ENVIRONMENTAL RESOURCE INVENTORY

BOROUGH OF HARRINGTON PARK
BERGEN COUNTY, NEW JERSEY

Prepared For:

The Borough of Harrington Park Environmental Commission

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ADOPTED BY THE HARRINGTON PARK ENVIRONMENTAL COMMISSION August 3, 2016

Adopted by the Harrington Park Planning Board as a part of the Conservation Plan Element of the Municipal Master Plan on this date: _____

The original document was appropriately signed and sealed on August 12, 2016 in accordance with Chapter 41 of Title 13 of the State Board of Professional Planners.

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BOROUGH OF HARRINGTON PARK
Bergen County, New Jersey

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BERGEN COUNTY, NEW JERSEY

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1. INTRODUCTION AND BACKGROUND

The establishment of local municipal Environmental Commissions in New Jersey was made possible in 1968 by the New Jersey State Legislature, when it authorized the formation of "Conservation Commissions". The current name of "Environmental Commissions" was adopted as a replacement name in 1972 when the State legislature amended the enabling legislation to grant expanded roles to these volunteer commissions.

The State Legislature recognized at the time, and it still holds true today, that one of the primary functions of the Environmental Commission is to prepare a municipal Natural Resource Inventory (NRI), more commonly (or contemporarily) referred to today as an Environmental Resource Inventory (ERI). This document is intended to be a factual one, free from subjectivity and opinionated interpretation. The purpose is to identify the presence of natural resources and areas of environmental concern, and to delineate and classify them where appropriate. A certain level of professional interpretation is acceptable, however, as may be necessary to determine the predominance of prescribed characteristics, the cumulative sensitivity of a variety of natural resources as may occur in a particular setting, and/or the particular combination of resources as might characterize or distinguish one locale. The local value of resources may also require a certain level of interpretation in consideration of their frequency of occurrence on a regional basis. Beyond this limited level, however, interpretations could be construed to be statements that reflect local or personal values or biases. It is important to avoid such statements in an Environmental Resource Inventory in order not to devalue the credibility of the factual data and maintain the integrity of the document.

Utilizing partial funding from the Borough of Harrington Park's Open Space Trust Fund, and a partial grant from United Water Resources, the Harrington Park Environmental Commission (HPEC) authorized the preparation of this ERI. Both the Harrington Park Green Team (HPGT) and this consultant supported the HPEC in their funding efforts and contributed supporting information to HPEC in their pursuit of grant assistance. This represents the first comprehensive town wide ERI ever to be prepared for Harrington Park. A document entitled Watershed Open Space: Natural Resource Inventory (WNRI) was prepared in 1992 and was limited to the open spaces within the Borough's narrow watershed corridors. Its graphics were rough and prepared free hand, and its availability to the public was extremely limited. Since the Borough continues to evolve with land use redevelopments and expansions, HPEC determined that the time has arrived to prepare such an inventory. Land use changes have included higher intensity developments and the loss of open space, as well as the effects non-point source pollution has had on those open spaces that remain.

This new ERI contains a set of Geographic Information System (GIS) maps, narratives, figures and tables describing the natural and environmentally-significant features of the municipality. The GIS system that was utilized is a contemporary version that is compatible with the GIS systems of the New Jersey Department of Environmental Preservation (NJDEP) and the Bergen County Department of Planning and Economic Development (BCDPED). This document will benefit the general public, and the various agencies of the Borough and higher authorities. The HPEC intends to have this ERI adopted as part of the Harrington Park Master Plan Conservation Element by the Planning Board.

Harrington Park's changing demographics, local development pressures, and periodic brownfield issues both regionally and nationally have combined to alter both the public's and the government's perception of environmental significance. Unfortunately, the only natural resource and environmental information readily available to be utilized and relied upon by Borough Boards and the Borough Council is primarily that which has been provided by applicants during their land use development presentations. This information generally includes the Applicant's representations (and in some cases interpretations) of environmental significance. Therefore the need for a comprehensive, updated and readily accessible ERI became apparent.

It is important that this ERI not be placed on a shelf in Borough Hall where it would be read and used by only those who seek it out. Rather, this document should be readily available to all those who may derive value from its contents. For this reason, the HPEC has authorized the preparation of large scale exhibits of the graphic portions contained in this ERI which have been mounted and permanently displayed in the Harrington Park Council Chambers. Those graphic exhibits are an integral part of this document. In this manner, the information is readily available to all parties to refer to when land use decisions are being discussed and applications deliberated. This document and the large scale exhibits together constitute the ERI of Harrington Park Borough. The entire Borough of Harrington Park constitutes the Study Area for this document.

The text describes the importance of each resource, the methodology employed in the determination of its existence and extent, its level of regulatory protection, its location within Harrington Park, and its relative level of sensitivity. Where particular resources offer opportunities; or where they may present severe constraints to development, they have been discussed. Furthermore, where a valuable resource is threatened by some intrusion; or where one may have already been degraded and remedial actions may be appropriate, these too have been discussed. Finally, resources have been described in terms of their individual characteristics, as well as their value within the context of the overall system of which they may be part.

The large scale exhibits serve to map such resources as topography, steep slopes, soils, flood plains, wetlands, surface waters, and watersheds. The delineation of these resources is depicted in relationship to the man-made features of the Borough, such as the street system. The parcels, roads and boundaries of each exhibit were obtained from Bergen County's Geographic Information Systems files. This mapping is general, and is based on the

research of record data, and on-site confirmation to the extent one might expect of a planning study. By no means should this mapping be considered accurate on a site-specific basis. Rather, it should serve as a "red flag", to alert interested parties to the likely presence of valuable natural resources and environmentally sensitive areas in a particular location. This document would then serve as a tool to ensure that the proper questions are asked and hopefully answered in a timely fashion, so that environmental concerns and issues can be considered at the earliest possible opportunity.

2. LOCATION

Bergen County occupies the northeast corner of the State of New Jersey (see Figure #1). Similarly, the Borough of Harrington Park is situated in the northeastern portion of Bergen County (see Figure #2). Harrington Park encompasses approximately 1.8 square miles and is situated approximately 17 miles due north of and 21 miles driving distance from midtown Manhattan, New York City. The Borough is irregular in shape, appearing halfway between a square turned on the diagonal and a triangle. Beginning to its north and moving clockwise Harrington Park is bounded by the Boroughs of Old Tappan, Norwood, Closter, Emerson and River Vale.

The western three quarters of Harrington Park's land area is separated from the eastern quarter by the north-south oriented CRS railroad corridor and Dorotockeys Run. The major east-west crossings of one or both of these features include Elm Street, Closter Road, Harriot Avenue, Tappan Road, and Blanch Avenue. The Borough's only other east west thoroughfare is Hackensack Avenue. North-south thoroughfares are limited to Schraalenburgh Road and Lafayette Avenue, and to lesser degrees Lynn Street and Bogerts Mill Road. This latter road crosses the Pascack Brook which separates off the southern most extremity of the Borough which represents only a very small percentage of Harrington Park's land area. One of Harrington Park's most unique features as contrasted against all neighboring and area towns is that most of its municipal boundary is defined by natural features rather than manmade delineations. While the latter is present to the north abutting Old Tappan, and to the east abutting Norwood, the southern municipal boundary is defined by the Oradell Reservoir, and the western boundary is defined by the Hackensack River. The entire Borough falls within the Hackensack River watershed basin as all of Harrington Park's surface land area ultimately drains into the Oradell Reservoir, either directly or via either the Hackensack River or Dorotockeys Run.

3. TOPOGRAPHY

A. Importance

The topography of an area, or the land's three dimensional shape (otherwise referred to as relief), is significant in several ways. Varying topography creates visual interest and spatial definition, provides for views and diverse vistas, and supports a variety of vegetation, habitats and water resources. Varying topography also creates a rhythm to the manner in which patterns of development generally occur, often leading to a hierarchy of public and private land uses. The recognition of these topographically induced patterns can help to create a sense of place as espoused by the now outdated New Jersey State Development and Redevelopment Plan (SDRP). On more tangible levels, varying topography generally provides opportunities for more efficient sewage disposal, storm drainage control, and water supply distribution.

B. Methodology

The topography and contours of Harrington Park were extracted from the United States Geologic Survey (USGS) 10 meter Digital Elevation Models (DEM's) (see Figure # 3). We opted to use this source since NJDEP's electronic database only provides a municipally wide contour interval of twenty (20) feet. Harrington Park is fortunate in that USGS only recently provided this information in a usable format without the extraneous information that formerly cluttered their exhibits.

C. Harrington Park

The entire Borough has very gentle rolling topography, and all of it falls within the Oradell Reservoir drainage basin. The Borough has two sub drainage basins of the Oradell Reservoir. Of those two, however, over 95% of Harrington Park's land area falls within the Hackensack River (Oradell to Old Tappan Gage) sub drainage basin. Only the extreme southwest corner of the Borough (along the southern end of Bogerts Mill Road, including Pascack Road and Taylor Place) falls within the Pascack Brook (below Westwood gage) sub drainage basin.

The Borough has no major topographic ridge lines and only three minor watershed ridge lines (see Figure #3). The minor ridge lines run approximately as follows:

- The largest ridge line runs south from North Colonial Drive and Blanch Avenue, across Bluefield Avenue, down Martin Drive, to Lafayette and Hackensack Avenues, then west to Russell Place and Guy Street, south to Giles Road, and then down the railroad tracks to the Closter boundary. This ridge line divides surface water runoff between the Hackensack River to the west, and Dorotockey's Run to the east;
- A very small ridge line divides surface water runoff between Dorotockey's Run and the northeast Oradell Reservoir basin. It runs across Wicks Drive and Greenway, and then south to Tappan Road;

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NJ County Boundaries
Bergen County

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Source:
Boundaries - New Jersey Department of Environmental Protection

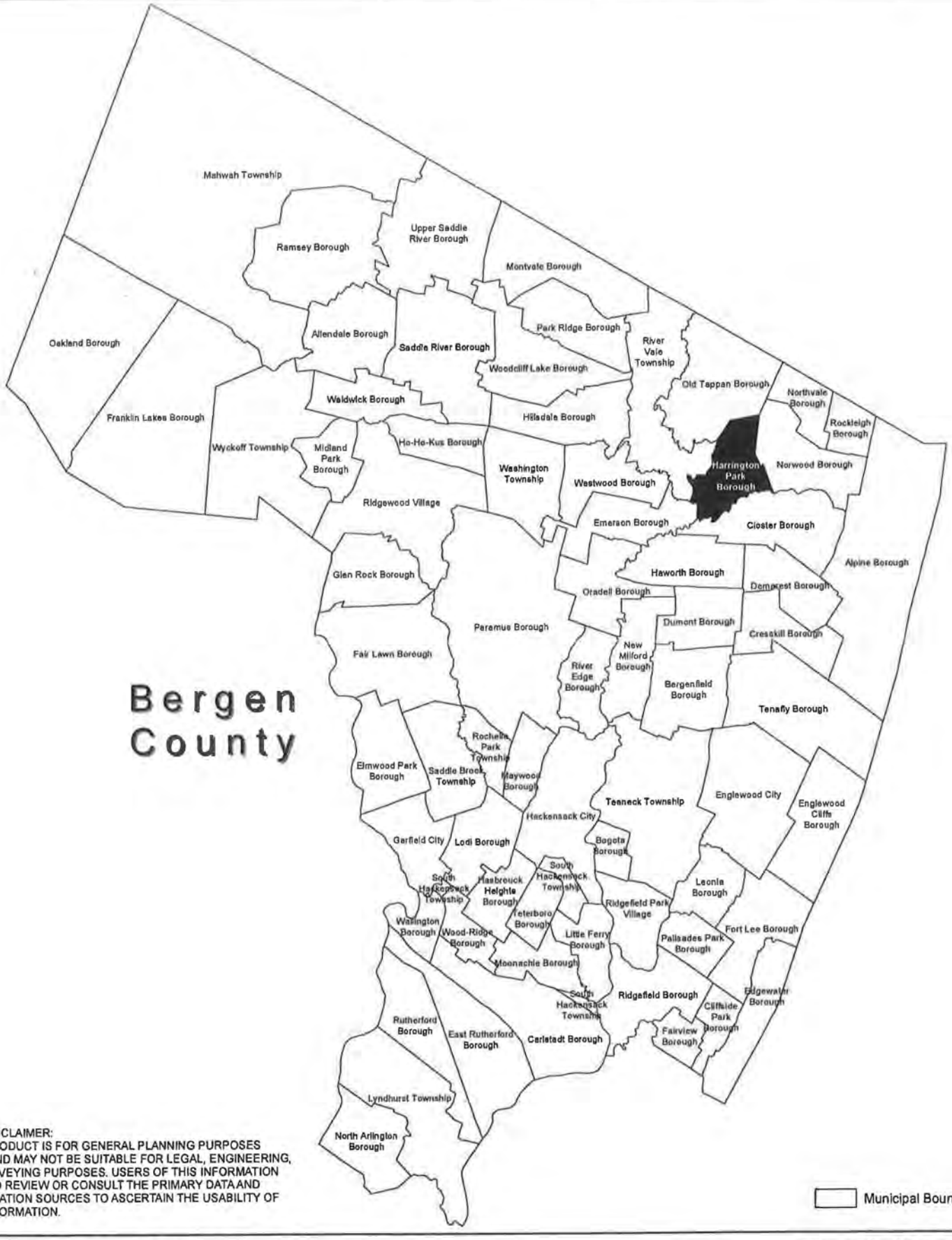
Map Prepared September 2015 by:
Donelt Group, LLC
Stamford, CT

15 0 15 Miles
1 inch = 15 miles

Figure 1 - Location Map

Environmental Resource Inventory

Borough of Harrington Park, NJ



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Source:
Boundaries - Bergen County Geographic Information Systems

Map Prepared September 2015 by:
Donelt Group, LLC
Stamford, CT

2 0 2 Miles
1 Inch = 2 miles

Figure 2 - Vicinity Map

Environmental Resource Inventory

Borough of Harrington Park, NJ

- A small ridge line extends south from Old Tappan Borough near Burkhardt Lane and continues south to just past Beechwood Place. This ridge separates surface water runoff between the Hackensack River and its Blanch Brook tributary.

Topographically the Borough of Harrington Park can be characterized as an elevated and undulating plateau between and including significant water features. The low point of the Borough is at approximate elevation 20 (U.S.G.S. Mean Sea Level Datum), and is located at the point where the Hackensack River drains into the Oradell Reservoir, south of Harriot Avenue and east of Bogerts Mill Road.

The high point of the Borough of Harrington Park is at approximate elevation 90 (U.S.G.S. Mean Sea Level Datum), and is located along the Borough's eastern boundary with Norwood Borough east of the southern bend of Wicks Drive. This neighborhood has a few other isolated high points that reach as high as 70 to 80. No other Borough neighborhoods reach these heights.

4. SLOPES

A. Importance

The extent and severity of slopes are among the most critical factors that influence development patterns. Most often, steep slopes are among the last areas proposed for development. This is because they pose relatively high levels of constraints to the difficulty of construction and to the expense and re-stabilization aspects of development. Steep slopes can be highly erodible and only marginally permeable by storm water, cause rapid storm water runoff, and are difficult to stabilize by vegetative means. They are generally characterized by shallow soils and surficial (visible along the surface of the ground) rock, and frequently by groundwater seeps and erratic geological formations. Because development interests tend to shy away from them, steep slopes frequently support large specimen trees, and a variety of wildlife habitats. Steep slopes are not generally found in areas characterized by wetlands or flood plains. Aesthetically, steep slopes are often visually prominent as a result of their elevation above their surroundings, and this represents a valued aesthetic resource.

At the other end of the spectrum, extremely flat slopes can present other issues. While they present fewer constraints to development, they often have characteristics that either inhibit their usage or are worthy of preservation. Flat slopes often present drainage and flooding problems. Frequently they have very shallow depths to seasonally high groundwater. They are the topographic condition that most often supports wetlands. Because of the wetness that is common on flat slopes, the prevailing soils often have poor permeability and drainage characteristics. All of these issues present impediments to usage of their lands.

B. Methodology

The gently varying slopes of the Study Area that is Harrington Park were extracted from the United States Geologic Survey (USGS) 10 meter Digital Elevation Models (DEM's) (see Figure # 3). Once again we opted to use this source since NJDEP's electronic database only provides a municipally wide contour interval of twenty (20) feet, and the slope severities would have had to be interpolated which is a less than accurate methodology. As a check the soils' slopes classifications that are included in the SSURGO of NJDEP's electronic database for soil types were compared for consistency.

C. Harrington Park

The slopes of Harrington Park Borough are overwhelmingly flat, with many fewer described as gently rolling (see Figure #3). Approximately 90% of the Borough's land area has slopes less than 5% (5 vertical units to 100 horizontal units). Another 7% has gentle slopes between 5% and 15%. Very few locations (no more than 3%) have slopes that exceed 15%. The two primary locations that feature these steeper slopes include a small location just west of the intersection of Lafayette Road and Hackensack Avenue, and around the historic Tappan Road cemetery and other isolated locations in the Borough's Carleton Lane/Greenway neighborhood. In this mostly developed suburb, extremely flat slopes can present drainage issues within the community and can be considered significant. Overly steep slopes have not presented issues within Harrington Park. As a result, the Borough has never considered the enactment of a local steep slope ordinance of importance. 15% is the industry standard threshold that delineates steep versus non-steep slopes as being environmentally sensitive.

5. GEOLOGY

A. Importance

The geology of an area can be an important consideration in land use decisions, for it influences the nature and extent of potential land uses in several of the following ways. Underlying geology can be a clean and consistent source of water supply. This relies on both the absence of soil contamination, and the presence of a sufficient frequency of fissures or cracks in the bedrock to allow for adequate access into the water table by well drilling. The converse of this is that certain geologic materials, such as sand and gravel, provide a porous subgrade which allows for a rapid recharge of groundwater supplies. When these materials are located over valuable aquifers, they are considered to be of value for the continuation, sustenance and protection of the aquifer. These same materials, however, are prime construction materials, and are valued as fill materials which exhibit strength and stability. Their preservation, therefore, is both of value and difficult to accomplish.

Subsurface sewage disposal capabilities are influenced by geology. A dense substratum can inhibit or prohibit infiltration and thereby preclude natural filtration. At the other end of the spectrum, a severely fissured geology allows infiltration at too rapid a rate, precluding adequate natural soil filtration and thereby potentially contaminating groundwater supplies. For the purpose of subsurface sewage disposal, therefore, a moderately porous geology is the most desirable. As this feature pertains to storm water control, rapid infiltration rates are beneficial since they both replenish groundwater supplies and reduce the need to retain or detain surface runoff waters for the purposes of flood control. From the perspective of retaining water in a reservoir system as is the case in most of Bergen County, and in particular in Harrington Park, a dense substratum is preferred to inhibit the loss of stored water into the aquifer.

The nature and depth of bedrock can influence the stability and cost of construction. Certain low bearing strength geologic formations, particularly the surficial (visible along the surface of the ground) deposits, are incapable of supporting heavy loads, in contrast to the sands and gravels mentioned above. These same surficial deposits vary in terms of their ability to accommodate and absorb the freeze-thaw and expansion-contraction characteristics of frost action. Further geological constraints are posed by carbonate rock that has a tendency to dissolve, thereby creating subsurface voids and sinkholes, threatening the stability of development that may occur above. This is a common and undesirable phenomenon in the Delaware River Valley to our west.

