Tices Land Park - East Brunswick, NJ
Inventory & Analysis

Prepared in March, 2017

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2. SITE HISTORY

Archeologists cannot say for sure who the first human inhabitants of East Brunswick were, but there is evidence supporting settlement by the Native Americans known as the Lenape. In 1651 the Dutch purchased a large tract of land that included all of present day Middlesex County north of the Raritan, from the Lenape. Many of the trails that the Lenape had used to transverse the wilderness was widened by the Dutch and used for commerce. Some of these trials passed close to the present-day site of Tices Lane Park. New Netherland was established on the Raritan close to present day New Brunswick and settlement gradually expanded south.[1]

Beginning in the 1660s the first few Middlesex County Townships were founded, Woodbridge and Piscataway were the first two. Towns acted as the central hubs for farming initially before a slow transition to transportation of goods became the centralized feature of organization. Thomas Lawrence settled along present day Lawrence Brook on the northern side of what is now East Brunswick. The key location between New York and Philadelphia along with the convenience of the Raritan River, and the Lenape established trails, put Middlesex County in a position to attract settlers at a high rate. After more than a century and a half of power struggles, wars and the American Revolution, New Jersey became the first State to ratify the Bill of Rights and Middlesex County continued to establish new townships.[2] East Brunswick was still not formerly settled but continued to serve a key role in agriculture and transportation of raw goods.

After incorporating in 1860 and with the onset of the Civil War East Brunswick began to industrialize. Railroad networks were expanded including one the appeared to cut though, or very close to present day Tices Lane Park (TLP).[3] Middlesex County became major manufacturer of Terra Cotta due its rich clay belt. It is unclear if any of this excavation took place at TLP, but historical imagery and existing evidence of excavation suggests that some sort of mining activity did in fact occur at TLP.[4]

East Brunswick continued to have a strong agricultural sector as manufacturing shifted to New Brunswick for a time. Population was increasing rapidly and by now Rutgers was well established and influencing other educational programs in Middlesex County. In 1918 Douglass College for Women formed (which later became part of Rutgers). From this point forward TLP was largely undistributed and former railroad tracks were being removed. The areas around the site slowly transitioned from agriculture to industrial lots, the first being what is

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[1] De Angelo, 2008
[2] Ibid.
[3] http://www.friendsebec.com/ reports evidence of a railroad bed
[4] Ibid.

today a major scrap yard across from TLP on Harts Lane. Shortly after these industrial and commercial buildings were built residential housing exploded on and around Tices Lane. The area was transformed vastly over 10 – 15 years. The surrounding area continues to grow, but changes to TLP have not been documented.

3. PRESENT ENVIRONMENT

Tices Lane Park is in the northern portion of East Brunswick, in the central part of Middlesex County, New Jersey. The site is an undeveloped wooded area 23.7 acres in size. It was purchased by the Municipality of East Brunswick in 1990, the parcel ID is Block 29.01, Lot 24.01. The entire park in undeveloped, there are no driveways, parking areas, trails, infrastructure or signage. The park has served as a dumping ground over the years and is often occupied by homeless people. The park contains a rare patch of forested land and is the northern most outlier of the pine barrens.[5]

The northeast corner of the park is situated at the intersection of Harts Lane and Tices Lane (Figure 3.1). Tices Lane is a busy residential/commercial road that serves as a connector between Route 18 and Ryders Lane. Harts Lane also serves as a connector but is also heavily used by large trucks accessing industrial and commercial complexes that characterize Harts Lane. The southern end of the park is enclosed by a mixed forest and the western boundary is bordered by an unnamed private road/driveway.

While Harts Lane and the areas south of Tices Lane were developed for commercial and industrial use, the surrounding area is largely residential. Multiple dwelling high density and single unit medium density residential areas occupy areas north of Tices Lane. Generally speaking, the immediate area as well as the region are dense suburban environments, the majority of land use is classified as urban.

[5] http://www.friendsebec.com/parks/eb-parks/20-tices-lane-park

Figure 3.1 Tice Lane Park Location

3.1 Physical Context

3.1.1 Geology

The physical environment in New Jersey is categorically diverse and the foundation of such diversity begins well below the surface. Within the relatively short Euclidean distance of 220 miles, extending from the northwestern Sussex County at the tristate intersect, to the southeastern peninsula tip of Cape May County, exist four distinct geological physiographic provinces. From northwest to southeast, the physiographic provinces in NJ are ridge and valley, highlands, piedmont and coastal plain. Each of these physical boundaries are delineated by specific geologic and topographic characteristics; these properties are in part responsible for the divide of unique soils, vegetation, hydrology and climatology.[6] Regional examination of the four providences reveals that the geologic composition range in age widely. Precambrian rock in the NJ Highlands region is estimated to be one billion years old, these formations were created during the Grenville Orogeny.[7] Deposition along the eastern and southern shore are defined as geologically recent rock formations, created less than 2 million years ago in some cases[8].

Related to the abrupt physiographic divide in the region is the demarcation of glacial land forms, remnants from prehistoric glacial events.[9] While some areas of the northeastern sections of the coastal plain were glaciated, such as current day Perth Amboy, approximately 70% of Southern Middlesex County, areas south of the Raritan River remained unglaciated. However, glacial land forms related to till and stratified sediment do not coincide with deeper geological features dividing the region.[10] As the study area comes into focus, the present-day significance of the geologic past is realized. The municipality of East Brunswick is primarily located in the coastal plain province with the exception of the northwestern most areas that are located in the piedmont. Tices Lane Park (Figure 3.2), and the immediate surroundings are located inside the coastal plain province and have distinct geological properties derived from the parent bedrock of the Raritan Formation.[11] The physiographic divide at the fringes of the municipality provide no obvious topographical or climatological differences, but undeveloped areas in each region provide unique vegetative habitat distinct to each province (see section 3.7).

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[6] NJ Wildlife Action Plan, 2008
[7] Dalton, 2003
[8] Ibid.
[9] De Angelo, 2008
[10] Witte, 1998
[11] NJDEP, 2012

