EcolSciences, Inc.
Environmental Management & Regulatory Compliance

ENVIRONMENTAL IMPACT STATEMENT
FOR
BLOCK 252, LOTS 1.03 AND 1.06
TOWNSHIP OF NORTH BRUNSWICK
MIDDLESEX COUNTY, NEW JERSEY

Prepared for:

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June 17, 2025

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I. EXECUTIVE SUMMARY

North Brunswick Executive Park, LLC of Woodbridge, New Jersey, proposes a warehouse and flex space development and associated improvements within a 25.97± acre site known as Block 252, Lots 1.03 and 1.06 in the Township of North Brunswick, Middlesex County, New Jersey. Lot 1.03 is occupied by a stormwater detention basin. Lot 1.06 is undeveloped and characterized by a regularly maintained field. The field is used during the year for various festivals and carnivals. Lot 1.06 is bordered to the north by U.S. Route 1/College Farm Road interchange, to the south by an overhead electrical transmission line, to the east by Chamberlain College of Nursing/Devry University, and to the west by David B. Crabiel Park.

The proposed project consists of two one-story warehouse buildings [each 100,000 square feet (SF)] and two one-story flex space buildings (each 50,142 SF) on Lot 1.06. The site will be accessed by a proposed driveway from the Route 1/College Farm Road interchange, which will lead to a network of driveways within Lot 1.06. The project will have 401 parking spaces and 14 trailer storage spaces. The project will discharge its treated stormwater to the stormwater detention basin on Lot 1.03 through existing piping.

The stormwater management system will be designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) and Township's stormwater management standards through the proposed construction of bioretention basins, underground infiltration basins, and constructed wetlands.

The principal impacts of the proposed plan of development are those associated with a change in land use from a maintained field to warehouse/flex space development. Long-term impacts to the site include an increase in impervious surfaces and the loss of vegetation and associated limited wildlife habitat. Temporary impacts that may occur during the construction phase of the project ~~and~~ include soil loss, and increased noise and dust levels. All potential impacts will be minimized through appropriate mitigation procedures and best management practices.

This Environmental Impact Statement (EIS) has been prepared by EcolSciences, Inc. of Rockaway, New Jersey and is intended to support plans prepared by Langan of Princeton, New Jersey. The following chapters provide a project description, an inventory of existing environmental conditions on and around the site, an assessment of potential impacts associated with the proposed construction, and a description of performance controls designed to mitigate potential adverse impacts.

II. DESCRIPTION OF THE DEVELOPMENT PLAN

A. General Description

North Brunswick Executive Park, LLC of Woodbridge, New Jersey, proposes a warehouse and flex space development and associated improvements within a 25.97± acre site known as Block 252, Lots 1.03 and 1.06 in the Township of North Brunswick, Middlesex County, New Jersey (Figures 1 and 2). Lot 1.03 is occupied by a stormwater detention basin. Lot 1.06 is undeveloped and characterized by a regularly maintained field. The field is used during the year for various festivals and carnivals. Lot 1.06 is bordered to the north by U.S. Route 1/College Farm Road interchange, to the south by an overhead electrical transmission line, to the east by Chamberlain College of Nursing/Devry University, and to the west by David B. Crabiel Park.

The project consists of two one-story warehouse buildings (each 100,000 SF) and two one-story flex space buildings (each 50,142 SF) on Lot 1.06. The site will be accessed by a proposed driveway from the Route 1/College Farm Road interchange, which will lead to a network of driveways within Lot 1.06. The project will have 401 parking spaces and 14 trailer storage spaces. The project will discharge its treated stormwater to the existing stormwater detention basin on Lot 1.03.

B. Zoning

Lot 1.06 is located within the Mid-Rise Office Research (O-R) Zone of the Township of North Brunswick. A use variance is requested to allow warehouse/distribution centers. No bulk variances are proposed from the O-R Zone. For details, please see the site plans prepared by Langan (2025).