B. Methodology

The geologic information about Harrington Park was obtained from a publication by the New Jersey Geological Survey entitled "Geology of Bergen County in Brief" by Carol S. Lucey, Senior Geologist. It was prepared for the NJDEP Division of Water Resources, Bureau of Geology and Topography, and is dated December 1971.

C. Harrington Park

The entire Borough of Harrington Park is located within the Piedmont Physiographic Province. This geologic province cuts a swath diagonally across the State of New Jersey from its northeast corner through Mercer County. Not far to the west, situated approximately coincident with the Ramapo River, is the beginning of the Highlands Physiographic Province which follows a similar diagonal path.

The specific formation underlying the Borough of Harrington Park is known as the Brunswick Formation. This formation is characterized by deep glacial outwash, or surficial deposits, that were left by the receding glacier. The outwash deposits left by the glacier consist primarily of coarse-grained red sandstone and shales, with some conglomerate. These actions took place during the Triassic Period (180 million to 30 million years ago). During the Wisconsin, or last glacial stage, the receding glacier left deposits of an unsorted mixture of pebbles, boulders, sand and clay, commonly called till. The streams fed by the melting glaciers left deposits of layered and sorted sand, gravel and silt, commonly called stratified drift. Some of this drift formed drumlins (steep sided terraces or flat topped hills)

which are common around Bergen County, although no drumlins are present in Harrington Park.

Within Harrington Park, the resultant topography and slopes from this singular geological formation is extremely consistent and uniform (see Chapters 3 and 4 of this ERI) . The underlying geologic drainage is good throughout the town. In most cases in Harrington Park the subsurface drainage moves reasonably well through the outwash. In some cases, however, heavy clay deposits and igneous traprock (basalt and diabase) impede water flow through the subgrade. Surface drainage is carried in a classic system of rivers, tributaries and sub-tributaries with associated flood plains and transitional wetlands.

No subsurface sewage disposal systems such as septic systems are known to still exist within Harrington Park. If they do exist, however, they are rare and (a) could be expected to have a negligible geological impact, and (b) the percolation rate of the substratum could be expected to satisfactorily cleanse the minimal amount of effluent that might be generated. Harrington Park maintains a public sanitary sewer system that services the entire community. The resultant wastewater is conveyed to the regional treatment facility at the Bergen County Sewer Authority in Little Ferry. The primary threat to the integrity of the area's geology can be expected to come from improperly controlled industrial discharges. Industrial land uses are scarce in the Northern Valley area in general and Harrington Park more specifically. Most commonly, therefore, these contaminants are byproducts of small generators such as older dry cleaning and vehicular service establishments, and underground storage tanks.

The Borough of Harrington Park also maintains a separate storm water drainage control system. Storm drainage is collected in this system and it is conveyed directly into surface waters. The N.J. Storm Water Regulations require that all N.J. municipalities prepare a Storm Water Control Master Plan which was completed by Harrington Park's Borough Engineer. Two of its purposes are for N.J. communities to plan the implementation of contemporary methodologies over time to reduce flooding and improve water quality. Several of these methodologies involve (a) subsurface disposal of storm water, relying on infiltration and percolation through soils and into the underlying geology, and (b) surface collection and natural cleansing through vegetative means.

These methodologies are not expected to be detrimental to Harrington Park, except perhaps for their initial implementation costs. To the contrary, the implementation of infiltration methods of storm water disposal within Harrington Park could only serve to replenish and cleanse the groundwater supply, raise the groundwater levels, and support subsurface water supply usages that may be operative in the area. Without such disposal methods, area groundwater users run the risk of groundwater elevations potentially dropping to dangerous levels as compared to their withdrawal well depths, or to have the quality of the available groundwater compromised. Surficial vegetative cleansing methods such as rain gardens, grassy swales, and native plantings buffering surface waters, are inexpensive and very effective means of producing cleaner waters.

6. SOILS

A. Importance

General. Knowledge of local soil conditions is important from both development and preservation interests' perspectives. Soil Science is a complex area of study; one which involves the analysis of considerations so numerous that professions have been built around this one subject. This is important to mention in this context, since the considerations discussed in this Municipal Environmental Inventory are limited to the primary ones, leaving a myriad of secondary factors to the site specific analyses which should accompany each development or land alteration proposal.

Soil Conservation Service (SCS) Ratings. The SCS within the United States Department of Agriculture has evaluated and rated soils for a variety of uses and characteristics. The use categories include woodland management and productivity, recreation, wildlife habitat, engineering, building site development, sanitary facilities, and construction materials. For the purpose of an Environmental Resource Inventory for a mostly developed suburb that is seeking to preserve and protect its natural resources, it is considered most appropriate to emphasize the building site development uses when evaluating the level of constraints posed by the various soils. These levels can be seen on the Soils exhibit which accompanies this report (see Figure #4). Slight constraints generally mean that the soils are compatible for the intended use. Moderate constraints indicate that there are limitations to the use of the soils for building site construction, and special considerations will be necessary to adequately accommodate building uses. Severe constraints mean that soils properties are so unfavorable for building site construction that extraordinary measures with significantly increased costs are likely to be required to adequately support this land use. Severe constraints also mean that their disturbance can often result in the generation of adverse impacts both on and off site.

Composition. Soils can be mineralogical in composition, generally rendering them structurally sound and nutrient deficient. Other soils can have a high organic component, which while favorable for a growing medium and for moisture retention may be too compressible to sufficiently support development.

Particle Sizes and Mechanical Analysis. Soils can be uniform in particle size (sands, silts or clays), and this characteristic generally promotes erodibility since like sized soil particles do not bond together well. Conversely, a mixture of particle sizes within a soil composition, commonly known as a loam, promotes a "locking together" of soil particles which minimizes erosion potential. The percentages of particle sizes within a soil are called its Mechanical Analysis. Soils with larger particle sizes (sands), or those intermixed with the even larger particle sized gravels and stones, are generally well-drained and can absorb frost expansion due to the interstices (air spaces) between particles. Conversely, smaller particle sizes (e.g. silts and most especially clays) possess a minimum of interstices and are, therefore, moderately to poorly drained and subject to damaging frost heaving resulting from the expansion of water as it turn to ice.

Absorption. Some soils absorb water well, maintaining their natural volume to a large extent, which is a favorable characteristic for development. Others expand significantly when saturated, having what is commonly known as a high shrink-swell potential, which is unfavorable for development in that it causes unwanted volume displacement.

Soil Depths. Certain soils are deep, providing a favorable environment for construction and septic disposal, while others are shallow offering a more readily available supply of groundwater. Shallow soils generally mean that there is a shallow depth to bedrock. It is within the fissures of bedrock where groundwater supplies are usually found. Shallow bedrock also means that blasting or the ripping of rock may be necessary to prepare land for development, which is not economically desirable.

Chemical Analyses. Soils may exhibit extremes of chemical composition, from both of the highly corrosive ends of the acidity and alkalinity spectrum, to the neutral middle ground of pH levels. Excessive corrosiveness may have an adverse impact upon utilities, foundations, and vegetation.

Hydric and Non-Hydric Soils. The depth to water table affects the nature of soils. Shallow depths promote hydric soils which are those always, often or periodically found to be in an anaerobic (absence of air) state since their interstices are frequently filled with water rather than air. Hydric soils commonly support hydrophytic vegetation, which is discussed in the wetlands section of this Inventory. Deeper depths to the water table promote non-hydric soils, which are aerobic (presence of air within interstices). Non-hydric soils commonly support uplands vegetation. The differentiation of these soil categories can be seen on the Soils exhibit which accompanies this report (see Figure #4).

Flooding Potential. Certain soils are described as having a high potential for frequent flooding. This description is usually given to low-lying soils with a high water absorption capacity, low porosity and slow permeability. In highly developed areas, these soils have often been disturbed and/or filled in the past for the purpose of site development; but this manipulation may not remove their flooding potential. These soils are not considered hydric, and do not receive regulatory protection.

Soil Horizons. Soil profiles are made up of several layers, called "soil horizons", the characteristics of which help define the soil type. The top horizon, or surface layer, is usually the topsoil which overlays the subsoil. Topsoil generally has a high organic composition (4 percent or more by volume) and is compressible. Subsoils are predominantly mineralogical, but can have smaller organic composition percentages. Soils occurring below the subsoil are known as the substratum.

Slope Impacts. Steeply sloping areas generally possess soils which are shallow, erodible, well drained, non-hydric, and have a deep depth to the water table in all seasons. In contrast, extremely flat areas often possess soils which are deep, often erodible, poorly drained, frequently hydric, and with a shallow depth to the water table. These characteristics are generalities, and exceptions are frequent in both extremes.

B. Methodology

The soils of Harrington Park were described in the Soil Survey of Bergen County, New Jersey prepared by the Soil Conservation Service of the United States Department of Agriculture, in cooperation with New Jersey Agricultural Experiment Station, Cook College, Rutgers, the State University; and the New Jersey Department of Agriculture, State Soil Conservation Committee, March 1995. The mapping of Harrington Park's soils was obtained from SSURGO from the NJDEP's electronic database (see Figure #4).

C. Harrington Park

To understand the properties of soil types in generalized locations is to understand how they were formed. A review of the geology of Harrington Park reveals that all of the soils of the Borough were formed in water sorted deposits. Sorted deposits tend to be rather uniform in particle sizes and are therefore quite erodible. This distinguishes them from the unsorted deposits, or those characterized by glacial till. Unsorted deposits are common in Bergen County's more steeply sloping locations such as along the western facing slopes of the Palisades of Harrington Park's neighboring communities to the east and southeast.

There are seven different categorical names of soils within Harrington Park. Within these are nine subcategories which are further broken down into fifteen different soils classifications (see Figure #4). The following chart includes rough approximations of the percentages of the Borough's land that they cover. These percentages are for general comparison purposes and should not be relied upon for any other purpose.

Symbol	Soil Classification	Harrington Park Land Area %	%	%
DuoB	Dunellen loam, 3 to 8 percent slopes	*7*		
DuoC	Dunellen loam, 8 to 15% slopes	*8*		
	Total Dunellen loam		*15*	
DuuA	Dunellen-Urban land complex, 0 to 3% slopes	*3*		
DuuB	Dunellen-Urban land complex, 3 to 8% slopes	*22*		
DuuC	Dunellen-Urban land complex, 8 to 15% slopes	*18*		
DuuD	Dunellen-Urban land complex, 15 to 25% slopes	*5*		
	Total Dunellen-Urban land complex		*48*	
	TOTAL DUNELLEN SOILS			*63*

Symbol	Soil Classification	Harrington Park Land Area %	%	%
UdwB	Udorthents, wet substratum, 0 to 8% slopes	*4*		
UdwuB	Udorthents, wet substratum-Urban land complex	*4*		
	Total Udorthents, wet substratum		*8*	
	TOTAL UDORTHENTS SOILS			*8*

Symbol	Soil Classification	Harrington Park Land Area %	%	%
RkrB	Riverhead sandy loam, 3 to 8 percent slopes	*1*		
RkrC	Riverhead sandy loam, 8 to 15 percent slopes	*4*		
	Total Riverhead sandy loam		*5*	
	TOTAL RIVERHEAD SOILS			*5*

Symbol	Soil Classification	Harrington Park Land Area %	%	%
PbuA	Pascack silt loam, 0 to 3% slopes*	*6*	*6*	*6*
PrnAt	Preakness silt loam, 0 to 3% slopes, freq. flooded*	*5*	*5*	*5*
FmhAt	Fluvaquents, loamy, 0 to 3 % slopes, freq. flooded*	*4*	*4*	*4*
UR	Urban land	*2*	*2*	*2*
	Open water	*7*	*7*	*7*

	TOTAL, ALL SOIL CATEGORIES:	***100***	***100***	***100***

* These three soil types are the only soils within Harrington Park that are considered to be hydric. Hydric soils are regulated by the State of New Jersey under its Freshwater Wetlands Act. There are no local ordinances in effect.

The following are descriptions of Harrington Park's soil types (classifications). The most common soil type found within the Borough (over 60%) is known as the Dunellen Soils, both loam and urban land complex. Every other soil type combined make up less than 40% of Harrington Park's soils.

1. Dunellen Soils

Of the approximately 63% of Harrington Park's surface soils that are made up of Dunellen soils, 48% is Dunellen-Urban land complex and 15% is Dunellen loam. The slopes of the Urban land complex range from 0% to 25% with 40% out of the 48% ranging from 3 to 15%. The slopes of the Dunellen loam are evenly distributed from 3% to 15%. Dunellen soils are well drained and loamy, moderately deep, highly acidic, and moderately erodible except in hilly areas where erosion potential is high. They also include a small percentage of Urban land and Pascack soils. The lower subsoil and substratum of Harrington Park's Dunellen soils contain thick layers of silt and very fine sand that are frequently saturated. The nearly level Dunellen Urban land complex soils are subject to frequent flooding and have a shallow depth to their seasonally high water table. The surface runoff rates for Dunellen soils range from slow on the flat slopes to rapid on the steep slopes. Permeability ranges from moderate to rapid. Frost action is considered to be moderate. The Pascack soils inclusions are hydric, and these are protected since they are indicative of the presence of freshwater wetlands. Harrington Park's Dunnellen soils can be found in the vicinity of the Borough's surface waters, including the Hackensack River, Dorotockeys Run, Blanch Brook, Pascack Brook, Tappan Run, and the Oradell Reservoir.

2. Udorthent Soils

8% of Harrington Park's surface soils are comprised of Udorthents, all of which are of the wet substratum subcategory. Half of those are classified as 0 to 8% slopes, and the other half urban land complex. The Udorthents have all been extensively disturbed to a depth of three feet or more, so the compositions of the surficial soils, as well as their rates of surface runoff, are variable. Udorthent soils are presumed to have been deep, poorly to very poorly drained, and prone to flooding and prolonged ponding. It is presumed that they were formerly wetland soils prior to their manipulation. Since they have been extensively disturbed, they no longer enjoy regulatory protection, as do hydric soils. Their substratums are mostly impermeable. The wet substratum Udorthents - Urban Land Complex soils can be found on low lying marine deposits, upland stream terraces, and flood plains. The wet substratum Udorthents can be found on upland stream terraces, drainage ways, and flood plains. The greatest concentrations of Udorthents within Harrington Park are located along Blanch Brook in the neighborhood of Brook Street, and then extending southward across Dean Street, Spring Street, Lynn Street, and extending southward to the Oradell Reservoir. Two other pockets can be found in the Bluefield Avenue, Lynn Street and Jay Street area, and along Livingston Avenue.

3. Pascack Silt Loam Soils (hydric)

The most common low lying soil type within the Borough, found in approximately six percent of Harrington Park's land area, is the hydric Pascack silt loam. Its slopes range from 0 to 3%. It is nearly level and somewhat poorly drained. These soils are generally found in the outwash terraces of the streams. In Harrington Park, the primary location they can be found is south of Brookside Village, surrounding the swim club, and extending down into the Borough's Green Acres land. The soil consists of silty and sandy mottled loams. Small percentages of this complex include very poorly drained and hydric Adrian and Preakness soils. Pascack silt loams have moderate to rapid permeability, and medium to slow surface runoff. They have a slight erosion hazard, are strongly acidic, and have a high frost action potential. The seasonal high water table can be found within 6 to 18 inches of the surface. Pascack silt loams are protected by the New Jersey Department of Environmental Protection by the Freshwater Wetlands regulations. In Harrington Park, however, a few smaller locations of the Pascack silt loam soils were fully developed prior to the enactment of these regulations.

4. Riverhead Sandy Loam Soils

Five percent of Harrington Park's soils are in the Riverhead Sandy Loam category. One percent has slopes ranging from 3% to 8%, while four percent have slopes ranging from 8% to 15%. These are low lying soils on steeper lands. Both subcategories are well drained. The gentler sloping of these soils are a dark brown sandy loam for the top 8", sitting atop a 26" subsoil comprised of gravelly sandy loam and gravelly loamy sand. The substratum is primarily sand. Their permeability is moderately rapid, and surface runoff is slow. They have only a slight erosion hazard. They tend to be acidic, and have a moderate frost action

potential. The more steeply sloping of these soils are a dark brown sandy loam for the top 6", sitting atop a 22" subsoil comprised of gravelly sandy loam and gravelly loamy sand. The substratum is a gravelly sand. Their permeability is moderately rapid, and surface runoff is medium. They have a moderate erosion hazard. They tend to be very acidic, and have a moderate frost action potential.

5. Preakness silt loam, 0 to 3% slopes, freq. flooded (hydric)

This category comprises five percent of Harrington Park's soils. They are hydric soils meaning that their interstices are filled with water rather than air. This soil is level, very poorly drained, and frequently flooded; and can be found in broad depressional areas on glacial outwash plains, lake beds and flood plains. In Harrington Park, wherever this soil has not been previously disturbed it is predominantly wetlands. However, much of these wetland soils were developed residentially prior to the NJ freshwater wetlands regulations of 1988. The soil consists of silty and sandy mottled loams. Also included within this classification are small percentages of hydric Adrian and hydric Pascack soils. Preakness silt loams have a moderately rapid permeability and slow surface runoff. They are only slightly erodible, strongly acidic, and highly susceptible to frost action; and they have a surficial seasonally high water table. Generally speaking, Preakness silt loams are protected by the NJDEP by the Freshwater Wetlands regulations. The undisturbed Preakness soils can be found around Pondside Park, in the water company property straddling Blanch Brook, and in the eastern and southern portions of Highland Park. The previously disturbed locations for these soils include the Borough's northwestern residential subdivisions.

6. Fluvaquents, loamy, 0 to 3 % slopes, freq. flooded (hydric)

To a slightly lesser extent, encompassing about four percent of the Borough is another hydric soil known as the Fluvaquents, loamy, 0 to 3 % slopes, frequently flooded. This loamy soil is nearly level and somewhat poorly to very poorly drained. It is generally found in flood plains, and is subject to frequent flooding. Fluvaquents have a moderate permeability, medium to slow surface runoff, and a high erosion hazard which is regularly replenished with new materials from receding flood waters. These soils are moderately acidic to neutral, with a high frost action potential. Fluvaquents are protected by the NJDEPE by the Freshwater Wetlands regulations. In Harrington Park, Fluvaquents make up the majority of the soils along the Hackensack River corridor.

7. Urban Land

The soils known as Urban Land cover approximately 2% of Harrington Park's land area. Slopes are gently sloping or level. This land has been so disturbed as to be unclassifiable. It has been extensively developed, and usually paved with impervious materials, resulting in a very rapid surface runoff. They can be found within and on the sides of broad outwash plains or stream terraces. The only pocket of Urban Land within Harrington Park can be found at the Harrington Park School site. The Borough's central business district is not characterized by this soil category, but rather falls within the Dunellen soil classification.

7. FLOOD PLAINS

A. Importance

The term flood plain describes the land which serves to temporarily accept and store excess waters caused by heavy rain storms. Flood plains are generally broad and flat, and are associated with arterial waterways which otherwise contain their waters within their banks under normal rainfall conditions. Flood plains provide the "elbow room" to temporarily control flood waters and minimize excessive flood water elevations during intensive events. When flood plains are encroached upon, flood water storage capacity is often reduced, flood water elevations are raised, and the likelihood of property damage and human injury can be greatly increased. Furthermore, since professionals accept both hydraulics and hydrology as inexact sciences, the consequence is that the full impact of an encroachment cannot always be accurately predicted. For example, flood plain encroachments can cause damage in the immediate vicinity of the encroachment, as well as downstream by virtue of elevated water surfaces and reduced detention volumes and times of concentration. Beyond this, encroachments can also cause flood waters to rise upstream, due to the constriction of what previously had been an adequately serving outfall.