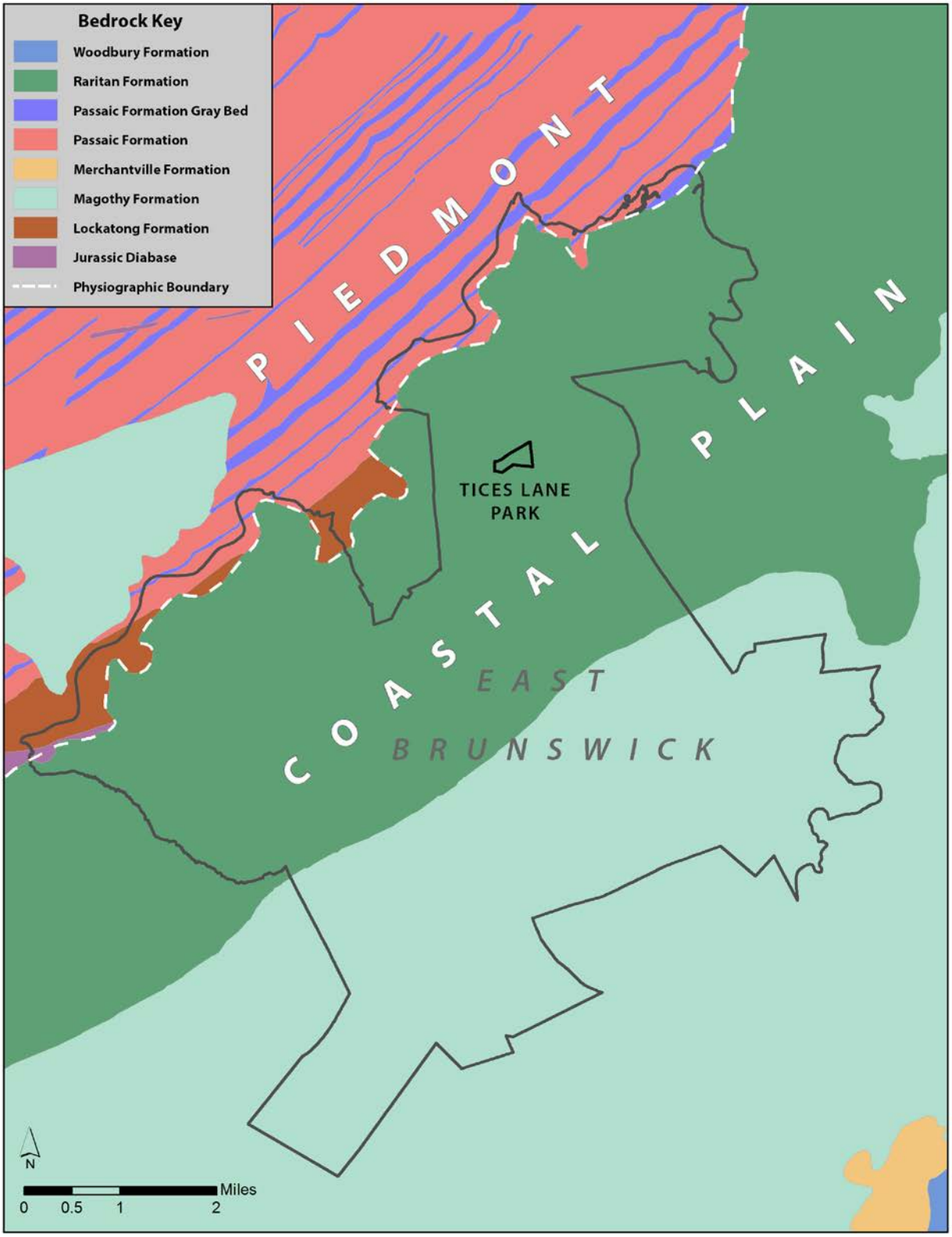

Figure 3.2 Geologic Composition and Physiographic Provinces

3.1.2 Soils

Soil composition is fairly diverse in the 23.7-acre park. Four soil map units (SMU) account for about 80% of all soils.[12] The predominant SMU are Elkton loam (22.5%), Sassafras sandy loam (22.3%), Sassafras gravelly sandy loam (18.1%) and Humaquepts (17.4%). The remaining SMU are urban (8.1%), Lakehurst sand (5.8%), Pits (3.1%), Sassafras-Urban land complex (1.4%), Galloway (.8%) and Atsion sand (.5%; Figure 3.3). Many of the soils here share common physical properties, health and usage limitations. With few exceptions, soil traits can be aggregated to provide overall surface and subsurface characteristics. The majority of the site consists of low quality soil[13]. Two SMU are of high quality, but cover only a small percentage of total area and do not contribute significantly to the overall soil health after normalization by area (Table 3.2).

Map unit name	% Sand	% Silt	% Clay	Rating (%)	Rating (Weighted)
Atsion sand	—	—	—	85	3.59
Elkton loam	38.2	43.8	18	2.5	0.11
Galloway	81.1	16.4	2.5	0.8	0.03
Humaquepts	41.6	37.4	21	12	0.51
Lakehurst sand	91.5	5	3.5	85	3.59
Pits	49.7	2.8	47.5	1.5	0.06
Sassafras gravelly sandy loam	67	23	10	1.5	0.06
Sassafras sandy loam	65	25	10	1.8	0.07
Sassafras-Urban land complex	68.5	24	7.5	1.8	0.07
Urban land	—	—	—	—	—
					Weighted Average = 8.09%

Table 3.2 Basic Particle Composition and Organic Material Ratio

[12] Soil Survey Geographic Database (SSURGO, compiled by the USDA-NRCS)
[13] Determined by the NRCS soil health rating: ratio of organic material available in each soil type

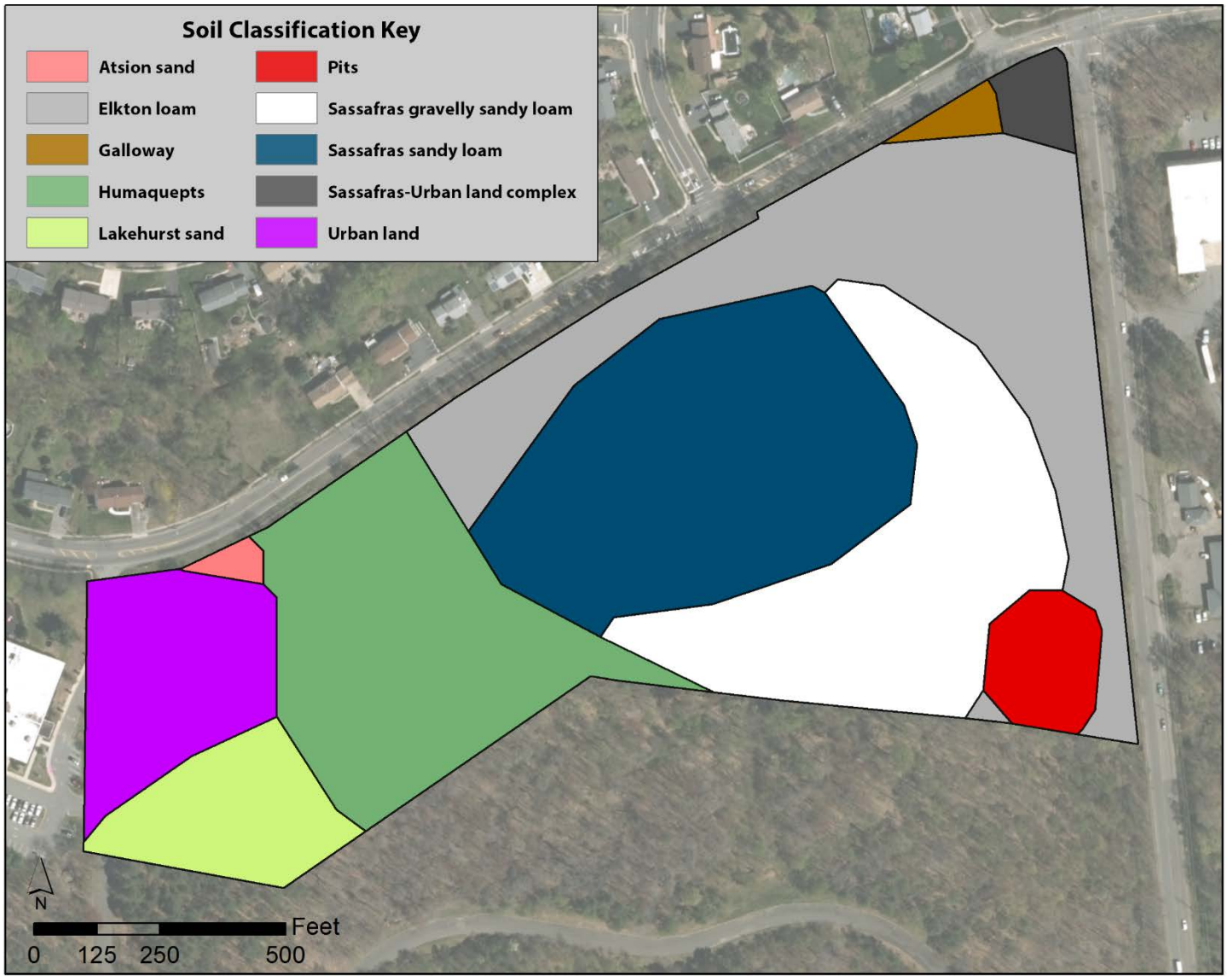

Figure 3.3 Soil Type and Distribution

Basic soil texture properties are widely distributed throughout the site in close relation to drainage properties. Approximately 40% of the SMU in TLP meet hydric criteria defined by the NRCS, 42% do not and 8% of SMU are not classified. The the slope, land cover and water table depth suggest the unclassified SMU is a well-drained. Hydric and non-hydric SMU are sub grouped by the soil drainage class rating assigned by the NRCS. In Figure 3.4, it is evident that this metric is closely related to the depth of the water table for each SMU, hydric soils with poorly drained areas return a shallow water table depth and well drained SMU have greater water table depths.