C. Sanitary Sewage

The sanitary sewage service for the proposed project will be collected and directed towards the existing on-site pump station within Lot 1.06. Wastewater for the project will be conveyed to Middlesex County Utilities Authority's sewage treatment plant for treatment. It is estimated that the proposed development of 8,000 gpd of wastewater (Langan, 2025).

D. Potable Water Supply

Potable water for the proposed project will be obtained from the North Brunswick Water Department by a connection to existing lines located within the U.S. Route 1/College Farm Road interchange. The estimated demand for potable water for the proposed development is 8,000 gpd (Langan, 2025).

E. Stormwater Management Facilities

The stormwater management system will be designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) and Township's stormwater management standards through the proposed construction of bioretention basins, underground infiltration basins, and constructed wetlands. For additional details, refer to the Stormwater Narrative prepared for the project by Langan, dated June 10, 2025.

F. Utilities Plan

All other utilities (electricity, cable television, telephone, etc.) will be provided through connections to the existing lines located within Lot 1.06.

G. Solid Waste Plan

Solid waste generated by the proposed development will be collected and transported to an approved landfill for disposal. The Township of North Brunswick, in conjunction with Middlesex County, has developed a recycling program that requires the recycling of glass, aluminum, metal cans, plastic bottles, corrugated cardboard, magazines, and newspapers.

III. INVENTORY OF EXISTING NATURAL RESOURCES

A thorough inventory of environmental conditions is a fundamental prerequisite to an understanding of a land tract's ecological and cultural history, current condition, and suitability for alternative future uses. The inventory of existing environmental conditions in this chapter is divided into systematic and logical subsections that treat each aspect of the site and vicinity in detail, and collectively define the constraints to future land use.

A. Geology

The portions of New Jersey that have similar sequences of rock types, geological structures, and geological history have been characterized as Physiographic Provinces - major areas of the state that have experienced specific geological histories and that have similar characteristics at present. From northwest to southeast across the State, the major physiographic provinces are: Appalachian Ridge and Valley, Highlands, Piedmont, and Coastal Plain. Each of these physiographic provinces has regional subdivisions, and each is also a continuation of larger regions in the northeastern United States (Widmer, 1964; Robichaud and Buell, 1973).

The site is situated within the Piedmont Physiographic Province, which is characterized by shale, sandstone, and argillite formations. The surficial geology of the site consists of Pensauken Formation, which is characterized by yellow, reddish-yellow, or white sand, clayey sand, pebble gravel, minor silt, clay and cobble gravel. This formation may be locally iron-cemented and as much as 140 feet thick(NJDEP, last updated January 18, 2024). Below the surficial geologic formation, bedrock geology is characterized by two formations: Passaic Formation and Passaic Formation Gray Bed. The Passaic Formation is characterized by siltstone and shale and the Passaic Formation Gray Bed is characterized by sandstone, siltstone, and shale (NJDEP, last updated January 18, 2024).

B. Topography

The topography of a site or area is a description of the variation in elevation of the land surface with horizontal distance; topography is generally described by contour maps where points of equal elevation are connected by smooth contours. The surficial topography of a site or area reflects the underlying geology as altered by geomorphological processes; the surficial topography, in turn, directly influences the drainage patterns, watercourses, soils, and biological communities evolving on the particular site.

Lot 1.03 is relatively level to moderately sloping with elevations ranging from 91 feet in the bottom of the existing stormwater detention basin, to 106 feet in the southern portion. Lot 1.06 is

relatively level with elevations ranging from 103 feet in the southern portion, to 109 feet in the northwestern portion.

C. Soils

Soils are formed through the interaction of a variety of physical, chemical, and biological factors that include climate, parent material, topography, biological activities, and time. The degree to which any or all of these factors affect the local soil characteristics is quite variable, generally leading to the formation of a mosaic of soil types in any particular locality. The United States Department of Agriculture has, through the Soil Conservation Service, mapped soils in detail; for New Jersey, the results of these soil surveys are issued for each county.