Because flood plains are often and most desirably undeveloped, they frequently support vegetation that can survive periodic inundation, detain and reduce the velocity of flood waters, and filter silt and particulate matter from the storm water. These functions serve to lengthen the discharge time period and reduce intensities. This generally reduces the risk of a large slug of destructive flood waters, and cleanses the water thereby improving water quality and mitigating against downstream water quality degradation. Flood plains become part of the aquatic ecosystem, providing much in the way of wildlife habitats. Finally, due in part to the limitations on the land uses which they can support, flood plains offer vast recreational opportunities. Active recreational fields can be developed within flood plains since their presence does not compromise the functions of the flood plain, and because field usage is infrequent during storm events. Benign passive recreation can also take place within flood plains for similar reasons.

A flood plain consists of the floodway, the floodway fringe, and flood plains of varying theoretical storms. These are distinguished from one another by the frequency with which a storm causing flood waters of that magnitude can be expected to occur (e.g. once every 2, 5, 10, 50, 100, and 500 years, etc.). The generally recognized values of flood plains have caused them to be regulated through permit applications governed by the NJDEP via Flood Hazard Area Control Act (formerly known as the Stream Encroachment Permit Process). Furthermore, since flood plains are oftentimes coincidental with the most sensitive of surface waters (known as C-1 anti-degradation waters by NJDEP), they receive additional protection via the stringent New Jersey Stormwater Regulations buffer requirements for these waters. There are no local regulations governing either resource.

B. Methodology

Mapping of flood plains has been completed by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRM), which are not considered to be comprehensive on a site specific basis. The latest FIRM information is included on the NJDEP electronic database which was used for this ERI (see Figure #5).

C. Harrington Park

During the 1990's the State of New Jersey Planning Commission prepared and enacted the following publication: Communities of Place: The New Jersey State Development and Redevelopment Plan (State Plan, or SDRP). It makes strong recommendations with regard to flood plains. This plan is in the process of being replaced by a new advisory State Master Plan, and the flood plain recommendations are expected to be even more protective. In the discussion concerning Water Resources, the Plan recommends that development within flood hazard areas be prohibited, and further that some of the existing development situated within flood plains be acquired in order for its land to revert back into the flood plain. These recommendations contributed to the creation of New Jersey's Blue Acres program whose purpose is to acquire flood prone properties, demolish their structures, and return them to flood plain elevations. These efforts are supported by the ever expanding flood plains that appear on the regularly updated Flood Insurance Rate Mapping (FIRM) prepared and provided by the Federal Emergency Management Agency (FEMA). The SDRP goes on further to endorse some of the recommendations of the April 1982 New Jersey Statewide Water Supply Master Plan and its more recent Updates by recommending higher standards for the control of storm water runoff within watersheds than might otherwise be required.

Both of these documents are advisory rather than regulatory. However, for the first time in 2004 the State adopted the N.J. Stormwater Regulations which contain stringent regulations regarding both flood control and the protection of water quality, both of which directly affect flood plains. These regulations have since been updated and strengthened. Harrington Park has suffered from flooding too often in recent years as a result of older development that is present within and upstream of its flood plains. To the best of our knowledge, the only case of successfully employing flood plain management tools for the preservation of flood plain lands within Harrington Park came as a result of the settlement agreement between the Environmental Defense Fund (EDF)/Bergen Save the Watershed Action Network (SWAN) and the local water company (now known as Suez; formerly known as United Water Resources N.J.; then known as the Hackensack Water Company).

With a few exceptions, Harrington Park's flood plains are associated with and run in narrow corridors along the Borough's arterial waterways and reservoir. Flood plains within Harrington Park can be found associated with the following waterways and water bodies (see Figure #5):

1. Hackensack River. The central third of Harrington Park's western municipal boundary is defined by the Hackensack River. Its 100 year flood plain is confined in a narrow corridor along its length on both its sides, thereby keeping it separate from

and protecting the adjacent properties from severe flooding events. All neighboring properties are either residential or open space. The extremely narrow flood plain corridor and the virtual absence of any 500 year flood plain are indications that the river corridor was manipulated and narrowed in the past to accommodate development. This belief is further supported by our observations of the River's other flood plains both north and south of Harrington Park which in some places get quite expansive. These expanded areas were likely present in Harrington Park in the past as well. As we explained earlier, flood plains are important to provide relief valves to temporarily store flood waters during extreme rain events. No Hackensack River flood plains of any substance are present in Harrington Park, and therefore no Borough residential properties are threatened by its potential for flooding.

2. Dorotockey's Run. The 100 year flood plain of this major area stream varies considerably as it passes through the Borough from north to south, draining into the Oradell Reservoir. To the north of Blanch Avenue, it encompasses the entirety of the pond at Pondside Park and continues in a wide swath down to Blanch Avenue. It narrows somewhat as it traverses the private properties of Flint Terrace and Pondside Terrace. It then expands again to its widest dimensions as it passes through the Brookside Village condominium complex heading south of Blanch Avenue. It continues to narrow as it skirts the west side of the swim club, and then south to the railroad trestle passing along the east side of Lafayette Road residential properties. It does not inundate the Borough's Green Acres property to the east. The flood plain continues in a moderate width down to its Tappan Road culvert, then narrows slightly for its final run along the east side of Schraalenburgh Road to and through its culvert beneath Closter Road where it drains into the Oradell Reservoir. The rear of a few properties at the end of Kohring Circle and the adjacent townhouses are slightly adversely affected by this flood plain. The 500 year flood plain is almost non-existent, appears in only three small locations, and does not adversely affect any properties.

3. Oradell Reservoir. The flood plain of this artificial water body impoundment is far narrower than one might expect with such a large body of water. The reason for this is that the water levels of the reservoir are manipulated by the water company (Suez), and this is done independently at each of its reservoir water bodies. The manipulation is necessary to satisfy the company's cross purposes as explained in the surface waters section of this ERI. The Oradell Reservoir's 100 year flood plain affects water company property south and east of Livingston Avenue and Schraalenburgh Road, south of Parkside Road, and south of the Rockland Electric maintenance yard along Schraalenburgh Road. It also extends one finger up into Highland Park which is wooded and undisturbed. There is virtually no 500 year flood plain. The result is this flood plain does not adversely affect any properties.

4. Pascack Brook. Both the 100 year and 500 year flood plains of the Pascack Brook are confined to water company property south of the residential properties along Taylor Place. No other Borough properties are threatened by its potential for flooding.

5. Blanch Brook. This tributary of the Hackensack River and its sub tributary have 100 year flood plains that vary significantly in their expanses, and these represent the most problematic of all of Harrington Park's flood plains. They both also have relatively insignificant 500 year flood plains. The flood plain of the main brook affects water company property at its southern end. It then impacts one property along the east side of Lynn Street north of Walter Court. Going north it doesn't adversely affect any other private properties until it crosses Arthur Place where it expands onto the rear of the properties along the west side of Brook Street. This flood plain expands significantly further north in undeveloped water company property. It then expands over the rear of properties along the west end of the south side of Lee Avenue and the northwest side of the Lynn Street extension. Two properties along the west side of the Lee Ave./Lynn St. intersection are almost completely inundated by the 100 year flood plain. Even more problematic are the properties along both sides of the east end of Higgins Place, and those south and east of Herron Court, which are also inundated by this 100 year flood plain. One property south of Blanch Avenue and west of Higgins Place is significantly impacted by the 100 year flood plain. The 500 year flood plain affects a few properties in this neighborhood, but this is a rare occurrence. The sub tributary's flood plain extends to the southeast between properties along Walter Court and Brook Street, and terminates in undeveloped Borough owned property. This flood plain is not problematic. The larger flood plains in the undeveloped lands help to protect other developed properties.

6. Tappan Run. Tappan Run is a tributary of Dorotockey's Run. Its flood plain is expansive in Harrington Park, but it only adversely impacts the Brookside Village Senior Citizen condominium development along the south side of Blanch Avenue. It inundates the entire Brookside Village property. Fortunately, this three building multifamily development was constructed with underground parking and elevated first floors. Therefore the only areas that are adversely affected are the parking garages and storage rooms. Its flood area also extends into undeveloped water company property which does not cause any problems, but rather helps to protect other developed properties along its route.

8. FRESHWATER WETLANDS

A. Importance

The U.S. Fish and Wildlife Service defined freshwater wetlands for the purpose of their regulation by the U.S. Army Corps of Engineers (the Corps). They also mapped and classified the nation's wetlands, and this information is available on the National Wetlands Inventory maps (NWI). This project was performed for New Jersey from 1982 to 1984. It should be noted that these maps were prepared to planning level accuracy only and are not site specific.

Since that time, on July 1, 1988 after enacting the N.J. Freshwater Wetlands Act, the NJDEP attained co-permitting jurisdiction over freshwater (or inland) wetlands, along with the Corps. This Act prohibits any local ordinances governing wetlands. The State of New Jersey adopted the Federal wetlands definition with few modifications. This deliberate redundancy was done for the purpose of ultimately taking responsibility for the Federal program; which if successful would result in sole jurisdiction being awarded to NJDEP. This was accomplished in January of 1994 when New Jersey became the second State in the nation (Michigan was the first) to achieve such status. The entitlement granted by this jurisdiction is the right to grant and/or deny permits for work in or adjacent to wetlands. NJDEP has now completed its mapping of New Jersey's wetlands. The Bergen County maps became available to the public in the fall of 1993. The NJDEP maps were also prepared to planning level accuracy.

The Federal definition of wetlands is as follows:

"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year."

The definition of hydric soils is located in the Soils chapter of this Inventory. Hydrophytes, or hydrophytic vegetation, are defined as "any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content".

Hydrophytes are members of one of four classifications:

1. Obligate (essentially always found in wetlands, greater than 99% of the time);
2. Facultative wet (usually found in wetlands, 66% to 99% of the time);
3. Facultative (sometimes found in wetlands, 33% to 66% of the time); and
4. Facultative upland (seldom found in the wetlands, less than 33% of the time).

NJDEP modified the definition to state that, in most cases, all three of the above parameters must be met to be deemed a regulated wetland. This means that some wetlands under the federal definition that would have been regulated by the Corps would not be regulated by New Jersey. Offsetting this reduction in regulation, however, the NJDEP enacted more restrictive regulations governing activities in or adjacent to wetlands than is utilized by the Corps. For example:

1. In contrast to Corps regulations which do not apply to wetlands smaller than one acre, the New Jersey regulations have no minimum size threshold smaller than which a general permit would automatically be granted. New Jersey does have a limited general permit process similar to the Corps process however;

2. Excavation (removal) in addition to deposition (filling) of wetlands is regulated by New Jersey. The Corps only regulates deposition. This is an enormous difference since drainage basins and other elevation reducing activities would not be regulated by the Corps but is regulated by New Jersey;

3. Transitional Areas (buffers) are required to be preserved around most wetlands, varying in width depending upon the relative level of sensitivity, otherwise referred to as their "resource value". In order to make this determination, a classification system has been established wherein wetlands can be classified as either Exceptional Resource Value (requiring a 150 foot buffer), Intermediate Resource Value (50 foot buffer), or Ordinary Resource Value (no buffer required). The Corps requires no buffers, meaning that disturbance involving fill can take place right up to the edge of Corps wetlands without any requirement for a permit;

4. In New Jersey, there is a presumption that a practicable alternative to the proposed wetlands-disturbing action exists that would have less of an adverse impact on the wetlands; and the onus is on the Applicant to refute this presumption to qualify for a permit. The Corps has no such presumption;

5. In the case of an Exceptional Resource Value wetland, the Applicant must demonstrate that there is a compelling public need for the project which is more important than the desire to preserve the wetland; or that denial of the permit application would present an extraordinary hardship peculiar to the project; and

6. Mitigation (the creation of new wetlands or the improvement of despoiled existing wetlands) is an acceptable practice in some cases, with specific guidelines established for compliance. In addition, for sites where mitigation is either impossible or undesirable, a mitigation bank has also been established to receive contributions in lieu of on-site mitigation.

Wetlands serve a variety of functions, including flood control, erosion control, preservation of water quality, provision of abundant habitat and migratory rest area, groundwater recharge, recreational opportunities, environmental education, and aesthetics. The following is a quotation from the NJDEP Division of Coastal Resources, dated July, 1988:

"Once considered to be wastelands with little or no value, wetlands are now considered to be a vital link in human and natural ecology. Wetlands provide many important benefits including pollution filtration, flood water storage, soil erosion and sediment control, habitat for fish and wildlife, timber production and shoreline stabilization. They also offer unspoiled open space for the aesthetic enjoyment of nature as well as recreational activities such as hiking, fishing, hunting, photography, and environmental

education. Wetlands provide valuable habitat for endangered and threatened wildlife and vegetation.

"Wetlands can minimize the damage to downstream property owners by decreasing the velocity of floodwater and acting as a temporary storage basin. When a stream overflows its banks, it spreads horizontally into surrounding wetlands where the vegetation acts as numerous tiny barriers temporarily detaining the water.

"Along with controlling the flood waters, wetlands also serve to maintain water quality. They have a "self-cleaning" ability which, if not over-taxed, can filter, or take up, most pollutants from runoff before they enter an adjoining watercourse. In many respects, wetlands function much like sophisticated sewage treatment plants by removing nutrients and other pollutants prior to discharge to a waterway. This is done at no cost to the taxpaying public.

"A wetland acts as a sediment trap for soil erosion resulting from natural and man-induced activities. Increased development along a watercourse can hinder the wetlands capability to trap these sediments. Often special measures need to be taken to decrease the sediment runoff in urbanizing areas. Wetlands provide essential wildlife habitat as well. A large number of animals use wetlands from time to time for breeding, feeding, or refuge. All wetlands function in providing an important source of food for wildlife and represent a critical link in life cycles and food webs."

The wetlands delineations shown on the accompanying drawings (see Figure #6) do not represent accurate delineations. As stated in the Introduction chapter of this ERI and also this chapter's beginning, site specific delineations and classifications should be required for any site specific land use proposals. As is conventional for Planning Studies, the scope of this study was limited and did not allow for more accurate delineations.

B. Methodology

Since the NJDEP is the only agency currently having jurisdiction over freshwater wetlands within New Jersey, Harrington Park's illustrated delineations of wetlands were obtained from the NJDEP's electronic database (see Figure #6). The check on this information then was multi-faceted. First, the old National Wetlands Inventory (NWI) maps were consulted for consistency. Second, areas indicated as "wet" on the USGS Quad Sheets were compared and contrasted to the NJDEP maps. Third, the three parameters which determine the presence of wetlands were then individually examined as another check of the unsubstantiated delineation utilized for this ERI. These included hydric soils as inventoried by the Bergen County Soil Conservation District, the one-year flood plain as extrapolated from the FEMA FIRM maps (which is indicative of annual inundation), and the limits of the predominance of hydrophytic vegetation based upon spot checked general visual observations. Those areas which meet the criteria of most of the tests generally confirmed the NJDEP wetlands mapping delineated for this ERI.

The only modifications made by this consultant were to:

1. slightly modify the wetland limits by removing them from the few locations where development occurred after the wetland delineations were completed by NJDEP; and
2. add one field delineated isolated wetland from a subdivision application that was not identified by NJDEP.

C. Harrington Park

Harrington Park's wetlands (all are freshwater wetlands as opposed to coastal wetlands) are primarily found in five distinct locations as mapped by NJDEP. All five locations are associated with the Borough's arterial waterways and exist in their outwash plains. All of the Borough's NJDEP mapped wetlands are hydraulically connected parts of larger systems. It does not appear that any of these wetlands are naturally isolated. The importance of this finding is that any disturbance proposed for these wetlands is extremely unlikely to enjoy the protection of a statewide general permit that would allow its disturbance. Rather, an individual wetlands disturbance permit from NJDEP would be required with are difficult to justify. There is one wetland that was not mapped by NJDEP, but rather was site specifically delineated as a part of a 2007 subdivision application in the southwest corner of the Borough. This wetland is not currently hydraulically connected to any larger system. All are described below.

Harrington Park's wetland systems occur (see Figure #6):

1. Along and nearby the Dorotockey's Run corridor, north of Blanch Avenue:

    a. Surrounding all sides of the Pondside Park baseball field, and continuing south along the east side of the park road and north side of Blanch Avenue to the point of Dorotockey's Run's Blanch Avenue crossing; and
    b. Along the edges of Dorotockey's Run as it by-passes the Pondside Park pond along its west and south sides.

2. Along and nearby the Dorotockey's Run and Tappan Run corridor south of Blanch Avenue:

    a. Along both sides of Tappan Run from the Norwood border to its confluence with Dorotockey's Run;
    b. Throughout the open spaces south of Tappan Run and north of the Swim Club, then wrapping around the southeast and southwest sides of the Swim Club; and
    c. Straddling both sides of Dorotockey's Run continuously south to the railroad overpass, then less continuously along Dorotockey's Run south of the railroad and again between Tappan Road and Closter Road. It is interesting to note that the remnant of an old spillway dam that was breached many years ago is the only evidence that an old skating pond once existed on the

north side of the railroad overpass that was known as the Old Mill Pond. Its breaching caused the open water body to revert to its prior flood plain and wetland condition that is now protected from disturbance by environmental regulations.

3. Along the Blanch Brook and tributary corridors:

    a. Wide spreading on both sides of Blanch Brook through the open space that interrupts Lynn Street;
    b. Along a narrow corridor surrounding Blanch Brook between Lynn Street and Brook Street backyards to its Lynn Street crossing;
    c. Along a narrow corridor surrounding its tributary between Brook Street and Walter Court backyards to its confluence with Blanch Brook; and
    d. Along a corridor surrounding Blanch Brook west of Lynn Street to its confluence with the Hackensack River.

4. Along the Hackensack River corridor:

    a. Straddling the Hackensack River corridor south of Beechwood Place to Hackensack Avenue;
    b. In the open space between Hackensack Avenue and Harriot Avenue;
    c. Extending into the water company property east of the river and north of Peat and Hazel Streets; and
    d. At the mouth of the Hackensack River where it outlets into the Oradell Reservoir, south of Harriot Avenue.

5. From Highland Park towards the easternmost lake of the Oradell Reservoir:

    a. Within the central woodlands of Highland Park between all of the ballfields; and
    b. Expansively throughout the water company property north of Livingston Street.

State Plan. New Jersey remains in a lengthy State Planning process with the intent of replacing Communities of Place: The New Jersey State Development and Redevelopment Plan (State Plan). There are no reliable projections of when this updating initiative might be completed. Nevertheless, the current State Plan has rarely been utilized over the past few years, leaving New Jersey without an effective Statewide master plan. However ineffective it may be, we have chosen to refer to the State Plan in this instance because it is the most recently adopted Plan that addresses the environment on a State-wide basis. Within this plan, none of Harrington Park's wetlands were designated as "Critical Environmental Sites" (CES); however almost all of them have been included in of the Environmentally Sensitive Planning Area (PA 5). The State Plan defines CES's as being equal in environmental value to lands of PA 5, except that they are smaller in size than the minimum size threshold of one square mile established for a Planning Area designation. Nevertheless, the State Planning

Commission has provided the same level of protection for CES's as is afforded to PA 5 properties. Such a designation could have value in protecting valuable natural resources outside of PA 5. Nominations were formerly initiated by Environmental Commissions and endorsed by governing bodies during a State Plan review cycle. Due to its current status however, we do not believe another such review cycle will take place.