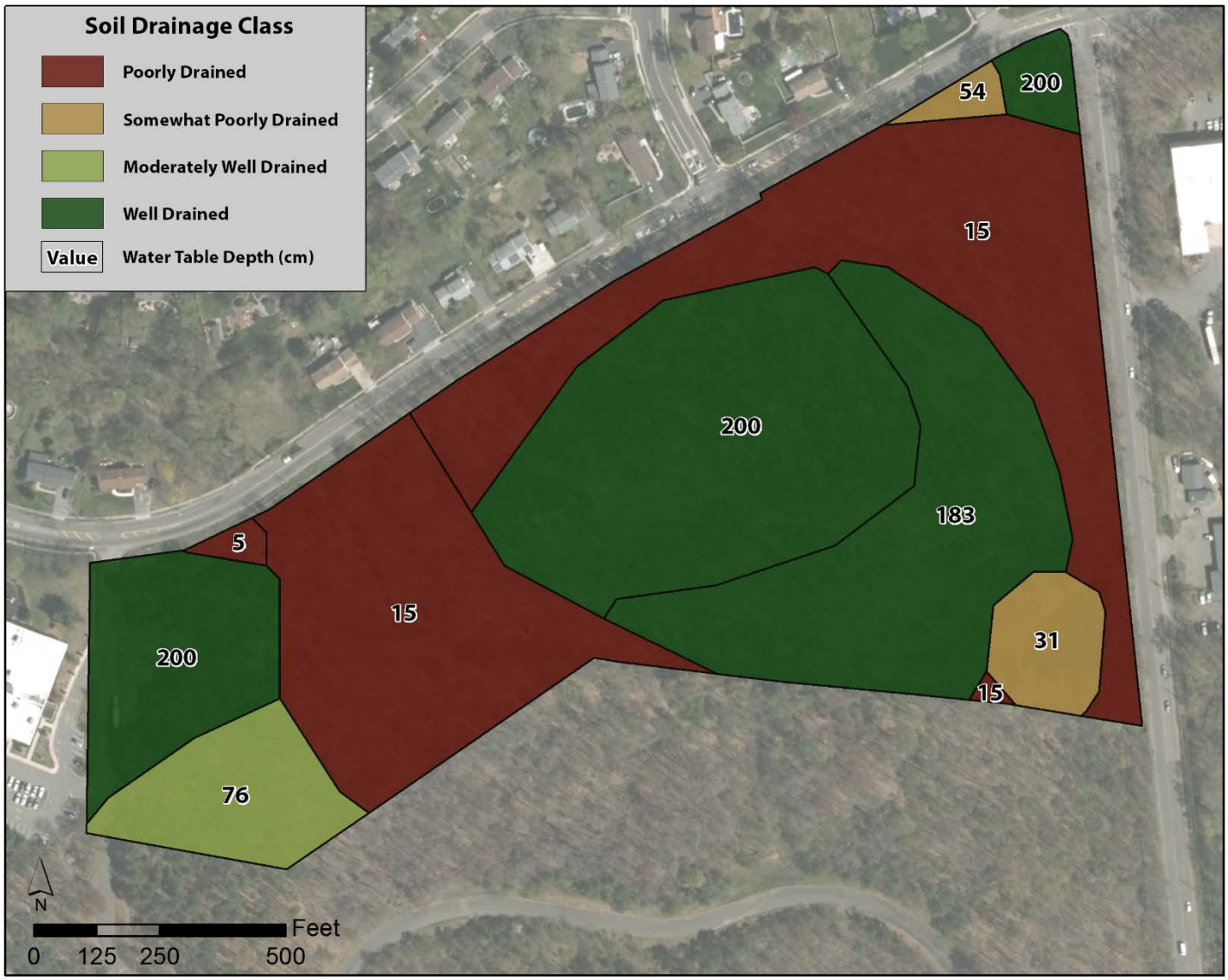

Figure 3.4 Soil Drainage Class and Water Table Depth (cm)

Hydrologic soil groups, assigned by the NRCS based on expected runoff potential, and slope also explain the spatial dynamics of soil drainage properties. Natural variation in slope and topography are evident in the SMU spatial distribution and subsequent runoff potential, however historical land use of TLP explained in the prior section must be considered to properly assess SMU in dual groups.[14] The high silt content in the Elkton Loam SMU is easily eroded, this is verified by the soil erodibility factor K from the NRCS dataset. [15] Approximately 23% of TLP is comprised of this SMU, bordering both Harts Lane and Tices Lane, which serve as key access

[14] NRCS Dual Groups - If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes. http://resources.arcgis.com/en/communities/soils/02ms00000008000000.htm

[15] K Factor is used in the RUSLE2 soil loss prediction equation. Values range from 0.02 for the least erodible soils to 0.64 for the most erodible (USDA)

point to the park. Soil erodibility for the remainder of the site is in the low to low-moderate risk factor range (Table 3.2).

Map unit name	Drainage	Depth to Water Table (cm)	Hydrologic Soil Group	% Slope	K factor
Atsion	Poorly drained	5.00	D	0 to 2	—
Elkton	Poorly drained	15.00	D	0 to 2	0.43
Galloway	Somewhat poorly drained	54.00	D	—	0.2
Humaquepts	Poorly drained	15.00	D	0 to 3	0.17
Lakehurst	Moderately well drained	76.00	A	0 to 5	—
Pits, clay	Somewhat poorly drained	31.00	—	—	0.1
Sassafras sandy loam	Well drained	183.00	B	5 to 10	0.10
Sassafras gravelly sandy loam	Well drained	>200	B	10 to 15	0.20
Sassafras-Urban land complex	Well drained	>200	B	0 to 5	0.20
Urban land	Well drained*	>200	—	—	—

Table 3.2 Basic Particle Composition, Hydrologic Soil Groups

3.1.3 Topography

Topographic variance in the immediate region (1½ mile radius) is relatively low. The land follows a slight westward slope toward the Lawrence Brook (Figure 3.5). Other topographic depressions slope toward the drainage path of two streams before forming a single shallow valley. Regional elevation varies from about 120 feet to just above sea level at the Lawrence Brook.

TLP is a bit of an anomaly in otherwise predictable topography. The park features a diverse terrain which create localized differences in soil and vegetation. Changes in elevation here are more abrupt than elsewhere. The peripheral areas of the park are generally low lying and blend in with regional topography but elevation increases moving toward the center of the park along a ridge that is well above the surrounding landscape at a maximum height of 86 feet. The Sawmill Brook flows around the south side of this feature exiting the park at the northwest corner where the minimum elevation of 32 feet is located (Figure 3.6). Slope and aspect are largely dictated by the centralized ridge feature, and soil types closely follow.

There are two significant depressions in the park. The old mining remnant discussed earlier contains water for all or majority of each year. A more significant depression is seen in the northeast part of the park where a steep drop-off of 10 feet from three directions creates a partial sink hole. This appears to be a result of soil erosion. The erodible Elkton loam is below an area of storm water runoff from where Harts Lane and Tices Lane intersect.