According to USDA NRCS web soil survey (last modified July 31, 2019), four soil map units are mapped within the site: Matapeake silt loam, 0 to 2 percent slopes (MbrA); Matapeake silt loam, 2 to 5 percent slopes (MbrB); Nixon loam 2 to 5 percent slopes (NknB); and Sassafras gravelly sandy loam, 10 to 15 percent slopes (SadD). A detailed soils map and description of the soil unit is provided within the Custom Soil Resource Report provided in Attachment C. Table 1 lists the soil characteristics, limitations and suitabilities. A brief description of each soil per the NRCS is provided as follows:

Matapeake Series (MbrA, MbrB) – This series consists of deep, well-drained soils that formed in acid, medium textured Coastal Plain sediments. These soils are found on flats, terraces, and ridges. The parent material is silty eolian deposits over marine deposits and/or coarse fluviomarine deposits. The depth to restrictive feature is more than 80 inches. The seasonal high water table is found at a depth of greater than 80 inches.

Nixon Series (NknB) – This series consists of deep, well-drained soils that formed in acid, medium textured Coastal Plain sediments. These soils are found on flats. The parent material is old fine-loamy alluvium derived from arkose and/or shale. The depth to restrictive feature is more than 80 inches. The seasonal high water table is found at a depth of greater than 80 inches.

Sassafras Series (SadD) - This series consists of deep, well-drained soils that formed in acid, medium textured Coastal Plain sediments. These soils are found on hillslopes and knolls. The parent material is Loamy and/or gravelly fluviomarine deposits. The depth to restrictive feature is more than 80 inches. The seasonal high water table is found at a depth of about 48 to 122 inches.

French & Parrello Associates (May 2, 2025) excavated 14 test pits within Lot 1.06. The 14 test pits were excavated to depths between 11.5 feet to 18 feet. Groundwater was encountered within

Table 1: Soil Characteristics, Limitations, and Suitabilities

Parameter	Matapeake (MbrA)	Matapeake (MbrB)	Nixon (NknB)	Sassafras (SadD)
Texture	Silt loam	Silt loam	Loam	Gravelly silt loam
Slope (%)	0 - 2	2 - 5	2 - 5	10 - 15
Depth to Bedrock (inches)*	> 80	> 80	> 80	> 80
Depth to Seasonal High Water Table (inches.)*	> 80	> 80	> 80	48 - 122
Saturated Hydraulic Conductivity (Ksat) (micrometers/second)*	16.3541	16.3541	18.7000	39.0274
Available Water Capacity (cm./cm. soil)*	0.17	0.17	.11	.12
pH*	4.7	4.7	4.6	4.6
Erosion Hazard (Factor K)*	0.49	0.49	0.37	0.37
Limitations for Small Commercial Buildings	Not Limited	Somewhat Limited: slope, depth to thin cemented pan, and depth to thick cemented pan	N/A (only mapped on Lot 1.03)	N/A (only mapped on Lot 1.03)
Limitations for Local Roads and Streets	Very Limited: frost action & low strength	Very Limited: frost action & low strength	N/A (only mapped on Lot 1.03)	N/A (only mapped on Lot 1.03)
Limitations for Lawns, Landscaping, and Golf Fairways	Very Limited: low exchange capacity & dusty	Very Limited: low exchange capacity & dusty	N/A (only mapped on Lot 1.03)	N/A (only mapped on Lot 1.03)

* = measurements taken using a dominant component of within unit

Source: USDA, NRCS, last modified July 31, 2019

test pits TP-1 and TP-3 through TP-6, at depths ranging from approximately 10 feet to 17 feet below the existing grade. Soil mottling, an indication of seasonal high water level, was observed within test pits TP-1, TP-2, TP-6 and TP-9 at depths ranging from approximately 8 feet to 12.5 feet below the existing ground surface (French & Parrello Associates, May 2, 2025).