Canopy Variations. With few exceptions the wetlands observed within the Borough are characterized by wooded, deciduous hardwood, closed canopy vegetation. A few canopy openings can be found, but these are the exception. The closed canopies represent the mid-range to drier end of the wetland spectrum; and this observation is typical for the developed suburbs of Bergen County. The freshwater wetlands considered to have the highest ecological value are those with open canopies and emergent herbaceous vegetation. This is because such wetlands support and sustain the highest density of habitat and life species than any other environment. The only places open canopy wetlands have been observed in Harrington Park are periodic locations along Dorotockey's Run north of the railroad overpass, along the Hackensack River for short distances both north and south of Harriot Avenue, and in the outwash plains of the Pascack Brook for its limited run within the Borough. Nevertheless, many believe that due to the predominantly developed nature of Bergen County, all of these wetlands - both open and closed canopy - exhibit especially high ecological values as compared to similar wetlands that can be found in more rural areas. This is because their relative rarity, in addition to their documented ecological values, renders these wetlands that much more valuable.

Ordinary Resource Value. Not mapped by NJDEP are the drainage ditches, swales or detention facilities that meet the three parameter NJDEP definition of wetlands. These would all probably be classified (see Chapter 8.A of this ERI above regarding NJDEP's classification system) as Ordinary Resource Value wetlands.

Isolated Wetlands. Also not mapped by NJDEP are smaller hydraulically disconnected (or isolated) wetlands. We are only aware of one of these within the Borough that was site delineated during a subdivision application in 2007, and it exists in the backyard corners of two lots fronting on Pascack Avenue. We believe this presently isolated wetland was at one time hydraulically connected to the Pascack Brook wetlands, but became disconnected and isolated as a result of the fill required during the development of the Taylor Place residential cul-de-sac. As it now stands, however, this wetland could meet the criteria for a Statewide General Permit, thereby allowing it to be disturbed.

Intermediate Resource Value. It is also likely that most all of the wetlands that are mapped on Figure #6 would be classified as Intermediate Resource Value wetlands. This is notwithstanding the fact that many of the Borough's wetlands have development existing right up to their edges without the benefit of any transition area. These wetlands more than likely previously received Army Corps of Engineers permits for their manipulations and much of the disturbance that is evident took place prior to NJDEP taking over the State's wetlands jurisdiction. In each of these cases, however, the severity of degradation has not been significant; and the value derived from the type of reclamation that utilizes recognized mitigation techniques would be high since these cases are integral parts of larger systems.

This rationale is presented in this ERI because there has been precedent for classification as Ordinary Resource Value as a direct result of environmental degradation, and such designations are not desirable from ecological preservation perspectives.

Exceptional Resource Value. In contrast, several of the Borough's wetlands could potentially be classified as Exceptional Resource Value due to their upstream location from the region's drinking water reservoir. Precedent has been set for this action in nearby Cresskill on their High School site for the Tenakill Brook despite the brook having been determined to be severely polluted. This highest level classification was intended to be reserved for wetlands associated with trout production waters, and those used for breeding and nesting by threatened and endangered species. We know that Harrington Park has no trout production waters. We also know that there have been several documented sightings and findings of threatened and endangered species within Harrington Park. None of these species have been officially documented to breed or nest within the Borough by NJDEP however (see Chapters #11 Wildlife and #12 Upland Vegetation of this ERI). This distinction is an important criterion for warranting an Exceptional Resource Value classification. Nevertheless, as cited in Cresskill above, exceptions to these criteria have been noted within Bergen County. The expectation, however, is that the overwhelming majority of Harrington Park's wetlands would ultimately be classified as being of Intermediate Resource Value.

Resource Value Implications. As discussed above in Chapter 8.A of this ERI, the importance of the Resource Value discussion lies in the Transition Area (buffer) which will be required to be maintained around these wetlands. As previously discussed, Exceptional Resource Value wetlands require buffers of 150 feet. Buffers of 50 feet are required to be maintained around Intermediate Resource Value wetlands. Ordinary Resource Value wetlands have no transition area requirement. It should be noted that waivers from these regulations and transition area averaging techniques are frequently approved by NJDEP.

9. SURFACE WATERS, HYDROGRAPHY & WATERSHEDS

A. Importance

Benefits. Surface waters provide many benefits to man and the environment, some of which include storage area and transportation for storm water, recharge of aquifers, potable water supply, habitat availability for aquatic species, nesting and resting opportunities for avian species, recreational opportunities, and aesthetic value. The extensiveness of the values which they offer justifies their protection and preservation.

Forms. There are many forms of surface waters, including both water bodies (e.g. lakes, ponds, reservoirs, seas and oceans) and arterial waterways (e.g. rivers, streams, brooks and creeks). In general, water bodies are static, while arterial waterways are dynamic in that their water is always moving through to some other destination. These classifications reveal much about the character of the surface water, both in terms of how fragile a system it is, as well as its role within a larger system.

Water Bodies. Most often but not always, water bodies have an inlet and an outlet. These features allow water to move through water bodies, although usually at a very slow rate. As a result of this slow movement, water bodies are extremely sensitive to pollution and siltation, and if affected by these factors cannot do an adequate job of self-cleansing since the flushing characteristics are minimal. If they enter into a water body, silt and contaminants which are heavier than water generally settle to the water body's floor and remain there, with no means of escape. This creates adverse environments for bottom dwelling fish, and for the establishment of underwater life-giving vegetation. Contaminants which are lighter than water form a layer on the surface, spreading insidiously to the pond edges, adversely impacting the pond edge vegetation, which is usually considered to be the most environmentally productive vegetation of wetlands regimes.

Siltation. "Siltation" refers to the deposition of suspended sediments and soil silt particles into surface waters. Silts enter water bodies from upstream or upslope, and settle in the still water to the water body floor. As silt accumulates, the storage capacity of the water body (or volume of water which it contains) becomes reduced. Depending on its depth, as the water body then becomes shallower, sunlight may begin to reach the water body floor through the water. These conditions are then favorable for photosynthesis to take place, and this process promotes the establishment of an excess of water body floor vegetation. This excess of vegetation serves to trap an increasing volume of silt, exacerbating the condition described above and creating a vicious cycle. As the water body floor rises, more photosynthesis takes place, and floor vegetation eventually grows and begins to reach the water surface in the form of lily pads and other such vegetation.

Eutrophication. This process, known as "eutrophication", can also be caused by other means. For example, eutrophication can be caused by the over-application of nitrogen and phosphorus rich lawn fertilizers which get carried by surface runoff into surface waters, thereby promoting aquatic plant growth. The deposition of organic matter near the water's edge is another prime cause of eutrophication. Grass clippings and leaves leach nutrients into the surface waters as they decompose, further promoting aquatic plant growth. This adverse process can continue until the water body becomes choked off and oxygen deficient. This occurs as a result of a reduction in the available supply of dissolved oxygen due to the overwhelming demand. The water body then degrades, eventually reverting (or converting) into an emergent wetland. While emergent wetlands are valued ecological resources, their inadvertent or unintentional creation at the expense of also valuable open water bodies is not generally encouraged. Other conditions caused by eutrophication include a greater potential for flooding, the destruction of habitat, reduced dissolved oxygen levels, the degradation of the fish environment, and excessively high nutrient content in the water.

Arterial waterways. In contrast, arterial waterways are almost always in motion. Because of the rapid movement of water through waterways, they frequently have a high capacity for self-cleansing. This rapid movement also causes scouring of embankments, especially along horizontal curves of waterways. Unfortunately, scouring also promotes erosion and subsequent downstream siltation. Arterial waterways act as conduits for the transportation of suspended sediments, which are all too often a form of contamination. In some cases, waterways are intermittent, meaning that they flow only during high rain water seasons and major storm events, and remain dry the remainder of the year. Intermittent streams have a very small capacity for storm water volume and a low tolerance for flooding, and as a result are particularly sensitive to land disturbances which alter their hydrology. When this occurs, erosion usually ensues. The conclusion is that within the world of surface waters, water bodies are usually the "degraded", and arterial waterways are usually the systems that deliver the degrading constituents from varying upland sources.

Point Source Pollution. The sources of pollution which degrade surface waters (as well as groundwater and soils) are described as either point source or non-point source. Point source pollution is generated from a specific point, e.g. a pipe outlet, a sewage pump station, or an underground storage tank. The remediation of point sources of pollution is an important activity in reducing the contamination of our resources. But this is only a part of the problem.

Non-Point Source Pollution Non-point source pollution, on the other hand, is rather insidious in that its source can be anything from leaky vehicles traveling along roadways, to chemicals applied to lawns or sprayed in trees, animal waste, winter road salts, brake pad metals and construction sediments. Because its source cannot be isolated (since it is the collective product of many small sources), non-point source pollution is most difficult to control.

Regulations. The generally recognized values of surface waters of all types have caused NJDEP to regulate them via (a) the Flood Hazard Area Control Act (formerly the Stream Encroachment Permit Process), (b) the N.J. Stormwater Regulations which include the stringent regulations regarding C-1 (highest anti-degradation level) waters, (c) the Watershed Protection Act, and (d) State Open Waters protection, among other programs.

B. Methodology

The methodology employed for the Inventory of Harrington Park's surface waters, hydrography and watersheds included their mapping from record data obtained primarily from the NJDEP electronic database sheets (see Figure #'s 6 and 7). As a check, we inspected both the Yonkers and the Nyack N.Y.-N.J. USGS 7.5 minute quadrangles. Also consulted were 1980 aerial photographs obtained from the Bergen County Department of Planning and Economic Development, Google Earth aerial photography, and NJDEP freshwater wetland maps. This information was then generally verified in the field by personal observation.

C. Harrington Park

As discussed in the Importance section above, surface waters refer to both static water bodies and dynamic waterways. In both cases these are places where the water table reaches the earth's surface. This distinguishes surface water from groundwater. Wetlands are the transition area between these two classifications (see Figure #6). The term hydrography refers to the study of the types and behaviors of surface waters. The term watershed refers to a defined geographic area that ultimately drains into particular surface waters, generally separated by topographic ridges (see Figure #7). A watershed may also contain multiple sub-watersheds that drain into the tributaries of the main surface water prior to arriving at their next surface water.

Harrington Park is fortunate to be blessed with surface waters both within and surrounding the Borough that make up important features of its landscape. The Oradell Reservoir completely blankets the entire southern end of Harrington Park. It is one large water body broken into four smaller but substantially sized lakes. The only other water body of significance within the Borough is the pond within Pondside Park. Formerly there were two other water bodies that no longer exist. One was known as the Old Mill Pond along Dorotockey's Run on the north side of the railroad bridge. A breach in its dam combined with siltation from upstream disturbances caused it to revert into a wetland. The other was known as Bogerts Mill Pond along the Hackensack River by Harriot Avenue. This pond has now become a part of the Oradell Reservoir. All of the other surface waters within and travelling through the Borough eventually flow from north to south and drain into the Oradell Reservoir. Only the small tributary known as Tappan Run flows from east to west, draining into the Dorotockey's Run. The Hackensack River, Pascack Brook, and Dorotockey's Run are important regional arterial waterways. All three of these arterial waterways are publically accessible and could play more prominent roles in Harrington Park's recreational landscape.

The discussion in the Freshwater Wetlands chapter of this ERI pertaining to Communities of Place: The New Jersey State Development and Redevelopment Plan (State Plan, or SDRP) is relevant in this chapter as well. Harrington Park falls within two primary Planning Areas of the State Plan. As one might expect, the developed areas of the Borough fall within "PA 1 Metropolitan Planning Area" within which the State promotes smart growth and concentrated development. However, all of the Borough's surface water corridors that blanket the western, southern and eastern municipal boundaries fall within "PA 5 Environmentally Sensitive Planning Area". Technically PA 5 also includes the designation PA 11 for open water. This designation is a subset of PA 5. Development and disturbance are both discouraged in PA 5 and PA 11.

All of Harrington Park's surface waters, including both its water bodies and arterial waterways, are some of the most important surface waters in northern Bergen County. NJDEP has given them all its highest anti-degradation classification of C-1, albeit it of non-trout production status. This means that uses for lands within 150 feet of their tops of bank in all directions are severely restricted, and within 300 feet are also restricted and considered to be riparian buffers.

Water Bodies. Harrington Park has two water bodies and formerly had two other water bodies.

1. Oradell Reservoir. As stated above, the Oradell Reservoir comprises the entire southern end of Harrington Park's land area. It is one large manmade water body segmented four smaller but substantially sized manmade lakes, all of which are partly within Harrington Park. The Oradell Reservoir dam in the Borough of Oradell is the impoundment mechanism that created this reservoir that was constructed along the mainline of the Hackensack River, and each smaller lake is sustained by a controlling outlet culvert. Only the Oradell Reservoir's northeast spur, which extends into the Boroughs of Closter and Norwood, was constructed off of the Hackensack River mainline. Since this waterbody serves as the regional public water supply for almost 1,000,000 people and industry, it is closed off to public access except on rare occasions that are carefully controlled by the water company. Nevertheless, the Oradell Reservoir offers important ecological, habitat, scenic and passive recreational values.

The Oradell Reservoir is the terminal reservoir of Suez's water supply system. The other reservoirs within the system all eventually drain into the Oradell Reservoir. These include the Woodcliff Lake Reservoir and the majority of the Lake Tappan Reservoir in Bergen County New Jersey, and the northern end of the Lake Tappan Reservoir and the Lake DeForest Reservoir in Rockland County New York.

All of the water levels in each reservoir are carefully manipulated as necessary to satisfy the water company's cross purposes. By that we mean that Suez is charged with impounding and supplying sufficient water supply quantities and quality to all of its users. But Suez is also charged with two other important obligations. One is to provide sufficient downstream water flow during times of drought to maintain the ecology of the downstream riverine environment. The concern in this regard is that if the downstream flow drops to too low a level, the Hackensack River estuary limit (currently in the proximity of the Hackensack – River Edge municipal boundary) will migrate northward and upstream, thereby introducing brackish water into areas that have always only supported fresh water. This would have a detrimental effect on the river's ecology. The third obligation is to lower water levels during times of high water flow to limit flood damage to nearby properties, both upstream and downstream. Therefore the water company manipulates the outflow dam gates to achieve the proper balance. Suez knows that they can always lower water levels if they act in time to prevent flooding. Conversely, once the water has been released, its only replenishment can come from precipitation. The implications of anything less than high quality management can be quite serious.

The Oradell Reservoir watershed drainage basin encompasses approximately 113 square miles, and extends as far south as the headwaters of the Tenakill Brook in Tenafly, as far north as the headwaters of the Hackensack River in Haverstraw, as far east as the Palisades ridge from Alpine to Upper Nyack, and as far west as a

ridge which runs from Paramus to Pomona and Mt. Ivy. The water from this system serves 60 communities in most of Bergen County and parts of Hudson County, New Jersey. The population of this service area is in excess of 750,000 people. In addition to these resident customers, business and industry also depend on a clean and stable supply of potable water.

The Oradell Reservoir is primarily fed by the Hackensack River; but it is also fed by numerous other streams and brooks, as well as from overland flow. These rivers, streams and brooks which feed into the Oradell Reservoir are all now classified as C-1 anti-degradation by the New Jersey Department of Environmental Protection (NJDEP), which is its highest classification. Not many years ago these streams carried NJDEP's FW-2 Non-trout classification which was the second highest classification. This change in classification emphasizes the importance now placed on this water supply system. The water that eventually makes its way into the Oradell Reservoir picks up a variety of constituents along the way. These constituents can pollute the water, and must be removed prior to its distribution. Today, much of the lands surrounding the reservoirs and tributaries have narrow natural woodland buffers. The vegetation and soils of these buffers act as filters, removing many of the constituents of concern. Further contamination is removed by means of Suez's Haworth Purification and Pumping Plant along Lake Shore Drive, which purifies the water using an ozone process to meet State and Federal water potability standards. Monitoring takes place just downstream of the Oradell Reservoir dam.

Ironically, as a result of the protection these buffer lands have historically received, their ecological quality remains considerably higher than that of the other natural areas of Harrington Park. They support open space, general habitat, endangered habitat, riverine and palustrine wetland systems, flood plains, and sensitive intermittent streams. These resources are worthy of protection, and land management has proven to be the most effective means of accomplishing this objective.

Natural buffers around reservoirs and feeder streams provide early intervention into water quality degradation, for the benefit of water consumers as well as area ecosystems. Buffers and appropriate land use planning cleanse water more inexpensively, thoroughly and efficiently than do modern ozonation processes. Ozone treatment is a high level energy consumer, and targets most known contaminants. Buffers, on the other hand, are natural cleansing systems which can be assumed to cleanse known contaminants, disease-causing bacteria, and undiscovered contaminants as well. They also filter out particulate soils before they make their way into the water body. The Oradell Reservoir has suffered from some siltation caused eutrophy (see 9.A above) in the past. Beyond that, once buffers are removed, they cannot be readily replaced. Consumers subsequently become dependent upon mechanical and technological systems for water purification, and residents in general lose irreplaceable habitat and open space. With future population growth inevitable, larger volumes of water supply will undoubtedly be

required. It would be advisable for these eventualities to all be considered during long-range land use planning.

Oradell Reservoir

2. Pondside Pond. Pondside Pond within Pondside Park is a manmade pond that was constructed for both recreation and flood control purposes. Its outlet is controlled by a dam (outlet structure) that maintains water levels sufficiently to provide a recreational lake for fishing, viewing, and remote boating. No actual boating, primary contact (swimming or wading) is permitted. Wildlife, however, does have primary contact with this water body. It was constructed along the east side of Dorotockey's Run, just off the stream's mainline. It is fed by Dorotockey's Run through a clever partial diversion of water towards the pond, while the remainder of the Run's water remains in the main channel that skirts both the western and southern sides of the pond.

Pondside Pond is suffering from siltation accumulation. Significant levels of land development have taken place over the past quarter century or more within its upstream watershed. When this occurs, soil particles get carried in suspension downstream via the conduit known as Dorotockey's Run. Once they reach Pondside Pond, they settle to the bottom of the dam-controlled pond with no means of escape. This process has caused the pond to become threatened by eutrophy (see 9.A above). If this process is not halted and the pond becomes eutrophic, the hydric vegetation that has developed along some of the pond edges will migrate into the pond bottom as sunlight reaches deep through the water. It will then continue until the open water

body could convert into a wetland as did the Old Mill Pond many years ago (see below). If that were to occur, the Borough would lose an important recreational and scenic resource, and its stormwater control value would be diminished. Moreover, it would become regulated by the NJDEP as a freshwater wetland, and any desired modifications to restore it to an open water pond would become extremely problematic, and likely would be prohibited from a regulatory standpoint. This very occurrence took place in neighboring Old Tappan to their former skating pond in Stanaland Park. Dredging is a viable yet expensive solution. Additionally, there would be a concern about noxious constituents that might be excavated from the pond floor. If hazardous materials were to be discovered, there would be a reporting requirement on the part of the dredger and professional in charge, and any disposition of this material would be closely regulated and costly.

Pond at Pondside Park Photograph by Ken Kai

3. Old Mill Pond (historical former pond). This pond, also known as the Demarest's Mill Pond, no longer exists. It was formerly a dammed pond on the mainline of Dorotockey's Run, east of Lafayette Road and north of the railroad trestle that now bridges over the Run. This pond was a well-used recreation amenity in winter when people used it as their skating pond. Sadly, the dam deteriorated over time as storm water and silt rushed down the Run. Eventually the dam was breached, and the pond silted and emptied. When no repairs were forthcoming, a natural transformation into a freshwater wetland took place. If the Borough were to want to restore this pond to its former state, Harrington Park would need to obtain a Freshwater Wetlands disturbance permit from NJDEP.