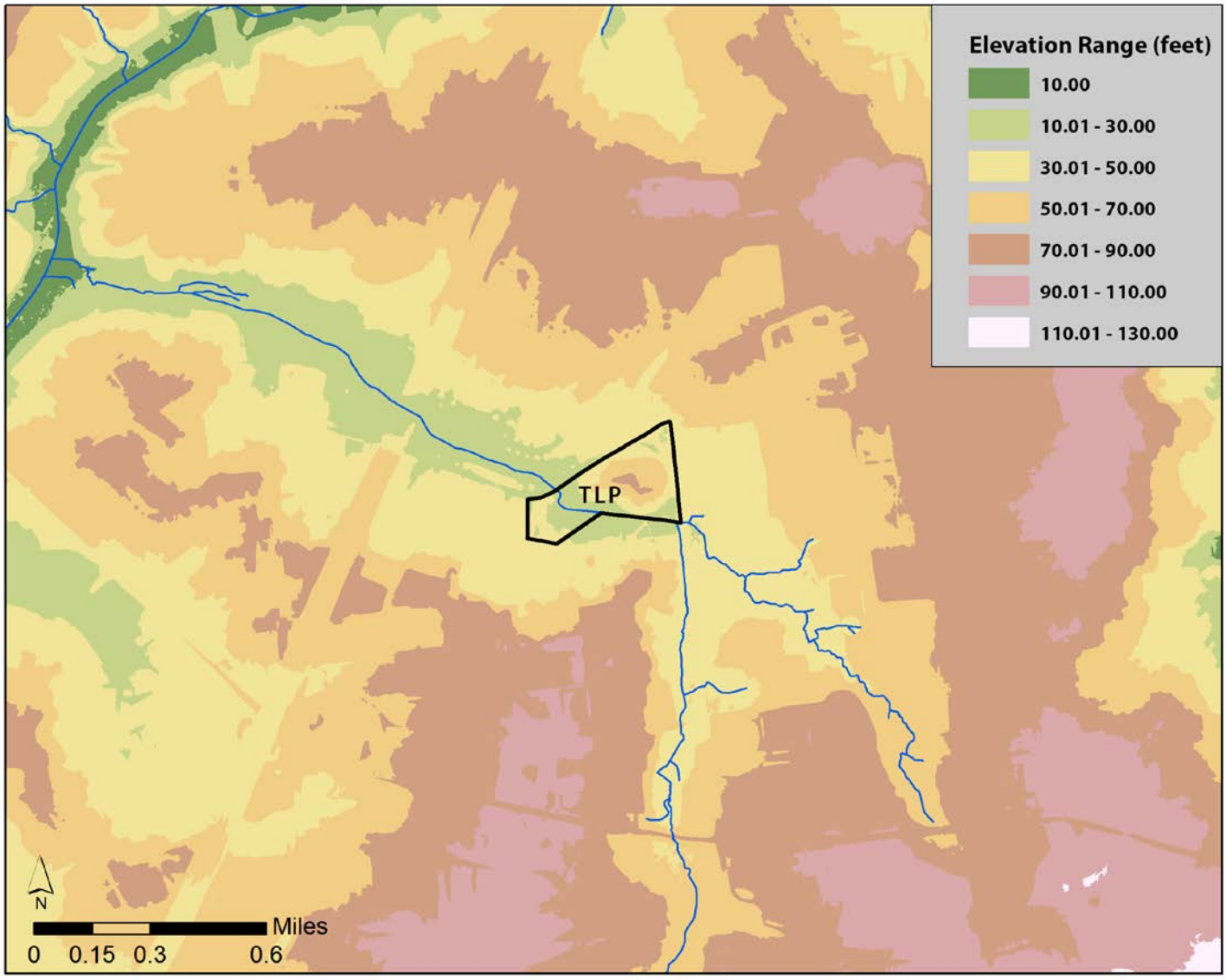

Figure 3.5 Regional Topography

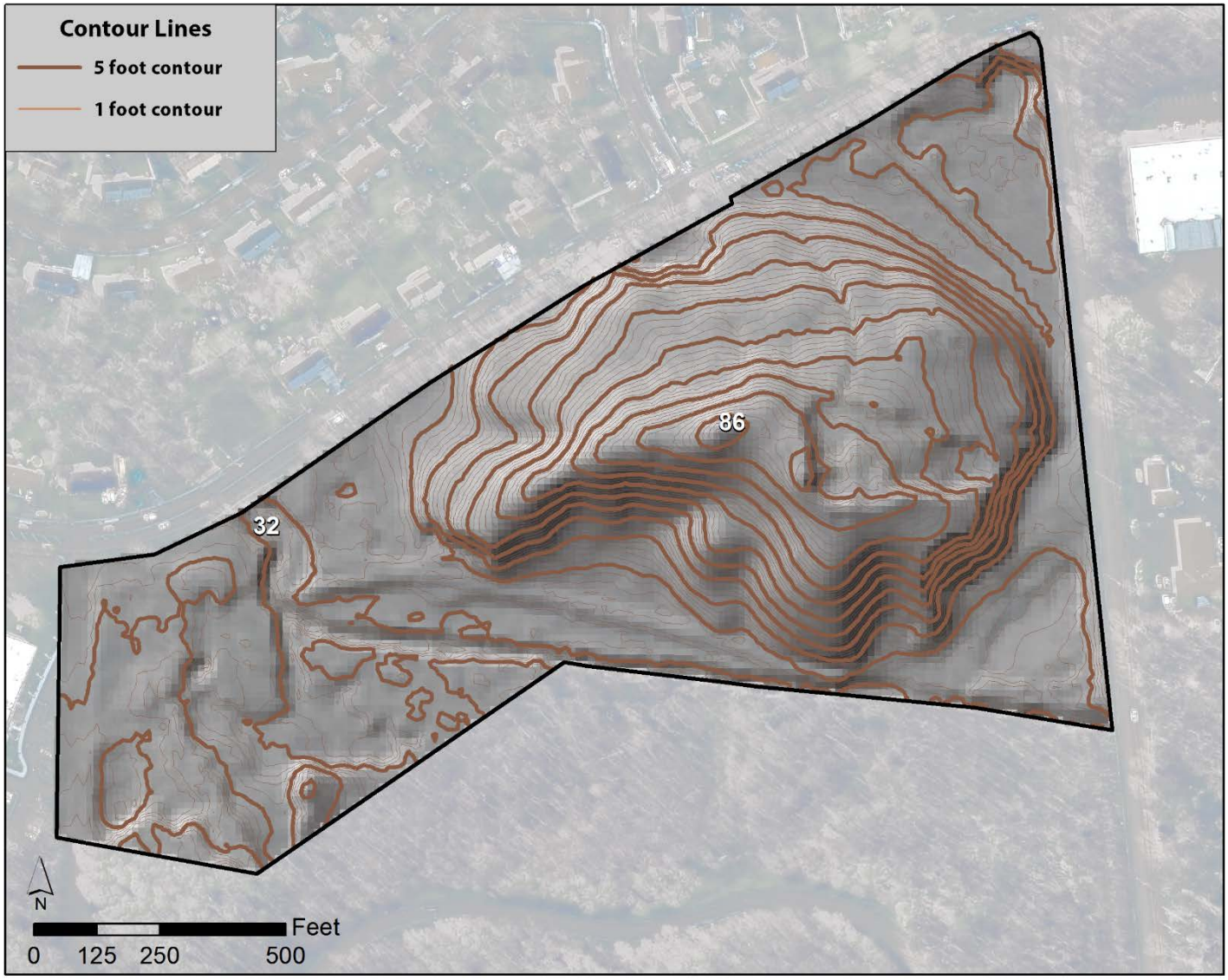

Figure 3.6 Site Hillshade Relief Map with Contour Lines and Highest/Lowest Elevation

3.2 Climate

The Köppen climate classification system separates New Jersey into three groups, temperate/humid continental, warm/humid continental and warm oceanic/humid subtropical[16]. Central New Jersey is considered warm/humid continental. Cool to mild winters, warm to hot humid summers and abundant precipitation broadly describe this far-reaching classification. New Jersey has great climatic variation for such a small area with less than signification differences in elevation.

[16] Determined by using New Jersey map of Köppen climate classification.
https://upload.wikimedia.org/wikipedia/commons/b/b9/New_Jersey_map_of_K%C3%B6ppen_climate_classification.svg

TLP is located on the coastal plain approximately 10 miles west of the Raritan Bay. This area located in the Central Climate Zone in New Jersey.[17] Weather patterns are primarily driven by westerly flow with southern and northern fluctuations leading to variable weather from day to day. Average precipitation is around 49 inches, distributed throughout the year, and a mean annual temperature of 53 degrees Fahrenheit. Average annual snowfall is close to 30 inches. Temperatures range greatly throughout the year averaging from about 40°F to 80° F. Annual high and low temperature also fluctuate significantly, nearby New Brunswick recorded a record high of 105°F and a record low of -13°F, an extreme difference from respective mean temperatures.[18] The average growing season is about 155 days long, but like other climatic factors, great interannual variability has been observed. [19]

3.3 Water Resources

3.3.1 Surface Waters

TLP is located in the Raritan Watershed, in the Lower Raritan Water Management Area (WMA 09). It is inside the 8.7 square mile Lawrence Brook subbasin (HUC14-02030105130070). A localized catchment area was delineated using StreamStats software from the USGS. The StreamStats 10-meter DEM suggests TLP is comprised of two catchment areas with a total area of about 3.14 square miles with a subbasin divide along the ridge (see Topography 3.2), but visual examination revealed no additional surface waters to create an additional pour point. A closer study revealed the natural drainage has been altered via an underground storm drainage network that is collecting water on the northeastern side of the ridge leading up to the opposite side of Route 18 and diverting it southward through an industrial park, then under Harts Lane and finally into the Sawmill Brook tributary. Since delineation is based on expected streams generated by flow accumulation, so it would be fair to consider the park as a divider of two subbasins (Figure 3.7).

Other surface waters that have been buried over the years drain through a large culvert just outside TLP during times of high flow and into the Sawmill Brook main channel. At the southeast corner of TLP is the confluence of Sawmill Brook and an unnamed tributary, the two surface waters of the catchment area. The Sawmill Brook empties into the Lawrence Brook which drains into the Raritan River. Other surface water features include several small perennial ponds including one located within TLP (Figure 3.8).

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[17] Office of the New Jersey State Climatologist, 2017
[18] Ibid.
[19] Dave's Garden, 2017

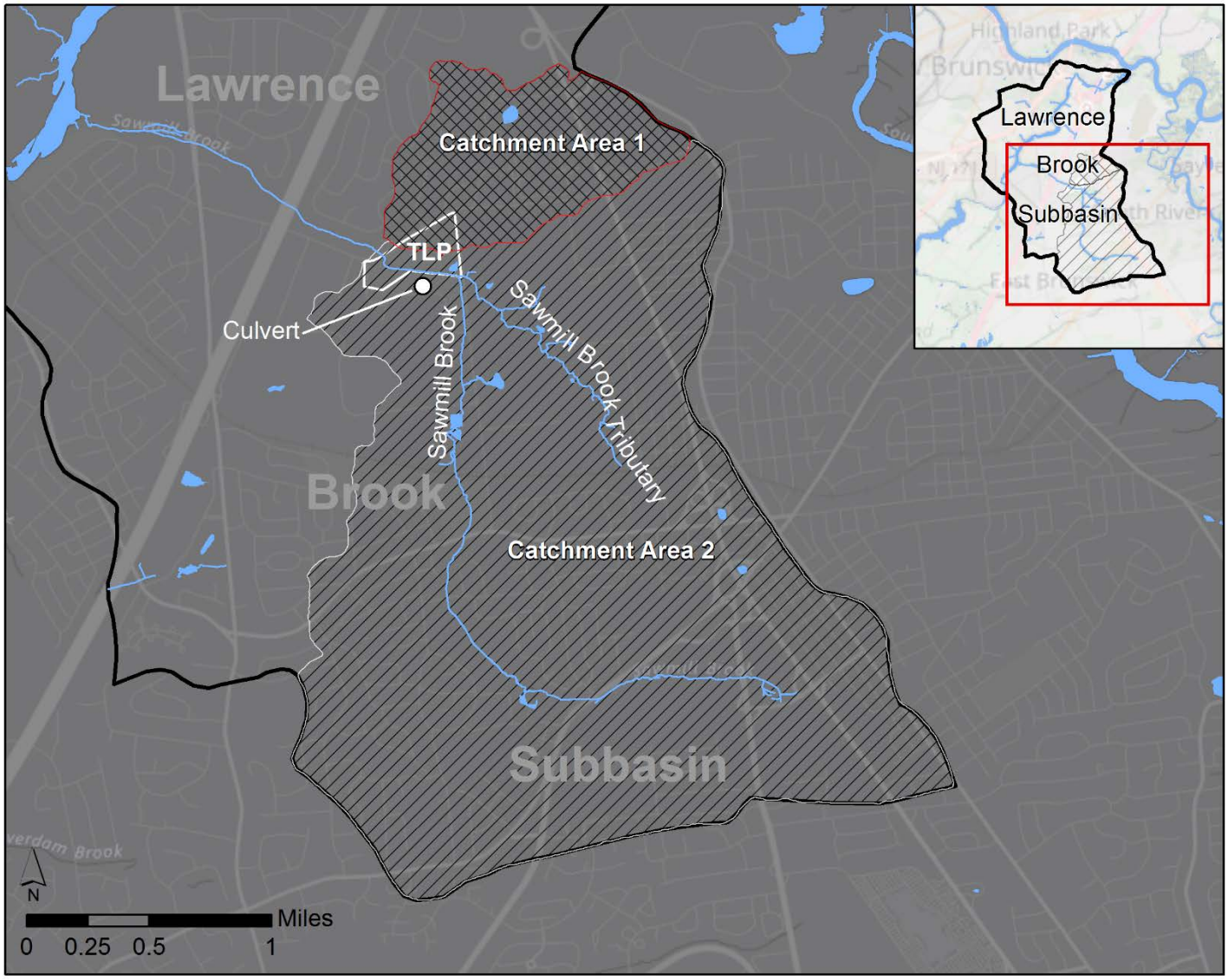

Figure 3.7 Catchment Areas Inside Lawrence Brook Subbasin and Surface Water

Figure 3.8 Culvert Releases Unknown Streams Buried by Urbanization

3.3.2 Water Quality and Quantity

Sawmill Brook is the primary water feature in the park with strong influence on the landscape and ecology. The Sawmill Brook is faced with significant challenges in both water quality and water quantity. Extensive regional urbanization characterizes nearly the entire HUC14 subbasin in which the park is located (see 3.6). This development has led to an increase in impervious surface area and connectivity leading to widespread degradation of water quality throughout the region. Connected impervious surface is especially harmful, not only water quality but also quantity regulation.