D. Ground Water Quantity and Quality

Ground water is all water within the soil and subsurface strata that is not at the surface of the land. It includes water that is within the earth that supplies wells and springs. Ground water resources are often functionally linked to overlying land areas and surface water bodies; ground water is often recharged through "outcrop" areas at the land surface and ground water discharges ("seeps") may contribute to base flows of streams and rivers.

The ground water yields of any particular geological formation are a function of the porosity and permeability of the material comprising the formation (consolidated rock or unconsolidated deposits). Porosity describes the water-containing spaces between individual mineral grains, while permeability is the ease or difficulty with which water is transmitted through interconnecting spaces in the formation. Formations lacking open spaces between the mineral grains have both low porosity and low permeability. Weathering and cracking of the parent bedrock can induce secondary porosity in the formation; water can accumulate and move through these fractures in the primary rock formation.

The site is underlain by the Brunswick aquifer. The Brunswick aquifer consists of sandstone, siltstone, and shale of the Passaic, Towaco, Feltville, and Boonton Formations (G.C. Herman et al., 1998). Ground water is mainly stored and transmitted in fractures. Water is normally fresh, sightly alkaline, non-corrosive, and hard. Calcium-bicarbonate waters dominate. Subordinate calcium-sulfate waters are associated with high total dissolved solid. The aquifer includes conglomerate facies along the northwest margin of the basin (G.C. Herman et al., 1998). The Brunswick aquifer is given an aquifer rank of C, where ground water wells provide a median yield from greater than 100 gallons per minute (gpm) to 250 gpm of water (G.C. Herman et al., 1998).

E. Surface Water Quantity and Quality

Surface waters include lakes, rivers, ponds, and streams - water bodies at the surface of the land. These waters serve as valuable habitats for aquatic organisms; collect, store and distribute water from rainfall; and serve as important aesthetic and recreational features.

There are no streams on or adjacent to the site. Overland runoff from Lot 1.03 and the majority of Lot 1.06 is toward off-site unnamed tributaries of Lawrence Brook mapped approximately 340 feet

to the southeast of Lot 1.03. Overland runoff from the extreme western portion of Lot 1.06 is toward the off-site Sucker Brook mapped approximately 1,135 feet to the west of Lot 1.06. Sucker Brook discharges into Lawrence Brook. The NJDEP has not classified Sucker Brook, but classified this stretch of Lawrence Brook and its unnamed tributaries as FW2-NT (Non-Trout) waters (NJDEP, 2023).

By definition, FW-2 waters are suitable for public potable water supply after required treatment. This classification requires that waters be acceptable for primary contact recreation, industrial and agricultural use, and maintenance and migration of the established biota. The Non-Trout (NT) suffix indicates that the waters do not possess the properties suitable for the maintenance of trout species, i.e., high dissolved oxygen levels, relatively low summer temperatures, and low pollutant loadings. However, more tolerant fish species, particularly warm-water species, may flourish in such waters.

F. Vegetation

Vegetation is the plant life or the total plant cover that is found in a specific area, whether indigenous or introduced by humans. The Piedmont Physiographic Province of New Jersey contains a moderately diverse mixture of major terrestrial plant habitats, including freshwater marshes, swamps and floodplains, upland valleys and slopes, upland ridges, and rock outcrops (Robichaud and Buell, 1973). This habitat diversity results in a mosaic of plant communities occurring in small areas, a situation rather different from the more homogeneous habitat conditions and plant communities found in more southern portions of the state, and less inherently "patchy" than habitats of more severe topographic relief in the Highlands and Ridge and Valley provinces to the north.

Based upon species composition, soils, and apparent hydrology noted during the field investigation, one vegetative community was identified within Lot 1.06. The community is briefly described below.