Old Mill Pond and Dam

4. Bogerts Mill Pond (historical former pond). This pond also no longer exists. It formerly was on the mainline of the Hackensack River at Harriot Avenue, but it was subsumed into the Oradell Reservoir at the time of its construction.

Bogert's Mill Pond

Arterial Waterways

As discussed elsewhere within this ERI, all of the arterial waterways within Harrington Park eventually drain southward into the Oradell Reservoir. The Oradell Reservoir itself is one of three on-line reservoirs of the arterial Hackensack River, which itself eventually drains into Newark Bay in the City of Newark. The other two on-line reservoirs of the Hackensack River are the Lake Tappan Reservoir and the Lake DeForest Reservoir. The significant arterial waterways and their in-Borough watersheds within Harrington Park include:

1. Hackensack River. The central one third of Harrington Park's western municipal boundary is defined by the Hackensack River. It enters Harrington Park from the west just north of Pine Place after having been the natural municipal boundary between neighboring River Vale Township and Old Tappan Borough and forms Harrington Park's municipal boundary with River Vale. From Hackensack Avenue it then continues to run south within Harrington Park's borders, beneath a Harriot Avenue bridge at the site of the former Bogert's Mill Pond, along the east side of Bogert's Mill Road, until it drains into the Oradell Reservoir north of Old Hook Road. Along its approximately 1.3 mile long route within Harrington Park it is joined by the Blanch Brook other small unnamed tributaries, dropping only about five feet in elevation through the Borough. The Hackensack River passes through only one culvert/bridge at Harriot Avenue within the entire Borough. This is an important river from a regional standpoint. Its headwaters begin in Haverstraw in northern Rockland County, and it drains into Newark Bay. Along its route it is joined by several tributaries, including both the Passaic River and Overpeck Creek. It is also the main arterial waterway that passes through the Hackensack Meadowlands and feeds those brackish wetlands.

2. Dorotockey's Run. This stream enters Harrington Park as it flows out of the north from neighboring Old Tappan Borough in between North Colonial Drive and First Street. Dorotockey's Run has its headwaters in Orangetown, New York, and its outlet is the Oradell Reservoir by Closter Road. In between it cuts from north to south through the entire Borough of Old Tappan. Along its approximate two mile Harrington Park route it drops approximately 10 feet in elevation, and is joined by the Tappan Run tributary. Within Harrington Park it both feeds and skirts the west and south sides of the pond in Pondside Park. It then runs due south along the east side of Lafayette Road and Schraalenburgh Road before emptying into the reservoir. It passes through the former Old Mill Pond off Lafayette Road. Dorotockey's Run passes through culverts or under bridges twice within Pondside Park (not including private pedestrian bridges from residential properties to the west), Blanch Avenue, the swim club drive, the railroad bridge, Tappan Road and Closter Road.

3. Pascack Brook. The Pascack Brook is a major waterway in northern Bergen County. It enters Harrington Park in the Borough's southwest corner, north of Old Hook Road and west of Bogert's Mill Road, after having been the natural municipal boundary between neighboring River Vale Township and Emerson Borough. Its

headwaters are in Spring Valley, Rockland County, New York, and its outlet is the Oradell Reservoir on the east side of Bogert's Mill Road. Along its route it passes through Nanuet, Chestnut Ridge, and Pearl River, New York; then through Montvale, Park Ridge, Woodcliff Lake (including the Woodcliff Lake Reservoir), Hillsdale, Westwood, River Vale, and finally Harrington Park in New Jersey. Its run in Harrington Park measures only about 0.2 miles without a measurable drop in elevation. Its only culvert/bridge in Harrington Park is at Bogert's Mill Road.

4. Blanch Brook. The Blanch Brook is a Hackensack River tributary, and a minor waterway entirely within the confines of the Borough of Harrington Park. Its headwaters are located in the back yards of Higgins Place and Lynn Street residents. It then drains southward into and through the Suez open space south of Higgins Place. From there it passes between the backyards of residential properties that front on Lynn Street and Brook Street. It then turns westward, and crosses beneath Lynn Street into the Suez owned open space just south of Beechwood Park. Blanch Brook then outlets into the Hackensack River after passing through this open space. Blanch Brook runs from north to south for only 0.9 miles, dropping approximately 10 vertical feet along its run. It's only culverts are beneath Arthur Place and Lynn Street.

5. Tappan Run. The Tappan Run is the only east to west flowing stream in the Borough. Its headwaters are located in Northvale, where it then flows through Norwood before entering Harrington Park. It runs for only 0.17 miles in Harrington Park without any measurable drop in elevation. It is a tributary to Dorotockey's Run, joining it near the southwest corner of the Brookside Village Condominium complex. It travels entirely through open space within Harrington Park.

Watersheds

As discussed in the topography chapter of this ERI that discussed drainage basins of the Oradell Reservoir, the Borough has two primary watersheds which are broken into several sub-watersheds. The larger of the two is known as the Hackensack River (Oradell to Old Tappan Gage) watershed which encompasses over 95% of Harrington Park's land area. Less than 5% of Harrington Park's land area in the extreme southwest corner of the Borough (along the southern end of Bogerts Mill Road, including Pascack Road and Taylor Place) falls within the Pascack Brook (below Westwood gage) watershed.

The Hackensack River (Oradell to Old Tappan Gage) watershed encompasses all of the arterial waterways of the Borough except the Pascack Brook. Each of the other four streams has its own sub-watershed. The Tappan Run sub-watershed is a part of the Dorotockey's Run sub-watershed, and the Blanch Brook sub-watershed is a part of the local Hackensack River sub-watershed. All of these join together into the Hackensack River (Oradell to Old Tappan Gage) watershed. The Pascack Brook (below Westwood gage) watershed stands alone without any local sub-watersheds.

The land uses within both watersheds are varied, ranging from suburban to exurban. Very small percentages of each watershed can be described as urbanized. The overall Hackensack River watershed extends as far north as New York's High Tor State Park in West Haverstraw, and as far east as the Palisades ridge. Its western extremity is the ridge line that separates it from the Pascack Brook watershed. This ridge line distinguishes the Northern Valley from the Pascack Valley. The Pascack Brook watershed extends as far north as Spring Valley, N.Y. and as far west as the Garden State Parkway. Both watersheds are situated within Watershed Management Area 5 (WMA 5).

Storm Drainage

The Borough of Harrington Park maintains a storm water drainage system that is independent from its sanitary sewerage system. The separation of those two systems favorably distinguishes Harrington Park and its neighboring towns from some of New Jersey's older urban areas. Storm drainage surface runoff is collected in this system and is conveyed directly into Harrington Park's arterial waterways without any pretreatment prior to its discharge. From a water quality perspective, Harrington Park's direct discharge system compares unfavorably with more contemporary methods of storm water discharge.

The N.J. Storm Water Regulations that were enacted in 2004 and subsequently updated require all N.J. municipalities to prepare a Storm Water Control Master Plan. One of the multiple purposes of this plan is for N.J. communities to plan contemporary water quality pretreatment methodologies (preferably through natural or non-structural means) for implementation over time so that pollutants aren't carried into the state's open waters through a direct conduit without pretreatment, as has historically characterized the State's systems. This program is intended to minimize the adverse impacts caused by non-point source pollution by filtering out pollutants before they reach open waters. Another of the purposes is to promote infiltration of storm water into groundwater reserves. This program is intended to reduce both storm water runoff discharge intensities and the need for more manmade attenuation facilities. Harrington Park's 2006 Stormwater Master Plan addressed both of these purposes by proposing several ordinance revisions intended to promote their objectives.

10. GROUNDWATER & SOLE SOURCE AQUIFERS

A. Importance

Groundwater moves through the geology of an area at varying depths, quantities and rates, and this science is known as hydrology. In wetlands, for example, the depth to the water table, or, in other words, to the top surface of the seasonably high groundwater level, can be zero feet. What this means is that groundwater levels have reached ground surface elevations, thereby saturating the underlying soils. In other areas, the depth to the water table can be several hundred feet.

In terms of quantity, where soils are relatively impermeable, air spaces are at a minimum and the relative quantity of water to soil is low. In contrast, where soils are rather porous below the water table, and especially where fractured rock geology exists, the ratio of water to soil particles can be extremely high.

The importance of groundwater is varied. Its depth can determine whether or not subterranean basements can be constructed, and if so the type of footing, foundation and subdrainage system which may be necessary. Depth to groundwater will also determine the general wetness of a parcel of land, with the extreme being the presence of regulated wetlands. Groundwater depth also supports water body elevations.

The depth to groundwater is also a determining factor as to how deep one would have to drill a well to reach an adequate supply of potable water. The flow of the groundwater is another factor in this determination. The direction and rate of flow is indicative of groundwater source, and hence the reliability of its quality and safe yield. "Safe yield" describes the maximum quantity which can be safely removed from a groundwater source without jeopardizing its quantity or quality. The contemporary terminology for this withdrawal is its sustainable rate. Groundwater quality can be influenced by the potential for salt water intrusion, geologic decomposition, and most often by the percolation of contaminants into the water table. Contaminants may be in the form of volatile chemicals, metals, petroleum products, landfill leachate, and raw sewage and salts, among others. The depth to and usage of groundwater resources also influences the acceptability of septic systems for the disposal of sanitary sewage.

With regard to well water availability for potable and industrial purposes, there are some geographic locations that are completely dependent on groundwater since they have few if any surface water sources from which to impound water such as is done in reservoirs by Suez (formerly United Water Resources and the Hackensack Water Company). Long Island, NY and Cape Cod, MA are two such notable locations. This condition is known as having reliance on sole source aquifers. Fortunately, Harrington Park is not such an area.

Because the value of good quality groundwater has been widely recognized, due in part to the deleterious effects of contaminated groundwater on water supply resources and general public exposure, agencies at many levels have promulgated regulations which govern groundwater monitoring and the remediation of its contamination.

Bergen County, which is largely located in the Brunswick Formation of the Piedmont Physiographic Province, has been notorious for its limited groundwater supply. This has spurred the development of extensive public surface water systems for potable water supply. Suez is one of the largest water purveyors, providing water to approximately 1,000,000 people in Bergen, Hudson and Rockland Counties, primarily from surface reservoirs.

B. Methodology

The information regarding Harrington Park's groundwater was discerned from the background that supports the geology, soils and watershed information contained elsewhere in this ERI. Since Harrington Park does not rely on groundwater for any of its water supply, rendering groundwater of little municipal importance, and since the subjects studied for this ERI were necessarily somewhat limited due to budget constraints, we agreed to not examine the NJDEP electronic database for this feature. All of Harrington Park's potable water supply comes from Suez, and therefore by definition the Borough does not support a sole source aquifer within its borders.

C. Harrington Park

Depending upon the nature of local soil conditions, groundwater and percolated surface water may move laterally through the soils, rather than infiltrating downward. This action usually occurs when groundwater levels are shallow, and when soils are impermeable or poorly drained. When lateral movement of groundwater occurs, or when the phenomenon of capillary action occurs, groundwater can seep into both surface waters and subsurface water supplies. Therefore, if Harrington Park's groundwater becomes contaminated, the potential for it to contaminate the Oradell Reservoir exists. The Oradell Reservoir is the source of water supply for the Borough and region, so this represents a public concern. Lateral movement of contamination could also affect the Borough's wetlands which also is a public concern. Fortunately for Harrington Park, its form of sewage disposal is by public sewerage rather than subsurface disposal, so this is not a contributing factor in the protection of the Borough's groundwater supply and wetlands.

As thoroughly discussed in Chapter 9 of this ERI, Suez supplies our potable water supply from its four reservoirs. The quality of this reservoir water has regularly met or exceeded NJDEP and USEPA standards for potable water, although periodically one or more of their parameters are exceeded. When this occurs UWNJ takes remedial actions to bring the water quality into compliance. These standards were promulgated by The Safe Drinking Water Act (SDWA). The federal Environmental Protection Agency (USEPA) is responsible for regulations for contaminants in water provided by public water purveyors. Similarly, the federal Food and Drug Administration prescribes regulations for contaminants in bottled water.

11. WILDLIFE

A. Importance

The health, population, and diversity of wildlife species within a community are indicators of the overall health, diversity and extent of the natural environment within the community. Both an extensive diversity of wildlife species and sustainable population levels indicate the presence of healthy habitats within which wildlife can thrive. These healthy habitats represent assets to man in that they provide environments which can promote clean air and water as well as tranquility and recreational opportunities. Furthermore, the presence of wildlife within a community presents educational opportunities. Bird watching and the observing of other wildlife are two of many opportunities to learn about the natural world which exists within and around us.

Certain species of wildlife are classified globally, federally or by the State of New Jersey as rare, threatened or endangered. These three classifications generally indicate that suitable sustainable habitat is scarce; and the implication is that the presence of these species within a community is indicative of the presence of some of this dwindling habitat, which is a positive ecological sign. Threatened and endangered species and their habitat are protected by State and Federal laws from harm or molestation by regulation. Hunting laws and restrictions are other forms of protection for wildlife.

B. Methodology

The methodology for determining the presence of wildlife within Harrington Park included referencing record data available from a few different sources. Personal observations of actual wildlife, their habitat and their tracks were also included, although none of these sources was very thorough. The organizations providing record data included the Bergen County Audubon Society, the New Jersey Audubon Society, and the NJDEP Office of Natural Lands Management of the Division of Parks and Forestry. The information collected by this latter group is included in the NJDEP electronic database, and locations where threatened or endangered species have been documented are known as Natural Heritage Priority Sites. While the two Audubon groups provide valuable information to the public, in order to protect the wildlife's habitat from human disturbance they do not make locations specifically available on a municipal basis. As a point of interest, the Bergen County Audubon Society periodically sponsors an "Audubon Adventures" curriculum which gets scheduled for presentation at a few Bergen County schools during the school year when run. This curriculum assists students in forming positive attitudes towards nature. This Bergen County group focuses on the avian species of wildlife. The New Jersey Audubon Society also emphasizes avian species, but addresses other wildlife as well.

C. Harrington Park

Urban Wildlife

Mammals commonly found in and around Harrington Park include a variety of species of what is commonly referred to as Urban Wildlife. These include a variety of species of chipmunk, deer, fox, mole, mice, muskrat, bat, opossum, rabbit, raccoon, shrew, skunk, squirrel, vole, and woodchuck. Bird species are likely to include varying species of Bald Eagle[1], blackbird, cardinal, catbird, chickadee, cowbird, creeper, crow, dove, duck, finch, flicker, gnatcatcher, goose, grackle, grosbeak, gull, hawk, heron (including Black-crowned Night-heron), jay, junco, kestrel, kingbird, kingfisher, martin, mockingbird, nuthatch, owl, phoebe, robin, sparrow, starling, tanager, thrush, titmouse, towhee, veery, vireo, vulture, warbler, waxwing, woodpecker, wren and Yellowthroat. Common reptiles and amphibians include varieties of bullfrogs, frog, newt, peeper, racer, salamander, skink, snake, toad, and turtles (including the Eastern Box Turtle[2]). None of these species are considered rare, threatened or endangered.

The majority of these species make their permanent habitat (otherwise known as occupied habitat) in northern New Jersey in general, and more specifically within Harrington Park. A few, such as the Bald Eagle have been documented to winter over in Harrington Park. Others, such as the veery, have documented sightings of breeding within the Borough. Finally, foraging activity has been documented for the Bald Eagle and Black-crowned Night-heron within Harrington Park.

Rare, Threatened or Endangered Species

The NJDEP Division of Parks and Forestry Office of Natural Lands Management maintains a policy of not revealing exact locations of sightings of rare, threatened or endangered animal species and wildlife habitat. This policy is intended to protect the valuable sensitive habitat upon which they depend. The Office maintains the Natural Heritage Database and the Landscape Project habitat mapping of all such documented sightings, and provides a listing of species. They do not provide exact location maps for the reasons cited above. The species identified for Harrington Park and their statuses are as follows:

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[1] The Bald Eagle was ranked as an "endangered" species until it was delisted and transferred to "threatened" species rank. Then, on June 28, 2007 it was removed from even this rank in the lower 48 states.
[2] The Eastern Box Turtle is currently ranked as a "Species of Special Concern".

Common Name	Scientific Name	Federal Status	State Status	Grank	Srank
Cooper's hawk	*Accipiter cooperii*		T/T[3]	G5[4]	S2[5] B[6], S4[7] N[8]
Northern copperhead snake	*Agkistrodon contortrix contortrix*		SC[9]	G5T5[10]	S3[11]
Red-shouldered hawk	*Buteo lineatus*		E[12]/T	G5	S1[13] B, S2 N
Snowy egret	*Egretta thula*		SC/S[14]	G5	S3 B, S4 N
Wood turtle	*Glyptemys insculpta*		T	G4[15]	S2

[3] Threatened species - a species that may become endangered if conditions surrounding the species begin or continue to deteriorate.
[4] Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.
[5] Imperiled in NJ 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.
[6] Refers to the breeding population of the element in the state.
[7] Apparently secure in state, with many occurrences.
[8] Refers to the non-breeding population of the element in the state.
[9] Special Concern - applies to animal species that warrant special attention because of some evidence of decline, inherent vulnerability to environmental deterioration, or habitat modification that would result in their becoming a Threatened species. This category would also be applied to species that meet the foregoing criteria and for which there is little understanding of their current population status in the state.
[10] Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species.
[11] 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.
[12] Endangered species - an endangered species is one whose prospects for survival within the state are in immediate danger due to one or many factors - a loss of habitat, over exploitation, predation, competition, or disease. An endangered species requires immediate assistance or extinction will probably follow.
[13] 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.
[14] Stable species - a species whose population is not undergoing any long-term increase/decrease within its natural cycle.

Notes:

1. Status for animals separated by a slash (/) indicates a duel status. 1st status refers to the state breeding population, and the 2nd status refers to the migratory or winter population.
2. **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 Division of Land Use Regulation, P.O. Box 439, Trenton, NJ 08625-0439. The Landscape Project was developed by the Division of Fish & Wildlife, Endangered and Nongame Species Program in order to map critical habitat for rare animal species. Natural Heritage Database response letters will also list all species (if any) found during a search of the Landscape Project. However, 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.

12. UPLAND VEGETATION

A. Importance

Upland vegetation exists in both undeveloped non wetland areas and in developed and ornamentally landscaped locations. For the purpose of this Environmental Resource Inventory, we shall concern ourselves with only the former, since the latter is often characterized by manipulated and unnatural associations, ornamentals and exotic species.

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

Undeveloped upland areas themselves provide opportunities for both active and passive recreation, as well as habitat for the proliferation and sustenance of wildlife. They often represent the watershed's upper reaches (or head waters) which supply potable water into our drinking water supplies. Activities within upland areas do not enjoy specific regulatory protection. The absence of these legal protections, in conjunction with the value associated with upland environments by both preservation and development interests, has spurred large scale protective activities such as what has recently taken place to the north and west of Harrington Park, within the Highlands Physiographic Province of New Jersey and New York (known respectively as the "Highlands" and "Skylands").

Some specific regulations do exist to regulate land use and other activities within uplands. At the State level, uplands that fall within wetlands transition areas are protected by the freshwater wetlands encroachment permitting process. Uplands that fall within stream corridors or flood plains are protected by the Flood Hazard Area Control Act (formerly known as the Stream Encroachment Permit Process). Uplands that fall within potable water supply areas enjoy certain protections provided by the Watershed Protection Act. In addition, if those water bodies are classified as anti-degradation level C-1 by NJDEP, the uplands that surround them are further protected by the buffers required by the N.J. State Stormwater Regulations. These buffers are very stringent. A 300 foot buffer from top of bank is regulated. Disturbance is prohibited within the first 150 feet. Within the second 150 feet disturbance is only permitted via permit with enhanced stormwater quality protection devices being utilized. In highly developed areas such as Harrington Park, however, the practical consideration of properties having been previously disturbed or developed frequently soften the C-1 requirements. Bergen County further regulates erosion and the control of sedimentation from uplands through the Soil Conservation District, which is an arm of the New Jersey Department of Agriculture. At the local level, Harrington Park enacted a tree protection and removal ordinance that governs activities pertaining to trees.