Visible observation of the site demonstrate that the natural habitat needed to support native wildlife here suffer from water quantity regulation. In its natural state, the Sawmill Brook experienced tolerable seasonal flow distributions throughout the year. These conditions would have offered a habitat for fish and other wildlife creating the opportunity for people to interact with the natural environment. Recent observations have shown that stream flow is interrupted even during the spring when a regular flow would be expected. Water is often limited to stagnant pools dammed by artificial debris and soil erosion.

Rock riprap added just beyond the culvert has helped ease erosion directly beyond the pipe location but has not helped with erosion in TLP. High flow rates from regional accumulative runoff are forced into this small stream channel causing significant bank migration, erosion and tree root exposure. Width is exaggerated and stream banks are often steep. Blowout and erosion problems are especially problematic where the flash flows from the culvert just outside the park enter the Sawmill Brook main channel eroding the opposite bank where debris accumulation also occurs. These high flows are eating away at the floodplain and even the upland boundary.

Direct samples of water quality in the region are limited, with the exception of two temporally separate benthic macroinvertebrate data collected from New Jersey Department of Environmental Protection (NJDEP) Ambient Biomonitoring Network (AMNET) at one nearby site. The benthic macroinvertebrates sampled are divided into two general categories, those that are generally indicative of good water quality and those that are generally indicative of poor water quality. These communities of macroinvertebrates are sensitive to subtle changes in stream quality and the population of each group of poor and good water quality indicators are part of the scoring index used to evaluate stream integrity.[20] Each of the two impairment score ratings were "poor", the lowest category. The NJDEP describes a poor rating as "Extreme changes in structure of biological community and major loss of ecosystem function. Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered." The waters in the park are classified as FW2-NT (freshwater II, non-trout waters) meaning alterations in water quality are allowed if economically or socially justified, however this rating does specify what tolerance of measurable difference is allowed.[21] Although more specific water quality data was not located, the surrounding industrial facilities, high impervious surface connectivity and area, visible debris, presence of the Archilestes grandis (highly tolerant to poor water quality) and known contaminated sites (KCS) suggest that stream health is degraded (Figure 3.9).[22]

[20] Ambient Biomonitoring Network; NJDEP, 2015
[21] The Surface Water Quality Standards (SWQS) establish antidegradation policies for all surface waters of the State (see N.J.A.C. 7:9B-1.5(d)).
[22] Moskowitz, D.P., and D. M. Bell. 1998

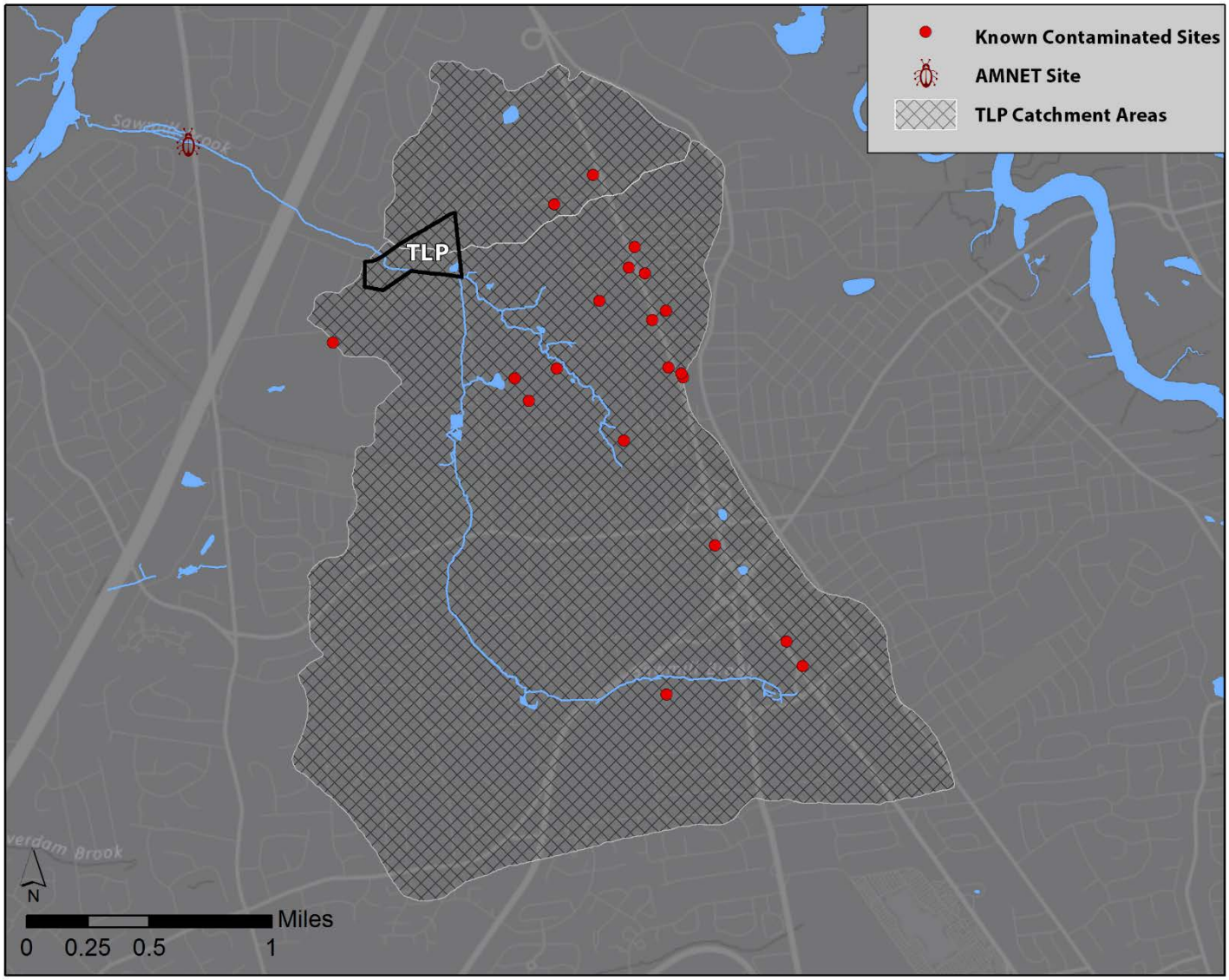

Figure 3.9 Ambient Biomonitoring Network Sample Site (AMNET) and Known Contaminated Sites (KCS)

3.3.3 Regional Groundwater Hydrogeology

Without groundwater field data, some general observations were made. Soil properties and land use/land cover (LULC) can provide estimated recharge rates where each unique mixture occurs. In the case of TLP where land is not developed, recharge is largely driven by two factors, hydric properties of soil and slope. Areas in the catchment area but beyond the park add the urban land use factor into the equation. Using NCRS web soil survey data and NJDEP LULC 2012 data the groundwater recharge was estimated.[23]

[23] New Jersey Geological Survey's Groundwater Recharge Methodology Version 6.1, 1993

This recharge methodology uses following equation in order to estimate groundwater recharge: *Groundwater recharge (in/year) = (recharge factor × climate factor × basin factor) - recharge constant.* The recharge factor and recharge constant are based on land use and soil type. This method excludes hydric soils, even if they may have a small degree of recharge they are excluded, a weakness of the method. TLP finds high recharge rates on well drained soils excluding the steeper slopes associated with the centralized ridge feature where water runoff exceeds infiltration leading to only moderate recharge rates. Regional recharge rates follow similar trends but are complicated by land use; high density urban development has a very low recharge factor canceling out a high recharge constant. Ground water flow direction is generally west, based on available data from nearby Ground Water Contamination Exception Areas provided by the NJDEP (Figure 3.10).