Maintained Field - Scattered woody trees and shrubs include horse chestnut, callery pear, Norway maple, black cherry, eastern red cedar, crab apple, multiflora rose, and Japanese honeysuckle. Ground cover includes grasses and common mugwort.

G. Threatened and Endangered Species and Wildlife

EcolSciences reviewed the New Jersey Landscape Project map for local habitat associated with rare wildlife and requested rare species information for the site and surrounding area from the Natural Heritage Program (NHP) of the NJDEP Office of Natural Lands Management. Starting in July 2002, NHP adopted the use of the Landscape Project to supplement threatened and endangered

species data requests. The Landscape Project was developed by the NJDEP, Division of Fish & Wildlife, Endangered & Nongame Species Program (ENSP) as a habitat-mapping tool used to identify potential habitats for endangered, threatened, and special concern wildlife. This tool takes documented sightings of listed wildlife and, based on a species-specific model or "occurrence area," maps areas of suitable habitat contiguous to the sightings as habitat. Landscape Project 3.4 is the current version, released in January 2025.

Landscape Project 3.4 employs 2020 land use/land cover for its habitat base. There are 86 distinct land use/land cover categories, and each wildlife species values a unique subset of land use/land cover as habitat. All applicable land use/land cover polygons within a "species occurrence area," an area of species-dependent radius centered on a documented record, will be valued as habitat. Major roads (County Route 600 and above) are used to divide otherwise contiguous areas of land use/land cover. Each habitat polygon in Landscape Project is assigned one of five ranks, which is dependent on the greatest conservation priority of the associated wildlife record or records, if applicable. Rank 1 habitat meets minimum suitability requirements, but there are no associated records of listed wildlife. Habitats assigned Ranks 2, 3 or 4 indicate the species of highest conservation priority is either a special concern, State-threatened, or State-endangered species, respectively. Rank 5 is assigned to habitats associated with one or more records of Federally listed wildlife.

According to the NJDEP's Landscape Project (Version 3.4), no portions of Lot 1.06 are mapped within any habitats (Figure 3). A request for information was sent to the Natural Heritage Program regarding threatened and endangered species. Their response generally corresponds with the Landscape Project (Version 3.4) mapping (see Attachment B).

The existing stormwater detention basin within Lot 1.03 is mapped as a Rank 2 habitat with an occurrence of a special concern species (great blue heron) (Figure 3). According to the NJDEP, special concern refers to species that are not listed as threatened or endangered, but whose status is being monitored by the Endangered and Nongame Species Program (ENSP).

During EcolSciences' December 18, 2024 field investigation of Lot 1.06, the following species were observed by sight, call, tracks, or other signs: white-tailed deer, Canada goose, black vulture, turkey vulture, northern harrier (Non-Breeding Special Concern), red-shouldered hawk (Non-Breeding Special Concern), red-tailed hawk, mourning dove, blue jay, American crow, northern mockingbird, European starling, savannah sparrow (Non-Breeding Stable), song sparrow, white-

throated sparrow, and northern cardinal. During EcolSciences field investigation of the site, no sightings of threatened or endangered species were made.

H. Wetlands

Wetlands are lands where water saturation is the dominant factor determining the nature of soil development and the types of plants and animal communities living in the soil and on its surface. Wetlands are transitional areas between terrestrial and aquatic systems, and are unique biological habitats of socioeconomic value. Wetlands moderate extremes in water flow, aid in the natural purification of water, and may be areas of groundwater recharge. According to regulations promulgated by the United States Army Corps of Engineers (COE) and the Environmental Protection Agency (EPA) (33 CFR Section 323.2 and 40 CFR Section 230.2, respectively) and pursuant to the New Jersey Freshwater Wetlands Protection Act (2022), wetlands are those areas that are inundated or saturated with surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

The NJDEP issued a Letter of Interpretation (LOI)-Absence Determination on July 21, 2023 for Lot 1.06, which verified the absence of wetlands, State open waters and transition areas on the site (File No. 1215-23-0003.1).