The vegetation itself provides a myriad of benefits to man and the environment. Many of these benefits have been discussed to some degree in other sections of this Inventory. To summarize, the benefits provided by uplands vegetation include the building and holding of soil, controlling moisture, cleansing the air, releasing oxygen while absorbing carbon dioxide, moderating temperature extremes, conserving energy, providing homes for wildlife, providing food source for wildlife and humans, buffering or screening views, attenuation of noise, providing aesthetic value, articulation of spaces, moderating bright light, dissipating strong winds, and timber production. It is important to note that most plants serve a variety of purposes. Since environmental conditions rarely exist in isolation, the functions of upland vegetation usually address these conditions in combination with each other, and are, therefore, multi-dimensional in their value.

One of the often overlooked but extremely valuable aspects of vegetation is its location within large contiguous tracts, in contrast to that which exists in smaller isolated parcels. Vegetation within large contiguous tracts provides significantly more ecological value than does the same acreage isolated into smaller disconnected blocks. The diversity of wildlife increases dramatically with the size and diversity of habitat. This is because most wildlife depends on safe cover for breeding, nesting, feeding and resting. These benefits to wildlife

are not always available on smaller tracts, particularly when they have been "intruded" upon by man. In this context "intruded" means that the presence of man often represents a threat, thereby minimizing the safe cover value of a particular location. Man also frequently clears brush from the forest floor, which while well intended is detrimental to wildlife which uses fallen trees, brush and rotting vegetative matter for its habitat. Since the ecosystem is comprised of the plant life, animal life, soils, air and water, it can only be sustainable if all of its components are accommodated and in balance. This dependence means that when any one of the components is adversely impacted, the entire ecosystem suffers as a result.

B. Methodology

The methodology for determining the presence of vegetative types within Harrington Park included personal observations, as well as referencing record data available from a few sources. These sources included Vegetation of New Jersey (Robichaud, Buell), and the NJDEP Office of Natural Lands Management of the Division of Parks and Forestry which maintains a computerized database of all such findings just as they do for wildlife. As is also the case with wildlife, certain species of vegetation are classified globally, federally or by the State of New Jersey as rare, threatened or endangered. These classifications indicate that suitable sustainable environmental conditions are scarce; and the implication is that the presence of these species within a community is indicative of exceptional quality local environmental conditions, which is a positive ecological sign. Threatened and endangered species are protected from disturbance by regulations under State and Federal laws.

C. Harrington Park

Many area communities further protect trees by enacting tree preservation and protection ordinances. An occasional community will also protect all of its vegetation in general, but taking that step is rare. Harrington Park's Chapter 350 Tree Protection and Removal ordinance is limited to trees on developable and sub-dividable lands only, although it mentions the Borough's concerns about other vegetation as well. Harrington Park's Chapter 350-73 Large Scale Clearing ordinance extends tree protections to single family lots within reasonable limitations. While other communities have the planting of replacement plantings as the primary objective of their ordinances, Harrington Park took a different and more ecologically sensitive approach. Harrington Park's Tree Preservation and Removal Ordinance states as its objective:

> *The purpose of this article is to discourage indiscriminate and excessive removal, cutting, and destruction of trees, and to encourage conditions and practices which prevent increased surface drainage, sedimentation and soil erosion, decreased soil fertility, post-construction mortality, and provide adequate revegetation of the area with appropriate species after construction. On relevant land, as defined herein, it is the intent of this article for the applicant's professional design consultants to prepare and submit plans which consider and place a design priority on the preservation of existing vegetation and, in particular, trees. It is the further intent of this article that roadway alignment, building placement, proposed grading, utility installations and other site improvements be planned and designed with the preservation of existing trees as a major consideration. The ability to maximize or increase development density shall not be a legitimate cause to justify relief from provisions of this article.*

Harrington Park's Large Scale Clearing ordinance then states as its objective:

> *It is the purpose of this section to control and regulate the indiscriminate or excessive removal, large-scale clear-cutting and destruction of trees associated with new construction on single-family lots, and to control and regulate and prevent conditions which cause an increase in storm water runoff, sedimentation, soil erosion, air or noise pollution or inhibit aquifer recharge or impair the ambiance or physical appearance of a neighborhood. The intent of this section is to limit the adverse impact of tree removal while not interfering with the right of a Borough property owner to appropriately remove trees in accordance with this section.*

Associations and Generations

The vegetation of the uplands of Harrington Park is typical of the northern New Jersey Piedmont Physiographic Province vegetation. General characteristics range from old fields to successional growth to dense forests. It varies to some extent as a product of its location in either water course valleys, on side slopes or on ridge tops, its orientation to the sun, as well as its proximity to the reservoir lakes. Forest heights within Harrington Park generally range from 50 to 120 feet. Natural vegetation has two primary common characteristics - - its succession or change over time, and its diversity or change in spatial composition.

The natural vegetation of Harrington Park is almost all at least second generation, meaning that it has been once disturbed or more. Forested areas, therefore, have been through at least one round of complete successional change, having reverted to forest from farm lands, fields, and red cedar dominated successional brush lands. First generation forests have never been disturbed and are rare in Bergen County. The primary exception in Harrington Park includes Beechwood forest, and perhaps may also include some of the forested areas along the Hackensack River north of Eastbrook Road.

Most of the uplands forests of Harrington Park are classified as Mixed Oak Forest of the Mesic North Jersey Uplands. The predominant tree species include red, white and black oaks. Other trees which characterize these areas to a lesser extent include chestnut and scarlet oaks, hickories, red and sugar maples, ash, beech and tulip tree. Common understory trees include dogwood, hop hornbeam and sassafras. Native shrubs are dominated by viburnum and spicebush. The uplands forests of Harrington Park which populate moist and cooler sites, in ravines or on steep lower north-facing slopes, are classified as Hemlock-Mixed Hardwoods Forest of the Mesic North Jersey Uplands. These forests are dominated by Canadian Hemlock[16], which is interspersed to a much lesser extent with sweet birch, yellow birch, basswood, beech, ash[17], red oak, sugar maple and red maple. The predominant understory trees and shrubs in the healthiest of forests include Shadblow, Black

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[16] While the Canadian Hemlock (Tsuga canadensis) formerly dominated these forests, they have been seriously attacted in recent years by the Wooly Adelgid, an aphid like bug that has smothered many hemlocks.

[17] Both the native White Ash (Fraxinus Americana) and Green Ash (Fraxinus pensylvanica) are currently being devastated by the invasion of the Emerald Ash Borer. This serious problem is being addressed on a regional basis.

Cherry, Ironwood, Chokeberry, Spicebush, Summersweet, Russian Olive, Grape Vine, and Willow. The dominant tree species surrounding the reservoir lakes is the White Pine[18]. While this is a native species, the water company specifically planted many of these trees around the reservoir in order to minimize the collection of deciduous leaves in the autumn.

Mixed Oak Forest

Botanical Name	***Common Name***
Quercus rubra	Northern Red Oak
Quercus alba	White Oak
Quercus velutina	Black Oak
Quercus prinus	Chestnut Oak
Quercus coccinea	Scarlet Oak
Carya ssp.	Hickory
Acer rubrum	Red Maple
Acer saccharum	Sugar Maple
Fraxinus americana	White Ash
Fraxinus pennsylvanica	Green Ash
Fagus grandifolia	American Beech
Liriodendron tulipifera	Tulip Tree
Cornus florida	Flowering Dogwood
Ostrya virginiana	Hop hornbeam
Sassafras albidum	Sassafras
Viburnum ssp.	Viburnum
Lindera benzoin	Spicebush

Hemlock-Mixed Hardwoods

Botanical Name	***Common Name***
Tsuga canadensis	Canadian Hemlock
Betula lenta	Sweet Birch
Betula lutea	Yellow Birch
Tilia americana	Basswood
Fagus grandifolia	American Beech
Fraxinus americana	White Ash
Fraxinus pennsylvanica	Green Ash
Quercus rubra	Northern Red Oak
Acer rubrum	Red Maple
Acer saccharum	Sugar Maple
Amelanchier canadensis	Shadblow Serviceberry
Prunus serotina	Black Cherry
Carpinus caroliniana	Ironwood
Lindera benzoin	Spicebush
Clethra alnifolia	Summersweet
Eleagnus angustifolius	Russian Olive
Vitus ssp.	Grape Vine

[18] White Pine (Pinus strobus)

There are very few scattered undisturbed stands which are remnants of the once predominant Sugar Maple - Mixed Hardwoods Forest of the Mesic North Jersey Uplands. These forests once existed in abundance in the areas which were the most prime for development, and hence have been extensively stripped of their natural vegetation. Those that do exist are dominated by sugar maple, but also possess significant stands of sweet birch, yellow birch, basswood, beech, ash, red maple, red oak, white oak and tulip tree. Common understory trees include hop hornbeam, dogwood, ironwood and sassafras. The shrub layer is dominated by viburnum and spicebush (all botanical names listed above).

To a somewhat disturbing extent the biodiversity of Harrington Park's upland vegetation has been compromised by the exotic intrusion of non-indigenous species. Fortunately, to a somewhat lesser extent than in some of its neighboring communities, the degradation of the forest health of Harrington Park is representative and typical of that which has taken place within suburban northeastern New Jersey. Air pollution and other forms of non-point source pollution have weakened native species to the extent that more competitive exotic and invasive species have established themselves within the woodlands, and in some cases have out-competed the indigenous species for dominance. Many of these plants invade by propagating from neighboring ornamentally landscaped properties. In Harrington Park, some of these invasive species include Winter Honeysuckle, Japanese Honeysuckle, Multiflora Rose, Japanese Barberry, Pachysandra, Norway Maple, Silver Maple, Tree of Heaven, Mulberry, Japanese Holly, Chinese Juniper, Forsythia, and Japanese Yew. This process can lead to the establishment of mono-culture forests that are severely lacking in good ecological quality and habitat biodiversity. Despite this common malady within the region, large sections of Harrington Park's forests can still be characterized as being of good overall forest health.

Botanical Name	***Common Name***
Invasive Species	
Lonicera fragrantissima	Winter Honeysuckle
Lonicera japonica	Japanese Honeysuckle
Rosa multiflora	Multiflora Rose
Berberis thunbergii	Japanese Barberry
Pachysandra terminalis	Pachysandra
Acer platanoides	Norway Maple
Acer saccharinum	Silver Maple
Ailanthus altissima	Tree of Heaven
Morus alba	White Mulberry
Ilex crenata	Japanese Holly
Juniperus chinensis	Chinese Juniper
Forsythia suspensa	Weeping Forsythia
Taxus cuspidata	Japanese Yew

Rare, Threatened or Endangered Species

The NJDEP Division of Parks and Forestry Office of Natural Lands Management maintains a policy of not revealing exact locations of sightings of rare, threatened or endangered plant species. This policy is intended to protect their valuable sensitive habitat. The Office maintains a computerized database of all such sightings, and provides a listing of species, as well as Index Maps which generally indicate areas where documented locations are known precisely, and where documented locations are known within 1.5 miles. Area maps were provided for the Harrington Park region on the USGS Yonkers NJ-NY Quad Maps to demonstrate the absence of any findings either in or near the Borough. They determined that no Natural Heritage Priority Sites are located in Harrington Park or in any adjoining communities. Neither precise nor approximate locations are known by NJDEP. More specifically, their statement of limitations is as follows:

> ***What is the Natural Heritage Grid Map?***
>
> *Through its Natural Heritage Database, the Office of Natural Lands Management (ONLM) documents the occurrence of rare plant species and rare ecological communities (rare plant species/communities) in order to inform decision-makers who need to address the conservation of natural resources. The Natural Heritage Grid Map is a geographic information system (GIS) file that provides a general portrayal of the geographic locations of rare plant species/communities for the entire state without providing sensitive detailed information. An associated data table (NHPDATA.DBF) may be linked or related to the main table in order to display information about the individual rare plant species/ community occurrences within any cell. By consulting the map, users can do broad scale analysis of potentially sensitive areas, and learn of specific areas where custom database searches are needed for land use decision-making.*
>
> *This file is not a complete record of rare plant species/community habitat for the state. It reflects data on known occurrences compiled as of* ***November 2009.*** *It includes both historically and recently documented habitat. Complete inventories of rare plant species/communities have not been performed throughout New Jersey. Areas both within and outside coded cells may contain unsurveyed habitat that is occupied by rare plant species/communities. This product will be updated on a periodic basis. For more information, contact the Office of Natural Lands Management.*

Specific Inventories

To our knowledge, there have been no local inventories conducted within Harrington Park Borough. The only vascular species inventory we have been able to uncover is that provided by the Office of Natural Lands Management from 2009, shown below. No federally or state protected plant species were included in their findings.

Harrington Park, Bergen County										
Vascular species findings, 2009										
Ver-sion	Class	Name	Com Name	Fed Status	NJ Prot	Reg Stat	GRank	SRank	Habitat	Preci-sion
Nov 2009	Vascular plant	Callitriche palustris	Marsh Water-starwort			HL	G5	S2[19]	Palustrine[20]	M
Nov 2009	Vascular plant	Callitriche palustris	Marsh Water-starwort			HL	G5	S2	Palustrine	M
Nov 2009	Vascular plant	Callitriche palustris	Marsh Water-starwort			HL	G5	S2	Palustrine	M

13. OPEN SPACE

A. Importance

Open space is a precious resource which, with the exception of its size, is not quantifiable in terms of its value. Extensive research has concluded that open space provides for the mental and physical health and well being of human beings, in addition to providing recreational opportunities. Some of the qualities associated with open space include peace, tranquility, aesthetics, and relief from urban and suburban congestion.

Open space also helps to define the sense of place, or unique identity, of a community. The open spaces of a community can create a recognizable vernacular which can be translated into a representation of the standards of the locality, against which proposed alterations to land uses can be measured. Precedent has been set for the usage of this as a yardstick for evaluating projected adverse impacts from development proposals.

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[19] Imperiled in New Jersey because of rarity (6 to 20 ccurrences). 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 occurences.

[20] A freshwater wetland which lacks flowing water

As was discussed in the Vegetation section of this Inventory, open space like vegetation similarly becomes more valuable in large contiguous tracts. All of the values of open space discussed above become enhanced as parcels grow larger in size. In some cases, long and linear contiguous stretches of open space are conducive to the development of greenways, or linear park corridors within which users may travel, and because of which other larger blocks of public open space and community facilities may be linked.

Open space in and of itself is not protected by regulatory authority, except as it may support other sensitive environmental features. There are two notable exceptions to this rule. First, if N.J. State Green Acres funds were used to purchase or improve open space within a municipality, as is the case within Harrington Park, then pre-existing publicly-owned open space cannot readily be the subject of disposition or usage for any purpose other than open space and/or recreation. Secondly and even more rigidly, if open space is zoned or has been dedicated as park land, and in particular if it was included on a Green Acres Recreation and Open Space Inventory (ROSI), it would take an act of the State legislature (the State House Commission) to either dispose of it or divert its use. Lands funded through the Green Acres program are open to the use and enjoyment of all residents of the State. Open space may also be protected by regulations concerning buffers for wetlands, flood plains, open waters, and C-1 waters.

B. Methodology

The open spaces of Harrington Park were first inventoried by the Borough's Environmental Commission in 2000 for the NJ Green Acres Administration (see 13.C below). This was completed for the purpose of bringing the Borough's Recreation and Open Space Inventory (ROSI) up to date. Doing so is a requirement of Green Acres for communities receiving funding assistance for open space and/or recreation purposes. No mapping was completed in this process. None of the mapping during any prior Master Planning or Zoning actions took on the mapping of these vacant land resources either. In 2008 during the Borough's affordable housing compliance efforts, a more complete inventory of vacant land was compiled by the Borough's Planning Consultant (see 13.C below). This inventory includes all vacant lands, whether they are dedicated as park land by the Borough or some other governmental authority, privately owned, non-dedicated and publicly owned, or Board of Education owned. Again, no mapping was prepared. Then, in May of 2015 the Borough Engineer corroborated the findings of the 2008 inventory of vacant land (see 13.C below). A few updates were made with regard to ownerships and reasons why they remain vacant. But the list of properties remained the same as it was in 2008.

C. Harrington Park

Open Space Tax. Harrington Park collects an Open Space Tax of $0.01 per $100 of assessed property value from its residents for the purpose of acquiring and improving its open space and recreation facilities. The imposition of this tax is also required for the Borough to qualify for certain N.J. Green Acres grant programs such as the Planning Incentive Program which has been quite successful and valuable to numerous area municipalities. To date Harrington Park has not applied for this grant. The imposition of

a municipal open space tax is also an important component of qualifying for grants from the Bergen County Open Space Trust Fund which Harrington Park has participated in.

Inventories. Initially for the purpose of its affordable housing planning, Harrington Park prepared two open space inventories. The first was prepared by the Borough Planning Consultant in 2008, and the second was prepared by the Borough Engineer in 2015. Both inventories found that the Borough has virtually no remaining open space land that is available for development. In contrast, however, the Borough is blessed by an abundance of protected open space that should remain in this state in perpetuity despite its unavailability for development. The following charts list both the publicly and privately owned vacant properties remaining within the Borough, including their locations, sizes, and development constraints. These charts were further updated by the Borough Planning Consultant in 2016.

Vacant Publicly Owned Properties

Block	Lot	Location	Acres	Development Constraint
101	23	99-109 First St	0.21	Stream bisects property; wetlands over east end
107	1	Lohs Place	23.02	Dedicated Park and Open Space
107	2	64-92 Lohs Pl.	0.88 / 0.44	Wetlands north end; 0.44 used for calculation
108	4	Blanch Avenue	1.3	Dedicated Park and Open Space
111	7	Blanch Avenue	9.83	Dedicated Park and Open Space
111	8	41 Blanch	0.05	Too small
111	9	Lohs Place	0.01	Too small
202	13	550 Lynn Street	0.56	Narrow strip of land
206	8.01	547 Lynn Street	0.04	Too small
401	1	Lynn Street	9.54	Dedicated Park and Open Space
401	17	Beechwood	0.32	Wetlands and stream on site
405	10	Arthur Place	0.59	Borough drainage land
406	6	Lynn Street	2.7	Borough drainage land
501	9	Lafayette Avenue	6.00	Protected by Green Acres ROSI
501	10	Lafayette Avenue	8.28	Protected by Green Acres ROSI
501	11	Lafayette Avenue	11.40	Dedicated Park and Open Space
604	7	Arcadia Ct-Area	0.22	No street access
604	12.01	Arcadia Ct	0.02	Too small
604	14.01	Tappan Rd	0.23	Narrow land locked strip
604	16.01	Tappan Rd	0.14	Narrow strip of land
604	17	Arcadia Ct	0.09	Too small and narrow
606	4.01	Rear of Carlton Ln	0.07	Too small, narrow land locked
702	2.02	Kline Street	3.33	Borough drainage land
704	2	331 Lafayette	0.08	Too small
707	1	52 Guy St	0.14	Drainage right-of-way
728	1	Dora St	0.21	Too small
805	13.11	Hackensack Avenue	0.33	Drainage corridor to Hackensack River
901	1	Hackensack Avenue	0.22	Dedicated Park and Open Space
901	2	Hackensack Avenue	2.97	Dedicated Park and Open Space
901	42	Harriot Avenue	14.19	Public school site & fields
903	29	Hackensack Avenue	0.52	Protected by Green Acres ROSI

903	30	Hackensack Avenue	1.16	Dedicated Park and Open Space
904	1	George Street	2.33	Dedicated Park and Open Space
904	15	Hackensack Avenue	0.26	Protected by Green Acres ROSI
908	19.01	Glen Ave West	0.08	Too small
911	1	Harriot Avenue	0.7	Dedicated Park and Open Space
912	19	Harriot Avenue	0.65	No street access
1001	16	Tappan Road	29.95	Dedicated Park and Open Space
1021	7	Kohring Circle	0.13	25 foot wide strip, C1
1202	1	LaRoche Avenue	0.565	Protected by Green Acres ROSI
1309	9	1 Carmen Rd	0.01	Too small
1317	5	146 LaRoche	0.14	Drainage right-of-way
1502	11	Right of Way	0.03	Right of way / too small
1504	1	423-441 Harriot	0.54	Narrow strip within roadway ROW
		TOTAL DEVELOPABLE PUBLIC LAND	**0.72**	

Legend: Shaded acreages are unavailable for development. Unshaded acreages are available for development to the extents indicated.