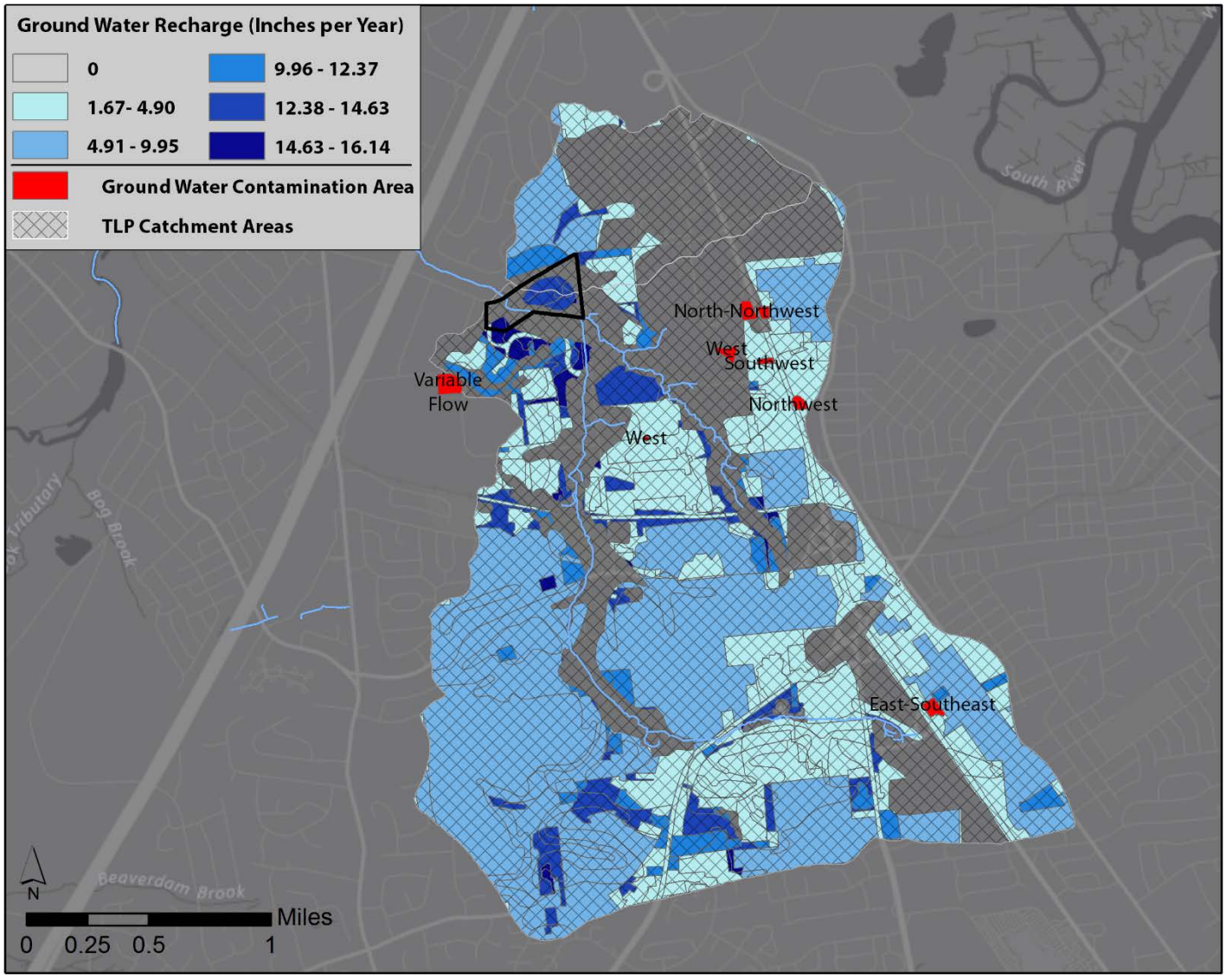

Figure 3.10 Ground Water Recharge Rate and Contaminated Ground Water Areas with Ground Water Flow

3.4 Socioeconomic Conditions

3.4.1 Population

To establish a reasonable sample size for population growth the entire municipality of East Brunswick Township was examined. East Brunswick has an area of about 22.2 square miles. In 1990 the population was 50,300 people, a density of 2,226 people per square mile (ppsm). In 2010 the population was 52,400 with a density of 2,360 ppsm, an increase of about 4% and 6% respectively. Tices Lane Park is located in the north-central part of East Brunswick Township, located in Middlesex County New Jersey. As a walkable park the focus demographic area of interest is a one mile radius from TLP. This focus area has a population of 9,841 over an area of 3.14 square miles for a density of 3,134 ppsm. In 2010 the population was 10,909, a population density of 3,474 ppsm, both metrics increased about 11%.[24]

3.4.2 Economy, Employment and Household Income

East Brunswick is primarily a bedroom community, residents have an average commute time of nearly 40 minutes. Local jobs are primarily in the retail and service industry. Median household income was about $98,500 in 2015, about 34% higher than the NJ average and about 24% higher than Middlesex County average income. Median home price in the Township was $377,000 in 2010.[25] Unemployment in 2015 was estimated at 4.5% compared to the statewide average of 6.5%.[26] Data sets that break income into blocks within the municipality show high income gaps, especially in the immediate vicinity of Tices Lane Park. The numbers provided are not referenced, however they seem reasonable based on the nearby properties. The area surrounding the park is primarily industrial complexes and apartment complexes, a sharp contrast to most of East Brunswick.

3.6 Land Cover & Land Use

3.6.1 Tices Lane Park

TLP has a mix of both land use and land cover. Applying the level I Anderson Classification scheme, TLP is broken into 4 broad categories, forest, urban, wetland and water (Table 3.3).[27]

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[24] U.S. Census Bureau, 2010
[25] Ibid.
[26] U.S. Bureau of Labor Statistics
[27] NJDEP, 2012

Level I LULC (TLP)	Acres	Percent
Forest	15.1	63.9%
Urban	2.2	9.2%
Water	.4	1.8%
Wetland	6.0	25.1%
Impervious Surface	.25	.9

Table 3.3 Tices Lane Park: Level I LULC Classification and Impervious Surface Area

While this patch of land is primarily in the form of natural cover, Table 3.4 shows the difference in the surrounding region. Most of the area have been converted to land use to support population and development growth, barren and agricultural land also make up a small portion of the area. Impervious surface totals nearly 891 acres or 44.8% of the land cover in the one mile radius. Using the same parameters for the HUC14 Lawrence Brook Subbasin, a similar pattern with a high percentage of urban land use is displayed in Table 3.5.

Level I LULC (1 Mile Buffer)	Acres	Percent
Agriculture	11.3	.6%
Barren Land	18.5	.9%
Forest	194.5	9.8%
Urban	1,668.6	84.0%
Water	9.0	.4%
Wetland	85.0	4.3%
Impervious Surface	890.8	44.8%

Table 3.4 One Mile Radius: Level I LULC Classification and Impervious Surface Area

Level I LULC (HUC14)	Acres	Percent
Agriculture	287.7	5.2%
Barren Land	17.8	.3%
Forest	605.4	10.9%
Urban	4,229.4	75.8%
Water	136.1	2.4%
Wetland	302.4	5.4%
Impervious Surface	2,055.8	36.8%

Table 3.5 HUC14 Lawrence Brook Subbasin: Level I LULC Classification and Impervious Surface Area

The high intensity development immediately surrounding the site, which continues throughout the region, highlight the value that this piece of land could add to the lives of local residents (Figure 3.11).

