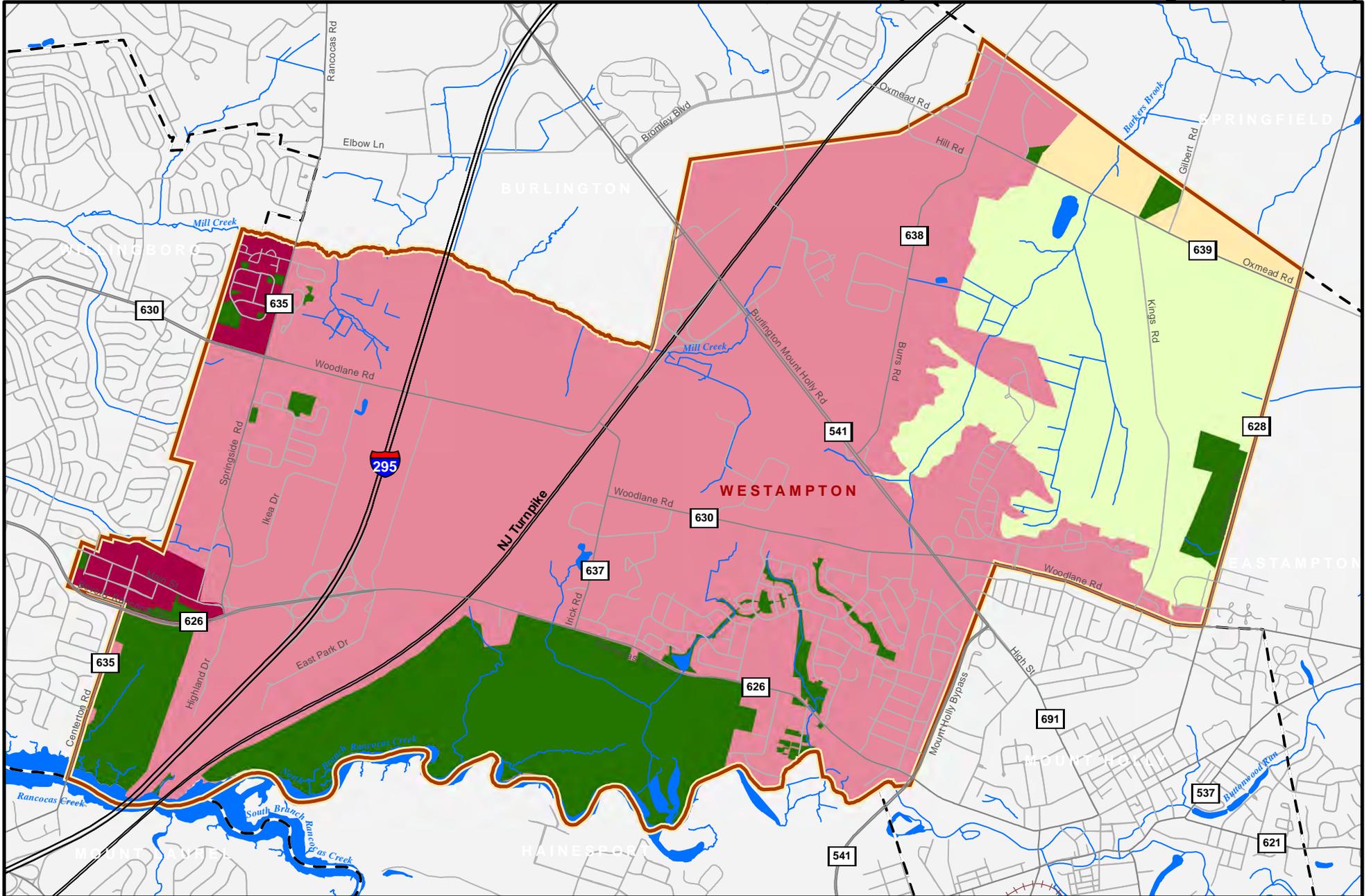


0 0.25 0.5
Miles



WESTAMPTON TOWNSHIP

Map 22: State Planning Areas (2008)



Sources : NJDEP, NJDOT, DVRPC.
 This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not state-authorized.

Planning Areas

- Metropolitan (PA1)
- Environmentally Sensitive (PA5)
- Park
- Suburban (PA2)
- Rural Environmentally Sensitive (4B)
- Water



0 0.25 0.5
 Miles



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Key Words

Agriculture, air quality, aquifers, biodiversity, biological resources, built environment, Burlington County, climate, conservation, development, endangered species, environmental issues, environmental resource inventory, floodplains, forest, grasslands, groundwater, habitat, land preservation, Landscape Project, master planning, natural resources, New Jersey, open space, population, Rancocas River, Rancocas Village, soils, steep slopes, topography, U.S. Census, vernal pools, water quality, watersheds, Westampton Township, wetlands

Abstract

This publication documents the natural and community resources of Westampton Township, Burlington County, New Jersey. The natural resource information includes descriptions, tables, and maps of: land use; soils; drinking water, aquifers, and wells; surface waters, including watersheds, streams, lakes, wetlands, and floodplains; impacts on water resources and surface water quality; impervious coverage; vegetation, including wetlands, forests, and grasslands; animal communities; threatened and endangered species; Natural Heritage Priority Sites; Landscape Project Priority Habitats; and known contaminated sites. Community resources that are briefly described include population, transportation, township utilities and services, historic sites and buildings, and protected open space. A short history of the community is also included.

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