Vacant Privately Owned Lots

Block	Lot	Location	Acres	Development Constraint
110	8.01	Lohs Place	0.01	Too small
301	2	Lynn Street	57.08	Deed restricted Suez protected watershed
401	3	Lynn Street	9.2	Deed restricted Suez protected watershed
501	1	Lafayette Avenue	11.53	Deed restricted Suez protected watershed
501	2	Lafayette Road	0.90	Deed restricted Suez protected watershed
501	3	Lafayette Road	0.04	Deed restricted Suez protected watershed
501	6	Lafayette Avenue	23.30	Deed restricted Suez protected watershed
601	1	Railroad	1.61	Rail Road right of way
602	1	Railroad	4.73	Rail Road right of way
602	2.02	Railroad	0.24	Rail Road right of way
604	4	Cemetery-Tappan Rd	0.85	Cemetery
702	2.04	Brook Street	1.38	Contains Wetlands/United Water Prop.
801	1	Lynn Street	18.31	Deed restricted Suez protected watershed
801	7	No street access	1.84	Deed restricted Suez protected watershed
912	1	Harriot Avenue	24.62	Deed restricted Suez protected watershed
1001	15	Tappan Road	3.98	Rockland Electric Company utility corridor
1018	1	Livingston Street	1.83	Deed restricted Suez protected watershed
1019	1	Livingston Street	10.28	Deed restricted Suez protected watershed
1020	1	Highland Avenue	4.18	Deed restricted Suez protected watershed
1020	2	Highland Avenue	0.44	Deed restricted Suez protected watershed
1021	23	Closter Road	7.46	Deed restricted Suez protected watershed
1021	24	Closter Road	4.03	Deed restricted Suez protected watershed
1101	1	Livingston Street	26.78	Deed restricted Suez protected watershed
1201	1	Railroad	6.28	Rail Road right of way
1202	2	Railroad	0.97	Narrow Rail Road buffer
1207	1	Schraalenburgh Road	1.59	Deed restricted Suez protected watershed

1208	1	No street access	2.03	Deed restricted Suez protected watershed
1209	1	Schraalenburgh Road	26.98	Deed restricted Suez protected watershed
1301	2	Penn Central	2.25	Narrow Rail Road buffer
1320	17	South Avenue	0.97	Deed restricted Suez protected watershed
1404	1	Columbus Avenue	1.42	Deed restricted Suez protected watershed
1405	4	12 South Ave	0.34	Overland swale towards Oradell Reservoir
1405	5	15 Martha Road	0.43	Deed restricted Suez protected watershed
1406	1	Parkside Road	97.35	Deed restricted Suez protected watershed
1406	28	Cemetery-Old Hook Rd	0.06	Cemetery
1501	1	500-540 Harriot	8.37	Deed restricted County golf with wetlands
1503	1	Bogerts Mill Road	8.42	Deed restricted Suez protected watershed
1601	1	200 Old Hook Road	57.88	Deed restricted Suez protected watershed
		TOTAL DEVELOPABLE PRIVATE LAND	**0.34**	
		TOTAL DEVELOPABLE BOROUGH LAND, PUBLIC AND PRIVATE	1.07	

Legend: Shaded acreages are unavailable for development. Unshaded acreages are available for development to the extents indicated.

Included among the above list are some properties that are dedicated for or traditionally set aside and/or used for open space and/or recreation purposes by the Borough. The importance of this distinction from other undeveloped properties is that these properties are or can be expected to be protected from diversion for any purpose other than open space or recreation use by N.J. Green Acres deed restrictions. Those properties include:

Reserved Open Space and Recreation Properties

Block	Lot	Location	Acres	Name	Owner
107	1	Lohs Place	22.83	Pondside Park upper end	Harrington Park
108	4	Blanch Avenue	1.71	Pondside Park southern stream corridor	Harrington Park
111	7	Blanch Avenue	9.55	Pondside Park lower end (pond)	Harrington Park
401	1	Richard Court	9.76	Beechwood Park	Harrington Park
401	3	West of Lynn St.	9.09	Beechwood Park extension	Suez
501	10	Off Lafayette Rd.	8.27	H.P. Swim Club	Harrington Park
501	11	Off Lafayette Rd.	19.00	Trautwein Property	Harrington Park
501	9	Off Lafayette Rd.	6.24	No name	Harrington Park
702	2.02	Brook Street	3.35	Passive open space	Harrington Park
702	2.04	Brook Street	1.38	Passive open space	Suez
901	1	Hackensack Ave.	0.207	Parkland addition	Harrington Park
901	2	Hackensack Ave.	2.98	Park	Harrington Park
903	29	Hackensack Ave.	0.515	Park	Harrington Park
903	30	Off Hackensack Ave	1.18	Park	Harrington Park
904	1	George Street	2.39	George Street Park	Harrington Park
904	15	George Street	0.33±	George Street Park	Harrington Park
911	1	Harriot Avenue	0.79	Horsey Park	Harrington Park

1001	16	Tappan Road	28.984	Highland Field	Harrington Park
1202	1	LaRoche Ave.	0.565	Nutshell Park	Harrington Park
1404	1	Columbus Avenue	1.42	Play field	Suez
1404	1	Columbus Avenue	8.37	Valley Brook Golf Course	Bergen County
		TOTAL ACREAGE:	138.91		

The 9.76 acre Beechwood Park, identified above as Block 401 Lot 1, received special recognition from the New Jersey Audubon Society. On May 13,1993 Mr. Karl Anderson, Director of the N.J. Audubon's Rancocas Nature Center in Mount Holly, N.J., wrote the following after his walk through Beechwood Park:

> *"Many thanks for showing me around Harrington Park last week. Though small, Beechwood Park preserves the finest stand of mature beech that I've ever seen in New Jersey. I find it surprising that such a resource exists in an area that is as heavily developed as northeastern Bergen County. It should be treated with care and protected from overuse.*
>
> *Sincerely,*
>
> *Karl Anderson*
> *Director, RNC"*

Protection. Harrington Park has placed its publicly owned parks and recreation areas into a zoning category known as "Dedicated Park, Recreation and Open Space", and they are illustrated in this manner on the Borough's zoning map. There are no zoning regulations to accompany this zoning category however. Nevertheless, since these properties are held for this purpose and there have been no known movements to divert their uses, and since they are protected by N.J. Green Acres deed restrictions, this should not present the Borough with any concerns if such a movement arises in the future. The vision and intent of the community for these properties is specifically for parks and recreation. Through deed restrictions N.J. Green Acres protects all properties held for recreation and/or open space purposes in every town that has accepted their grant funding. This includes funding that was intended for either property acquisition or property improvement. It matters not whether the property directly benefitted from the grant. Therefore the highest level of protection for these properties currently is their inclusion within the Borough's Green Acres Recreation and Open Space Inventory (ROSI). Through the use of deed restrictions the ROSI encumbers properties from being diverted to any uses other than parks and recreation. Only the State House Commission can undo this restriction through the diversion process, and that process is onerous and costly. It should be noted that Harrington Park's ROSI (shown below) was last updated in January of 2000. It is the Borough's responsibility to maintain a current ROSI on file with the Green Acres Administration of the Department of Environmental Protection.

NEW JERSEY GREEN ACRES
Open Space Database

Facility Name: If followed by - DIV = parcel was entirely diverted; if followed by - P/DIV = parcel was partially diverted; and if followed by - COMP = parcel was a compensation piece for previous diversion.

Interest: CR: Conservation Restriction; Fee: Fee Simple; Lease: Leased land

Type: M - Municipal; C - County; N - Non Profit

County: BERGEN **Municipality:** HARRINGTON PARK BORO

Block	Lot	Facility Name	Interest	Type	Last Updated
1001	16	HIGHLAND FIELD	FEE	M	1/1/2000
107	1	LOHS FIELD	FEE	M	1/1/2000
108	4	PONDSIDE PARK	FEE	M	1/1/2000
111	7	PONDSIDE PARK	FEE	M	1/1/2000
401	1	BEACHWOOD PARK	FEE	M	1/1/2000
501	10	HP SWIM CLUB	FEE	M	1/1/2000
501	11	TRAUTWEIN PROPERTY	FEE	M	1/1/2000
501	9	N/A	FEE	M	1/1/2000
901	1	PARKLAND ADDITION	FEE	M	1/1/2000
901	2	N/A	FEE	M	1/1/2000
1202	1	NUTSHELL PARK	FEE	M	1/1/2000
903	29	PARKLAND ADDITION	FEE	M	1/1/2000
903	30	GEORGE STREET	FEE	M	1/1/2000
904	1	GEORGE STREET	FEE	M	1/1/2000
904	15	PARKLAND ADDITION	FEE	M	1/1/2000
911	1	TRIANGLE	FEE	M	1/1/2000

The above information is the Recreation and Open Space Inventory (ROSI) on file with Green Acres. Please note that Green Acres relies on the accuracy of the information provided to us by the Local Unit(s) in maintaining the accuracy of our database. Since it is the responsibility of the Local Unit(s) to ensure compliance with Green Acres rules, it is strongly recommended that you confirm this information with the Local Unit(s).

Water company lands. As stated in the opening paragraphs of this ERI chapter, Harrington Park is fortunate to have an extensive array of open space. Most of these properties (approximately one-third of Harrington Park's land area) are owned by the water company and are not available for permitted public access. Nevertheless, they serve important ecological and aesthetic purposes for the residents of this community. The water company

periodically opens its lands for limited public access, but this is only done under extremely well controlled conditions. Additionally, many of the lands owned by the water company are not fenced or protected against uninvited pedestrian access. Therefore, as a practical matter these unprotected lands serve much of the passive recreational needs of the community. The overwhelming majority of users of these lands act as good stewards, caring for and not despoiling the land. As a result, the water company does not actively enforce its anti-trespassing rights. Unfortunately there have been isolated incidents of property abuses, and these have threatened the continuation of the water company's lax policy enforcement. The Borough strives to educate its citizens of their responsibility for careful stewardship of these precious resources lest they no longer remain accessible, and overall these efforts have been very successful.

Suez owns one particular open space parcel known as Block 401 Lot 3 which is situated west of Lynn Street and south of Beechwood Park. This 9.09 acre open space was leased[21] to the Borough in 1998 by the then known Hackensack Water Company for 40 years to function as an adjunct passive open space to the Borough's 9.76 acre Beechwood Park. The lease makes specific mention of its intended use as an extension of the "Nature Trail" and for passive recreation. Together these parcels formally comprise an almost square shaped passive open space along the east banks of the Hackensack River that measures 18.85 acres. The practical reality is that the non-fenced water company properties continue contiguously further south for much larger acreages, extending all the way to Harriot Avenue and then into the Oradell Reservoir. The water company's non-fenced natural lands also continue on the north side of a residential subdivision north of Beechwood Park, also for much larger acreages.

14. ENVIRONMENTALLY SENSITIVE AREAS

A. Importance

Each category of natural resource addressed within this ERI has a threshold beyond which it is considered to: (a) be particularly sensitive to disturbance (sometimes referred to as "environmentally sensitive"); and (b) exhibit particularly valuable ecological benefits. It is professionally accepted that the lands which meet the criteria of being environmentally sensitive include wetlands, the 100 year flood plain, hydric soils, slopes which exceed 15 percent, surface waters, the habitats for threatened and endangered species, and reservoirs and their tributaries (see Figure #8). Most of the lands surrounding potable water reservoirs

[21] As negotiated by the Borough Mayor and Borough Professional Planning consultant, there was no charge for this lease to the Borough. The Borough assumed the responsibility for the property's care, and for the construction and maintenance of a nature trail. The water company retained the right to terminate the lease with 60 days written notice with just cause of the Borough not fulfilling its obligations.

and their tributaries are considered to be environmentally sensitive. The sensitivity of the land diminishes the more distant it is from the reservoir or tributary. Because of this recognized sensitivity, the State of New Jersey has promulgated regulations that govern land use around reservoirs and their tributaries. Many of these lands exist within Harrington Park. These lands are of concern to knowledgeable Harrington Park residents for multiple reasons. All surface runoff within the Borough makes its way into the Oradell Reservoir of United Water Resources, either directly or via C-1 anti-degradation classified brooks, and Harrington Park's potable water comes from this water system. But more generally, the entire Borough sits within the immediate Oradell Reservoir watershed, and the overall ecology of this Borough is integrally linked to the reservoir.

Many of the most severe of these categories have been recognized by means of their protection via State or Federal regulation, e.g. wetlands and flood plains. Others are monitored closely by the County, e.g. soils. Some municipalities have elected to protect other resources by municipal ordinances. One example includes the adoption of an environmental checklist to accompany development applications, for the purpose of obtaining full disclosure of expected environmental impacts. Environmental Impact Statement ordinances have also been adopted by some municipalities (not including Harrington Park) to fully and impartially explore development proposals' projected impacts, as well as to study reasonable alternatives and mitigation methods of expected adverse impacts. Other ordinances which have been enacted by municipalities include those for the protection of steep slopes and vegetation (trees in particular), and for the control of pesticide and herbicide use.

B. Metholology

The graphic that illustrates Environmentally Sensitive Areas (see Figure #8) in general are those areas considered to be environmentally sensitive as defined by the N.J. Permit Extension Act of 2008 which is still in force. Minor modifications have been made as results of personal first hand information. In general these areas represent the combining and overlaying onto one map the most serious of all of the natural resource features mapped and described elsewhere within this ERI. The value of this graphic is that it should serve as the first point of reference in the review of development and other land disturbance proposals. If the site of the proposal is included on this graphic, it should be considered "red flagged" and the reviewers should then look more closely at the individual ERI graphics to determine in which category or categories the concern may lay, i.e. where there is reason to believe sensitive natural resources may be present. This should then put the onus on the Applicant to provide site specific information, with references, targeted to those concerns.

C. Harrington Park

Criteria. The criteria for inclusion on this map exhibit are cited in the Importance sub-chapter above. As might be expected, those locations within Harrington Park that meet these criteria are concentrated along the Hackensack River and tributaries corridor, the Dorotockey's Run and tributaries corridor, and the lands in close proximity to the Oradell Reservoir. They can be viewed on Figure #8.

State Plan. Beyond this mapping, in 1992 New Jersey adopted a Statewide Master Plan to guide land use entitled Communities of Place: The New Jersey State Development and Redevelopment Plan (otherwise known as the "State Plan" or "SDRP"). This advisory plan has been twice revised since. On a state-wide basis with planning level accuracy, and with the assistance of participating municipalities on a voluntary basis[22], this document identifies environmentally sensitive areas that are critically important for all New Jersey citizens that are worthy of being preserved. This land category was identified along with other land categories of varying levels of acceptable development.

The Borough of Harrington Park falls predominantly within SDRP's Planning Area 1 (PA 1), otherwise known as the "Metropolitan Planning Area". One of the important policy objectives of Planning Area 1 is:

> *"Natural Resource Conservation: Reclaim environmentally damaged sites and mitigate future negative impacts, particularly to waterfronts, scenic vistas, any remaining wildlife habitats and to Critical Environmental Sites (sites that would be included within Planning Area 5 if they met the minimum size threshold) generally. Give special emphasis to addressing air quality concerns; provide open space and recreational amenities."*

The second largest SDRP Planning Area category within Harrington Park's is Planning Area 5 (PA 5), otherwise known as the "Environmentally Sensitive Planning Area". Perhaps the most important policy objective of Planning Area 5 is:

> *"Natural Resource Conservation: Protect and preserve large, contiguous tracts and corridors of recreation forest or other open space land that protects natural systems and sensitive natural resources, including endangered species, ground and surface water resources, wetland systems, natural landscapes of exceptional value, critical slopes areas, and other significant natural features."*

The smallest SDRP category of land within Harrington Park is SDRP 11, or "Water". This planning area is really a subset of PA 5. The SDRP recommends the protection and preservation of all surface water resources within the State, and therefore SDRP opposes any development uses within this Planning Area.