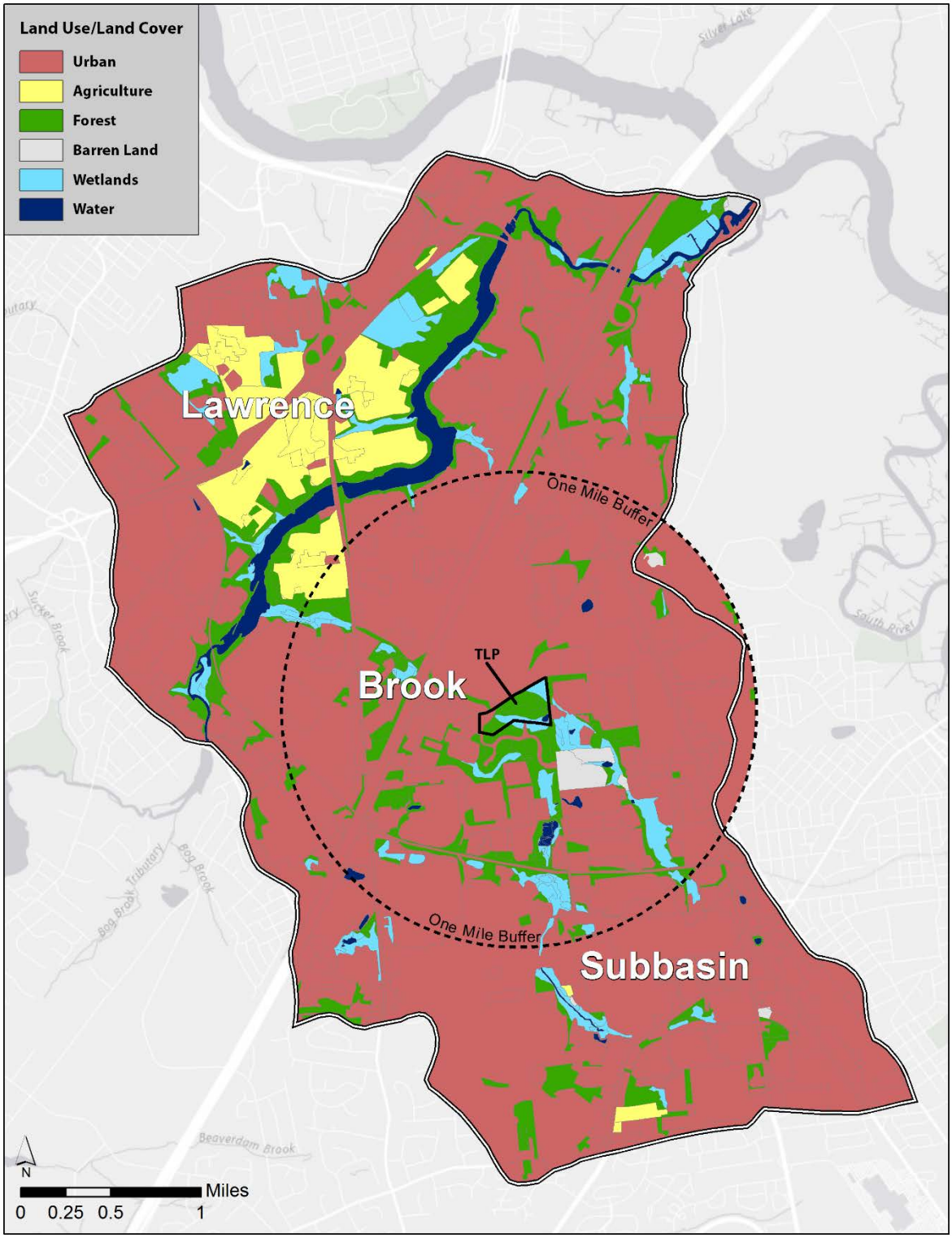

Figure 3.11 Anderson Level One Land Use Land Cover Classification – TLP, One Mile Buffer and HUC14 Boundaries

3.7 Vegetation Communities

Tices Lane Park has been described as the northern most outlier of the pine barrens and certain areas of the park share the same unique soil and vegetation properties as other Spotswood Outliers such as Jamesburg Park. [28, 29] The vegetation is broken into five broad categories that closely follow the drainage properties of soil, water availability and slope.

3.7.1 Upland Vegetation

Patches of deciduous forest, primarily sweet gum in the somewhat poorly drained and/or clay soils while white oak becomes more prevalent as soil drainage increases somewhat with slope around the edges of the elevated ridge. As the central part of the ridge forms a small plateau with a well-drained sandy acidic soil white oak and pitch pine are well mixed (Figure 3.12). Understory is limited here but "sweet pepper bush with occasional highbush blueberry, witch hazel, red maple and catbriar" have been documented in the past. [30]

Two dominant isolated areas of pitch pine were noted. Using leaf off color infrared imagery these patches are easily seen. Similar to the conditions on the ridge, the soils are sandy and well drained. The patch growing on the Lakehurst sand is almost exclusively pine while the Sassafras gravelly sandy loam stand is separated by some red maples. Much of the area between the bottom of the ridge and the patches of pine and maples appear to be highly disturbed by flooding and debris, sedges and leaf litter were noted (Figure 3.13).

3.7.2 Wetland Vegetation

Mockernut Hickory and Silver Maple were found on lower slopes at the edge of the flood plain. Red maple, white oak and a few green ash were located along the bank, but much of the flood plain contained very few trees with the exception of isolated shagbark hickory.

3.7.3 Regulated Wetlands

The NJDEP uses federal guidelines to classify wetlands by looking at the following three parameters: hydric soils, wetland hydrology and hygrophytic vegetation.[31] Wetland hydrology is primarily linked to the hydric soils that remain saturated for parts of the growing season although in this case several of the areas did not exhibit hygrophytic vegetation and were not classified as wetlands. 6 acres, or about 25% of the park are officially regulated wetlands habitat.

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[28] http://www.friendsebec.com/parks/eb-parks/20-tices-lane-park
[29] http://www.nynjctbotany.org/njiptofc/helmetta.html
[30] http://www.friendsebec.com/parks/eb-parks/20-tices-lane-park
[31] NJDEP Division of Land Use Regulation

3.7.4 Invasive Species

This area should be like many other areas in Middlesex County where a large variety of invasive plants are present. In this inventory, only Japanese Stiltgrass was observed however several others are likely. These may include understory plants that are common in forests throughout the state of New Jersey such as Japanese barberry, multiflora rose, and Japanese wine berry. Japanese honeysuckle and common privet would also be expected.

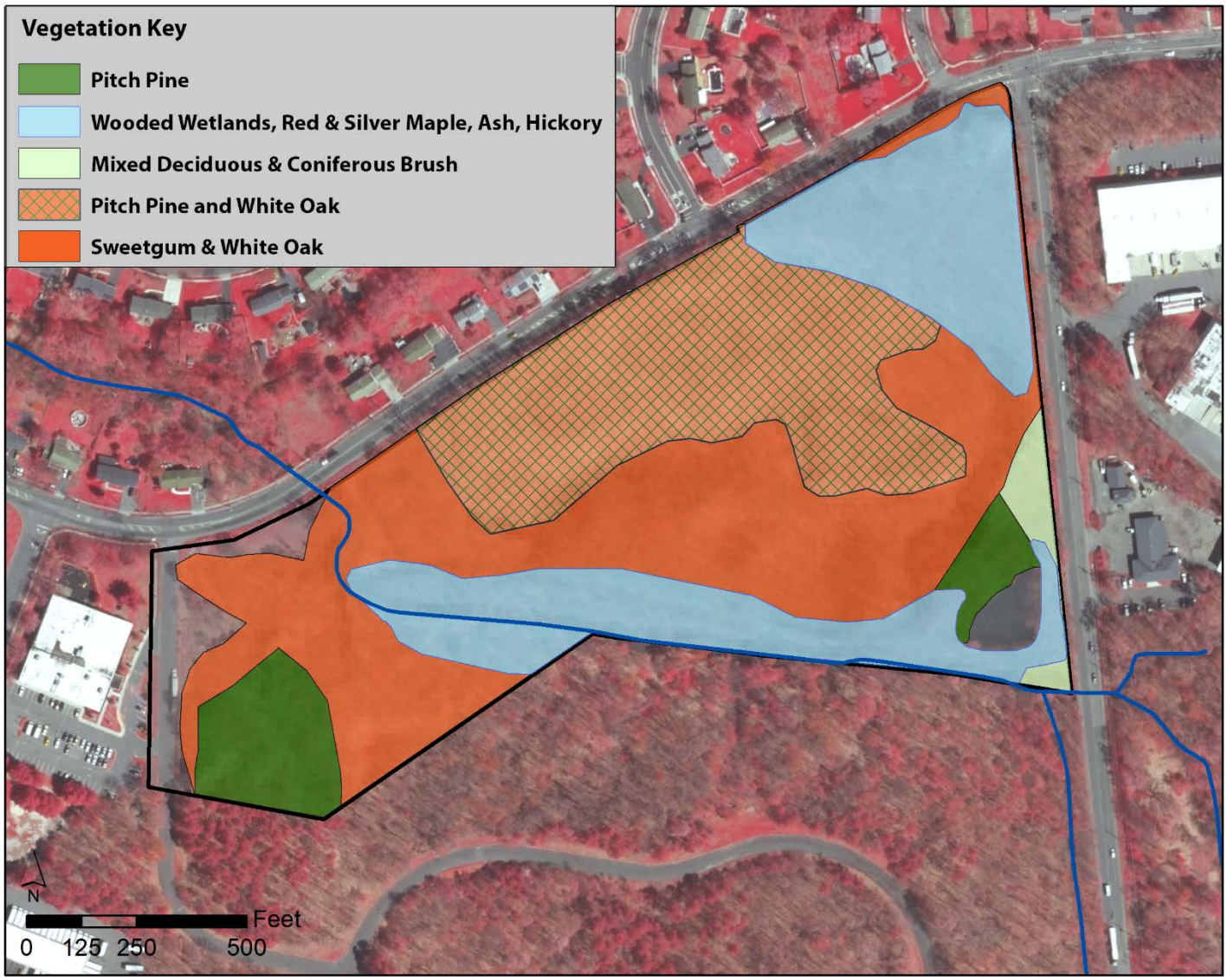

Figure 3.12 Vegetation Map including Regulated Wetlands

Figure 3.13 Debris on the Floodplain

3.8 Wildlife

A wildlife study has not been attempted at this location. In order to create a reasonable estimate, some hypothetical similarities to other sites are considered. Because the limitations of the site already known to a certain degree, inventories from for nearby areas that also share similar habitat fragmentation and intense urbanization just beyond site limits were used for reference. User observations of wildlife in this site and similar sites, especially the Rutgers University Ecological Preserve (RUEP) are also included here.

3.8.1 Mammals

Visual observation and basic reasoning define TLP as an impaired habitat. However, assessment of the various indicators that may show significant impairment would not change the fact that this area is an oasis of forest connectivity in an urban desert. This suggests that the constraints in wildlife diversity and survivability are not limited by the ecological state of this site, instead they are only possible because this site is here.