The SDRP also has another land area designation beyond Planning Areas that it uses to identify environmentally sensitive lands. This designation is known as "Critical Environmental Sites" (CES). SDRP defines CES's as being equal in environmental value to the lands within Planning Area 5. The only way they are differentiated is that CES's are smaller in size than the minimum size threshold (one square mile) the State Planning Commission established for a Planning Area designation. Nevertheless, the State Planning Commission has provided the same level of protection for CES's as is afforded

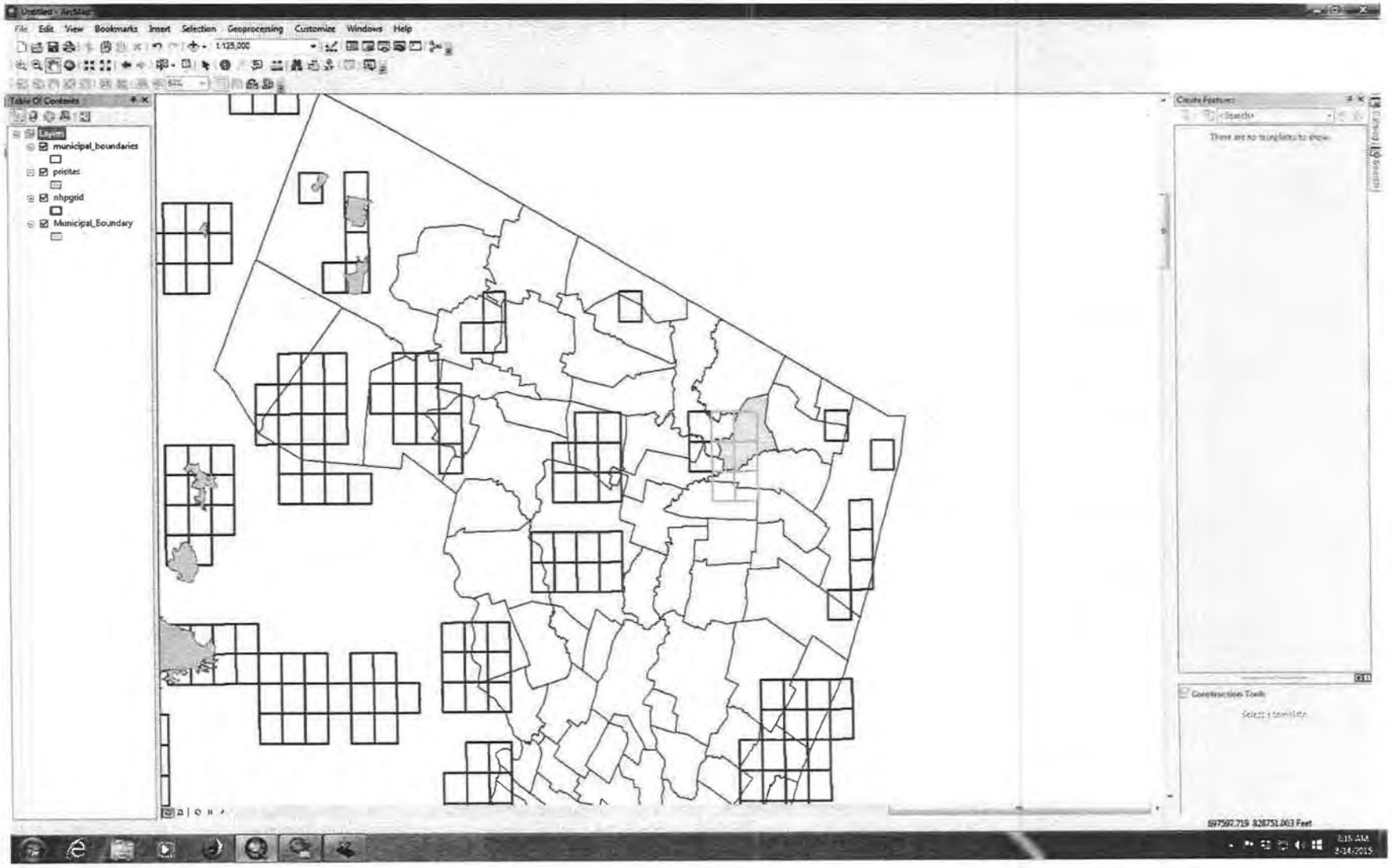
[22] While municipal participation in the SDRP Cross Acceptance process was voluntary, such participation advanced the municipality's standing for being awarded State grants.

to Planning Area 5. In order for one of these areas to receive this protective designation, it would have to be nominated by the municipality to the N.J. State Planning Commission via the Cross Acceptance Process. This process is administered by the various Counties; in Harrington Park's case by the Bergen County Department of Planning and Economic Development. No such locations within Harrington Park have either been so nominated by the Borough or officially designated as CES's by the State Plan. This is primarily because Harrington Park's environmentally sensitive lands are overwhelmingly contiguous with one another in blocks that exceed the one acre minimum size threshold. Furthermore, the SDRP process came to a halt several years ago and the State Planning process is once again being revisited. Among the policy objectives for CES's, which is virtually identical to that of PA 5, is:

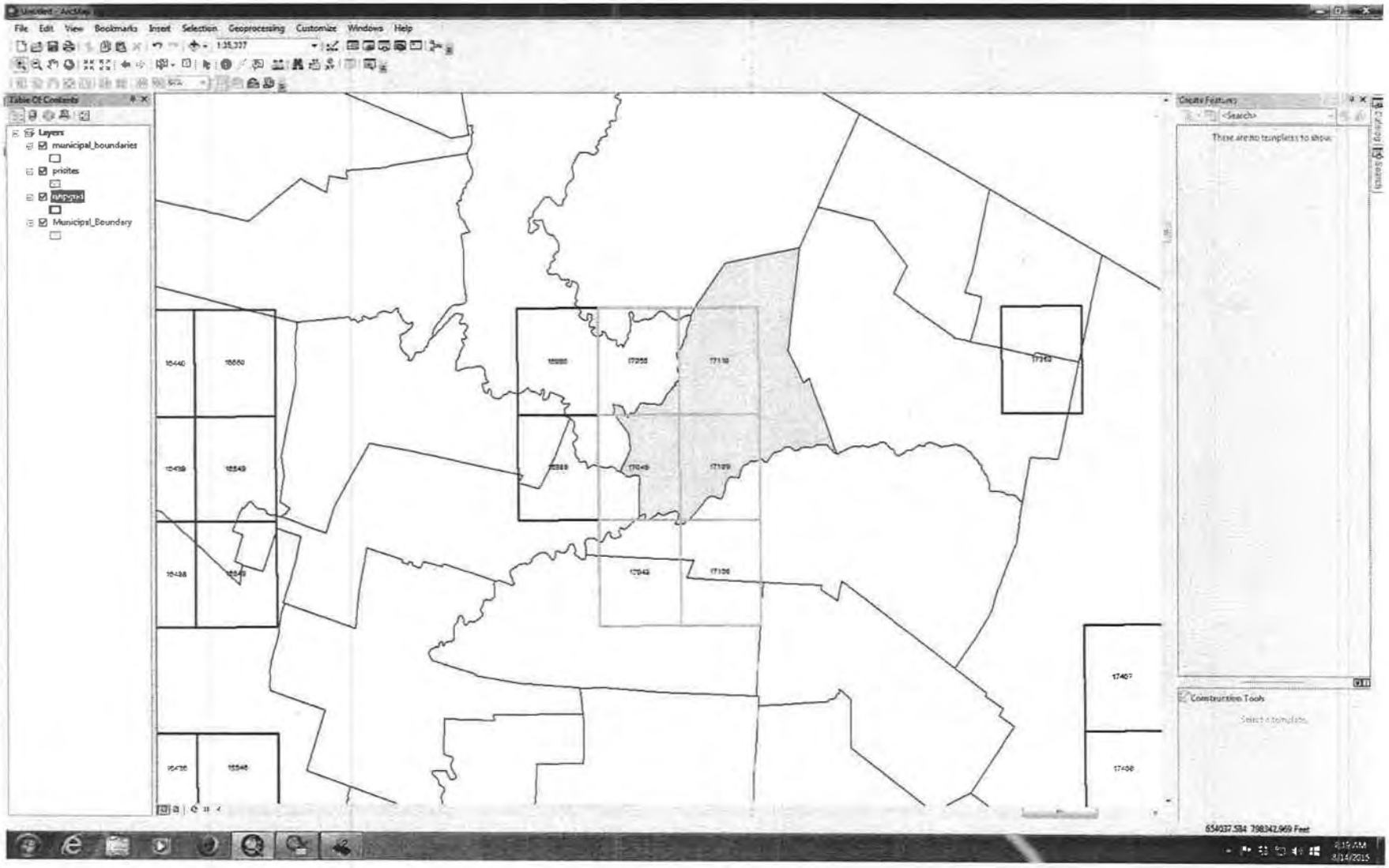
> *"Natural Resource Conservation: Protect and preserve large, contiguous tracts and corridors of recreation, forest or other open-space land that protect sensitive natural and cultural resources, including endangered species and, particularly, ground and surface water resources that are aquifers and serve as the head waters of many of the State's rivers and streams."*

* * *

Appendix



Natural Heritage Grid Map, Northern Bergen County Region



Natural Heritage Grid Map, Harrington Park Region

NEW JERSEY AUDUBON SOCIETY

Rancocas Nature Center
794 Rancocas Road, Mount Holly, NJ 08060 (609) 261-2495

May 13, 1993

John Carlton
168 Alexander Avenue
Montclair NJ 07042

Dear John:

Many thanks for showing me around Harrington Park last week. Though small, Beechwood Park preserves the finest stand of mature beech that I've ever seen in New Jersey. I find it surprising that such a resource exists in an area that is as heavily developed as northeastern Bergen County. It should be treated with care and protected from overuse.

Sincerely,

Karl Anderson
Director, RNC

Stewardship Recommendations

It is important to understand that this appendix in no way is intended to undermine the impartiality and/or integrity of the remainder of this ERI. As an inventory and not an action plan, this ERI neither supports nor opposes planned land use alterations or disturbances. Rather, this appendix is intended to advise the Borough of steps that can be taken to become better stewards of the natural resources that remain within the Borough.

A. GEOLOGY AND GROUNDWATER. Harrington Park could consider formulating and/or updating performance standards, guidelines, best management practices and regulations that would govern discharges, sewage disposal, pet management, property maintenance, and pesticide, herbicide and fertilizer applications. These actions would help to protect the groundwater as well as surface waters. HPEC could begin the process by disseminating information to the public about the importance of this resource and the need to protect it. It should be emphasized that one accidental spill or noxious effluent producer is not usually the primary culprit. Rather, quite often the worst source of groundwater contamination comes from non-point source pollution which is the cumulative impact of lawn chemicals and road salts and other noxious materials over large areas without definitive points of origin.

   Harrington Park could also implement and regularly update its Stormwater Management Plan which was prepared in response to the New Jersey Storm Water regulations. One of the primary benefits would be to diminish the pollutant load into the Oradell Reservoir that currently results from direct storm water discharges into the Borough's surface waters without pretreatment. Another benefit would be to replenish the groundwater supply.

B. SOILS. The Borough should be hesitant to permit any of the remaining non-urban land areas to be converted to urban land. It is understood that other higher level authority agencies have policies and jurisdictions which may force such conversions. This recommendation is twofold therefore. First, any lands over which Harrington Park maintains ultimate land use control can be prohibited from such conversion. Secondly, the Borough can object to any such conversions on lands over which the Borough does not maintain ultimate land use control, with the public good as its justification.

C. FLOOD PLAINS. Wherever the Flood Hazard Area Control Act (formerly known as the stream encroachment permit), storm water control (including C1 waters buffers) regulations and/or other statewide permits do not mandate land preservation themselves, the Borough may consider preserving the flood plains be through funding from programs such as New Jersey's Green Acres and Blue

Acres programs. Bergen County has an open space trust fund that may assist in the preservation of flood plain lands. The Federal Emergency Management Agency (FEMA) also has a Blue Acres program for the acquisition of flood prone lands. The Borough may also consider educating the public be as to the importance of flood plains, in order to encourage them to avoid deposition of materials within flood plains which: (a) are likely to be carried downstream during a future flood event, potentially degrading downstream water quality, or (b) may constrict the free flow of storm water potentially causing upstream flooding. Residents could also be made aware that the despoilment of flood plains, which includes increasing impervious area, reduces flood storage capacity potentially causing damage to structures and costing taxpayers money for elaborately engineered storm water control facilities.

D. WETLANDS. Some of the wetlands within Harrington Park are protected from development within park lands. The New Jersey Freshwater Wetlands Act of 1988 is expected to protect the wetlands not in park lands from disturbance and development. The only exceptions would be those degraded or isolated wetlands that may qualify for Statewide general permits. In addition to providing protection for wetlands and their transition areas within the State, the Act cited above prohibits municipalities from enacting their own local ordinances. In view of these restrictions, the Borough could be diligent about requiring development applicants to obtain a "Letter of Interpretation" from NJDEP. This is a State-generated opinion on the presence, extent and sensitivity of wetlands on or near a particular site.

Wetlands require protection from more than just developers. Wetlands are fragile yet extremely valuable ecosystems, and they should be protected from vehicular intrusions, from active recreation, and from the deposition of foreign materials. Often times, this latter action comes in the form of the disposition of lawn clippings by residents who dismiss this activity as discarding organic materials within organic woodlands, thereby rendering it acceptable in their minds. This is clearly not the case. Most of the ornamental grasses of manicured lawns are not indigenous plants. In contrast to other decaying organic matter which falls naturally within a wetland setting, the clippings of ornamental grasses offer neither wildlife habitat nor food source. Furthermore, grass clippings have often been treated with pesticides, herbicides, and high nitrogen-content fertilizers. When these clippings degrade, they create an unnatural organic mat that leaches high concentrations of organic matter, as well as the chemical constituents that were applied when it was a lawn. This contributes to contamination, and to oxygen deficiency in and potentially the eutrophication of surface waters. Concentrated grass clippings can also create an impermeable layer which inhibits groundwater recharge, and which smothers native plant seedlings. Therefore, Harrington Park may consider educating its residents about stewardship at the local level with a "Think Globally, Act Locally" campaign.

The Borough's Environmental Commission should examine some of Harrington Park's wetlands to determine if they should be nominated for designation as "Critical Environmental Sites" by the State Development and Redevelopment Plan, should that plan become active again. Such designations could have value in protecting valuable natural resources that aren't otherwise well protected. In the past, the Environmental Commission would initiate these nominations which would be endorsed by the governing body during an SDRP review cycle.

E. SURFACE WATERS. Point source pollution is a problem that can often be controlled by directing remedial actions at the sources of the pollution. The Borough should consider initiating a program whereby it ensures that the owners of all pipe discharges are in possession of a proper New Jersey State Pollution Discharge Elimination Permit (NJSPDES).

In contrast to point source, non-point source pollution is extremely difficult to control since its source cannot be isolated. The best method of non-point source pollution control is to educate those who could prevent its generation in the first place. Significant and beneficial reductions in non-point source pollution could be achieved if road crews would reduce the amount of salt used for winter roadway de-icing, and by using a less objectionable product than calcium chloride. Facilities such as golf courses could be required to practice Best Management Practices (BMP) by using only limited quantities of only organic fertilizers, and to limit the use of herbicides and pesticides. Residents could be convinced through education to follow the same BMP's for their properties as well. This would be particularly beneficial for those properties that are situated adjacent to open spaces and surface waters. Beyond this, developers could be required to follow BMP's for soil erosion and sedimentation control, including the installation of oil traps and catchments within terminal catch basins, by the use of biofilter drainage basins, and by strictly utilizing the methods included in the N.J. Stormwater Regulations (i.e. rain gardens).

In addition to the above measures, the natural pretreatment of storm water discharge through the construction of silt fences, sedimentation basins, infiltration basins, vegetated buffers, meandering grassy swales, and wetlands regimes are also beneficial. The Borough should be mindful of insisting on adherence to NJDEP's regulations regarding C1 waters and their buffers. In addition, integrated Pest Management procedures could also be followed which limit the use of pesticides, thereby minimizing non-point source pollution.

Since it is likely that much of Harrington Park's storm runoff is collected and conveyed directly into open water bodies without pretreatment, the Borough could require applicants to comply with its Storm Water Control Master Plan so that pollutants aren't carried directly into the state's open waters without pretreatment. The Borough could also initiate a program to retrofit its own public drainage outlet structures to comply with the State's regulations.

F. VEGETATION AND WILDLIFE. These two items go hand in hand because they depend upon each other for their survival and sustenance. For example, it would be difficult for wildlife to find food, shelter, safe cover, and suitable breeding and nesting grounds without healthy stands of native vegetation. Likewise, much of our vegetation depends on wildlife to spread their seeds for propagation purposes. Theirs are symbiotic relationships which result in large benefits to the overall environment.

In addition to the indisputable value of vegetation and wildlife of undeveloped open spaces, one of the most valuable and beautiful aspects of Harrington Park is the presence of vegetation and habitat which is interspersed within the Borough's developed areas, albeit it limited in its extent. While much of this vegetation is ornamental, large quantities are indigenous, native or naturalized species which inhabit the property lines between yards and developed properties. This mature vegetation is one of the most important factors that differentiate Harrington Park from other highly developed suburban towns. Native trees in general, and in particular along Harrington Park's streets, have the potential to represent a recognizable Harrington Park vernacular. For this reason among others, the vegetation of the Borough should be protected. This can be done by means of strengthened tree removal and land clearing ordinances.

G. OPEN SPACE. Through the use of NJDEP Green Acres grant funds, including Planning Incentive grants, as well as other open space funding acquisition funding sources such as Bergen County and private foundations, the Borough has the opportunity to acquire privately owned open space and potential open space lands for conservation and recreation purposes. Potential open space lands are those private properties that are marginally utilized and potentially available to acquire and add to the Borough's open space and recreation inventory. An important part of this emphasis should be towards lands that are either contiguous to larger blocks of open space and not otherwise protected, and properties that are situated in underserved portions of the Borough. Many neighboring and area towns have taken advantage of these programs to acquire land. In mostly developed suburbs, opportunities to preserve and expand open spaces are rare and may never again present themselves.

There are many planning techniques to achieve these objectives. Some are conventional and some are innovative. Examples of less expensive non-fee simple acquisitions are numerous. The Borough of Harrington Park could consider the purchase of conservation and/or recreation easements over certain properties. A conservation easement would allow the current property owners to continue to own their properties and use them for a variety of purposes, but would preclude their development. A recreation easement would permit public access onto the private properties for passive recreational activities, and would conserve the natural resources of the properties. Other techniques could include land donations, land trades, leases (i.e. Harrington Park's lease of the property

south of Beechwood Park from United Water Resources), current use assessments, municipal regulatory techniques, cluster zoning, and transfer of development rights. And on its simplest level, oftentimes more responsible and/or sensitive property management techniques can create the appearance of more open space (see Environmentally Sensitive Areas below).

From a land use planning perspective, the Borough could consider zoning open space and park lands within Harrington Park as such, as opposed to their current zoning classifications which generally conform to their adjacent building zones. Such an action would have a more permanent memorializing effect on the actions being taken by the current administration and environmental commission.

H. BROWNFIELDS (CONTAMINATED SITES). Since brownfields are not a significant issue in Harrington Park, they were not a topic undertaken in this ERI. Nevertheless, NJDEP maintains an inventory of such sites, and it would behoove the Borough to monitor the existing brownfields within its borders (if any) and other contaminated sites (a few exist) and take steps to promote their remediation. This can include taking such steps as (a) encouraging property owners to seek higher governmental authority assistance in their cleanup; (b) relieving development regulations for the redevelopment of and related fees for brownfield sites; and (c) becoming flexible in the land uses permitted for these sites so that they do not remain fallow. The Borough could monitor its current industries that are not brownfields to ensure that they do not become one. Also, the Borough can be cautious about permitting new industry into the community that has a history of generating brownfield conditions.

I. ENVIRONMENTALLY SENSITIVE AREAS. The nomination of Critical Environmental Sites (CES's) for the SDRP was scheduled to occur on a three-year interval, although that was never the State Planning Commission's actual practice. When this process was active, which it no longer is, they regularly fell behind that schedule. Now the entire process has become dormant while the State debates a replacement Statewide Master Plan. Nominations could only be made by the Governing Body of the municipality within which the resource was situated. Should this process return, the Borough should only consider nominating environmentally sensitive sites for CES designation that do not fall within SDRP PA#5 if they might be threatened by disturbances which may be planned. This process formerly was initiated by contacting the Bergen County Department of Planning and Economic Development which served as the intermediary, or liaison, between the State and its towns.

Municipal regulatory techniques can also be effective. For example, some communities enact environmental assessment and/or environmental impact statement ordinances that require the full public disclosure of existing conditions and impacts which could reasonably be expected to result from a development or disturbance proposal. These ordinances could also require the exploration of

reasonable alternatives and the provision of acceptable mitigation of expected impacts, and would be subject to the scrutiny of a public review process. As a compromise ordinance, those lands that appear on the Environmentally Sensitive Areas exhibit, and that are presented to the Borough as subjects of development or subdivision proposals, could receive further protection by the adoption of a local ordinance with the following requirements. The applicants for such a proposal could be required to prepare site-specific studies, more closely evaluating the location and extent of sensitivity for each natural resource which may be present on or adjacent to the subject site. Each applicant could then be required to project the impacts upon those resources that might reasonably be expected to result from their proposal, study and present reasonable alternatives to their proposals, and submit a plan for minimizing or mitigating anticipated adverse impacts.

Environmentally sensitive areas can also be protected by a more widespread acceptance of cluster development. The theory behind cluster development is that sensitive lands can be preserved by permitting higher densities on adjacent non-sensitive lands. Unless Harrington Park is presented with a large wholesale redevelopment proposal, this technique has little applicability in fully developed towns.

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