There are deer, squirrels and rabbits in TLP. Comparable sites such as RUEP indicate that several other mammals would find suitable habitat in the park, for example red foxes and coyotes. Other medium size mammals include groundhogs, opossums and raccoons. Smaller mammals that are likely present here are several species of chipmunks, moles, mice, and shrews. Limitations are also likely to be shared between TLP

and the RUEP; heavy urban development in the area eliminated animals that require a larger range many years ago, such as bears.

3.8.2 Reptiles & Amphibians

Hydric soils, surface water availability and canopy openings suggest that reptiles and amphibians would be found here. In the RUEP, Northern Two-lined Salamander and Eastern Red-backed Salamander are often seen, these species may be found here as well. Additionally, East Brunswick has several habitats with vernal pools in urbanized areas similar to TLP where caution is taken to allow reptiles and amphibians safe passage across roadway during spring migration. Some species include "potted salamanders, Eastern newts, wood frogs, spring peepers, chorus frogs, pickerel frogs, green frogs, bullfrogs, Northern gray tree frogs, Fowlers toads, box turtles, painted turtles and snapping turtles."[32] It would not be unlikely to find some of those species in TLP.

3.8.3 Birds

TLP is home to many native birds, and as resting spot on the Atlantic Flyway, offers crucial habitat for migratory birds as well. Blue jays, robins, red-winged blackbirds, gulls, turkey vultures, red-tailed hawks and dozens of others are common sightings in the area. TLP may offer habitat to birds seen less often in the area, including birds of prey that use the patch of forest for nesting.

3.8.4 Fish & Insects

The Sawmill Brook in the vicinity of TLP does not appear to be a favorable habitat for fish due to water quantity issues discussed earlier. Water quality, while not known to be degraded with certainty, creates an even more difficult environment for a sustainable fish population. This does not mean that there are no fish at all, or that there cannot be fish here in the future.

As an indirect consequence of the degraded water quality at TLP a relatively uncommon insect, the Great Spreadwing, which has emerged as a key biotic indicator of poor water quality.[33] The insect was originally native to the southeast but began expanding its range northeastward. Moskowitz and Bell realized that the insect was thriving in poor water quality conditions that other insects could not tolerate. These new condiaitons provided the Great Spreadwing a chance in an environment that it would not otherwise compete in.[34] Other aquatic macroinvertebrates tolerant of poor water quality are likely found here, but no obvious activity during several visits was noted.

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[32] EB SENTINEL NEWS, 3/14/2017
[33] Moskowitz, D.P., and D. M. Bell. 1998
[34] Ibid.

3.8.5 Threatened and Endangered Species

After reviewing the list of TES, there is no known listed species in TLP.

3.9 Air Quality

Although the area is subject to USEPA and NJDEP standards, the "Middlesex County Environmental Health Division (MCEHD) administers an Air Pollution Control Program pursuant to authority from the NJDEP and the County Environmental Health Act (CEHA) – NJSA 26:3A2-21et seq."[35]

In recognition of the critical need to provide the most stringent enforcement of appropriate air pollution control practices and reacting to the increased level of concern and public awareness over air pollution and its adverse impact on the area, Middlesex County implemented its countywide Air Pollution Control Program on December 6, 1982."[36] Air quality for the county, compared to all other NJ counites, is ranked 12th with 1st being the highest air quality.[37]

3.10 Noise

With nearly 3,500 people per square mile located within a one mile radius of TLP, noise is a pollutant that sometimes goes unnoticed until it is gone. The primary undesirable noise in this area is primarily from road traffic. During the busiest hours, the road noise is most noticed on Tices Lane, a busy roadway with a speed limit of 45mph. When traffic subsides in the late evening hours the noise arrives from Interstate-95 less than ½ mile from the park. Noise also travels from industrial complexes in the form of large trucks idling engines and loading/unloading. TLP does offer some natural protection from the intensity of noise through trees and diverse topography. The remaining wildlife in the area seems accustomed to the noise and at this time it does not appear to be the primary deterrent to continued wildlife activity.

3.11 Aesthetics

TLP may be aesthetically pleasing to some, or very undesirable to others. In its current state, it is likely undesirable at least to some degree, for most who visit. The natural setting that it offers upon immersion into the woods is calming, a reminder that a natural setting is still possible even in a highly-urbanized setting. This idea is quickly replaced by the realization the urbanization cannot be left behind so quickly when rusted out metal containers, tires, tarps and impaired streams quickly erode the natural setting. When these problems are corrected, the attractiveness of the scene will still be subjective. Some may prefer a more developed park, others

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[35] Air Pollution Control Program, Middlesex County, NJ
[36] Ibid.
[37] USA.com Air Quality Ratings

will be grateful that development is minimal. The views are never far, blocked by trees and the ridge in the center of the park. Yet, it is the ability to lose sight of the road and the development is one of the primary benefits of the park.

3.12 Recreation

TLP is not known as a recreational destination. In fact, it is difficult to find, contains no formal entrance (and recently no sign) and has no trails, fences markings or other boundaries. This park is not intended to be a well-groomed recreational destination, but it also should not be hidden away and uninviting.

3.13 Accessibility

Accessibility is limited beyond what was previously mentioned. It is limited because there is no parking lot and the cross walk to the park seems to lead to nowhere. There is no sidewalk on the opposite side of the road and no apparent entrance to the park. (Figure 3.14). The park is intended for local residents, so creating a parking lot isn't necessary. However, allowing for safe passage to the park, and a sign that acknowledges that there is an entrance is a necessity. The *entrance* on Harts Lane is not defined at all. Here there is no crosswalk, and no sidewalk on Harts Lane at all, additionally park access is blocked by a guard rail (Figure 3.15).

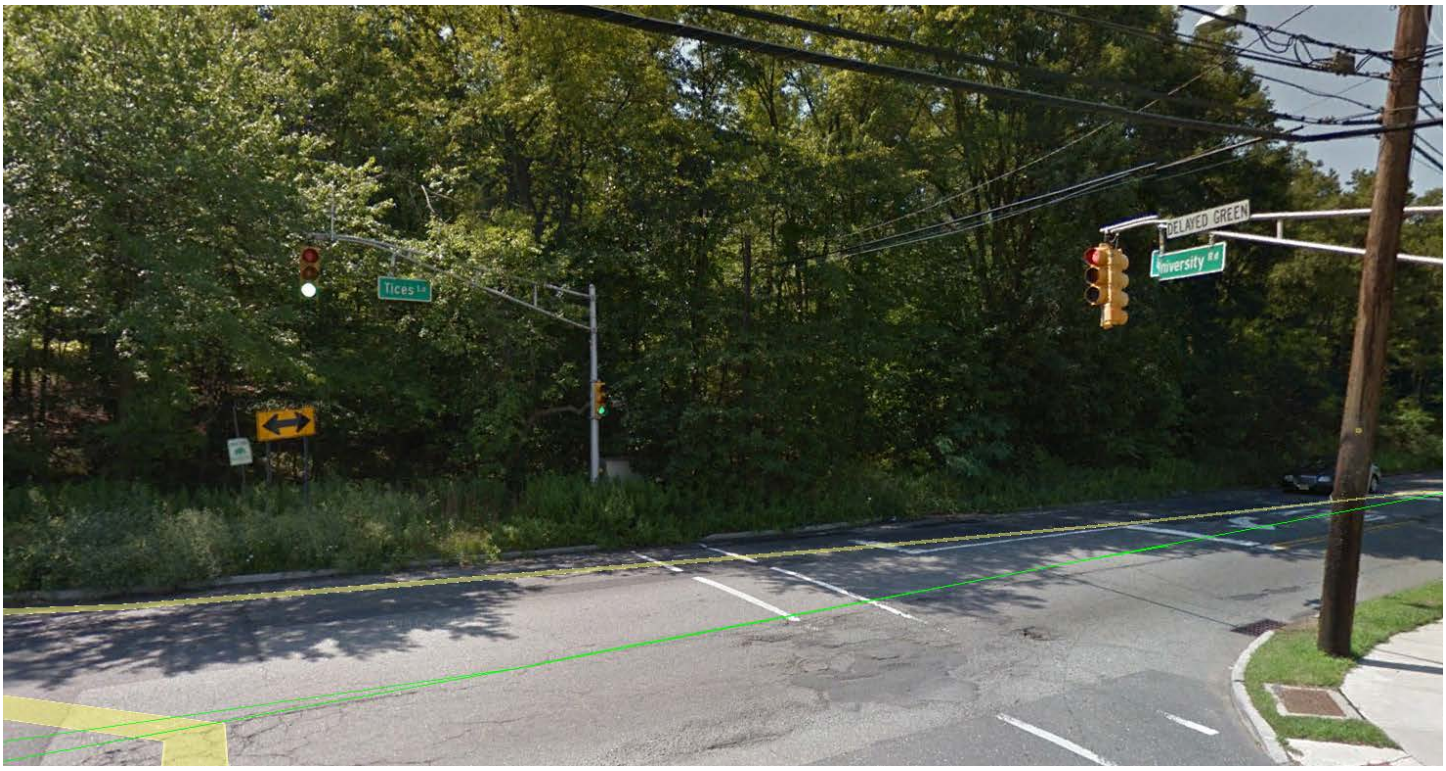

Figure 3.14 Crosswalk to TLP on Tices Lane, Former Sign is Missing (Google Street View)

Figure 3.15 Tices Lane and Harts Lane Intersection (Google Street View)

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