I. Floodways and Floodplains

The area inundated by the floodwaters of a river or stream is termed the floodplain. Within the floodplain can be found several subdivisions: the channel, where normal, non-floodplain flow is confined; the floodway, or terrestrial areas on the margins of the channel that show permanent terracing effects of repeated flooding; and the flood fringe, or areas landward of the floodway that may be inundated during more severe (and less frequent) storms. Taken together, these areas constitute the flood hazard area around a river or stream.

The NJDEP issued a Flood Hazard Applicability Determination on April 8, 2024, which determined that Lot 1.06 is not located within any flood hazard area regulated areas (File No. 1215-23-0003.2).

J. Historic and Cultural Resources

Historic and cultural resources are man-made or man-modified features of the environment, including objects, structures, site and districts deemed to be of cultural significance. Such resources

may be pre-historic or historic in age, and are often worthy of preservation to provide present and future generations with a sense of the peoples who once lived and worked in a particular locality.

The New Jersey & National Registers of Historic Places (NJDEP, 1995, last updated March 27, 2025) does not list any registered historic or eligible for listing resources on the site.

IV. ASSESSMENT OF ENVIRONMENTAL IMPACT

This chapter addresses the potential impacts to the environmental resources of the site and surrounding areas that could result from the proposed development. Potential impacts are first discussed generally, then according to the specific topics set forth in the preceding chapter that inventoried environmental characteristics of the site. The incorporation of mitigation measures during construction and operational phases of the proposed project are cited here in the context of the potential impacts; reference is made again to these mitigating measures in the following chapter.

In general, the principal environmental impacts associated with the construction phase of such a project result from temporary disturbances to soils and vegetation. In the absence of appropriate control measures, clearing of vegetated tracts of land for construction and access to construction sites could reduce the productivity of the soil and create unsightly conditions and fugitive dust. Precipitation falling on disturbed areas could tend to erode fine soil particles and, in the absence of appropriate controls, increase loadings to areas receiving stormwater runoff. As will be detailed below, these potential adverse effects will be minimized by adherence to the Soil Erosion and Sediment Control Plan, as approved by the Freehold District of the Soil Conservation Service.

Potential impacts on specific natural or human resources are discussed in the following sections.

A. Geology

Potential impacts to the site's geological integrity are typically related to the location and extent of bedrock disturbance resulting from the construction phase. According to information contained with the SSURGO, the mapped soils in the project area generally have a depth to bedrock greater than five feet.

No significant impacts to the project area's geological integrity are anticipated from the construction of the proposed development.

B. Topography

Potential impacts to the topography of the site are related to the extent of excavation and/or filling required to achieve the desired topography for construction of the buildings and associated improvements. The topography within the area of proposed development is relatively level to gently sloping. As indicated on the grading plan, some modifications to the existing topography are proposed. Cutting and grading will be required at the proposed buildings, parking areas, driveways,

and stormwater basins. Throughout the site, soil erosion and sediment control measures will minimize soil loss and erosion wherever grading is proposed. Where changes to existing topography are planned, the proposed contours will be graded to meet the existing contours.

Overall, the grading plan calls for no significant change to the existing site conditions; the general topographic and drainage characteristics of the project site will be retained.

C. Soils

In the absence of appropriate control measures, construction activities may result in both short-term and long-term impacts related to soil loss. Removal of topsoil and organic layers could reduce the productivity of the soils, remove ground cover vegetation, and create unsightly conditions.

During the entire construction period, soil loss and associated adverse impacts will be minimized by strict adherence to the measures specified in the Soil Erosion and Sediment Control Plan, as approved by the Freehold Soil Conservation District.

D. Ground Water Quantity and Quality

Construction of the proposed development is not expected to have an adverse impact on the ground water resources of the project area. No ground water withdrawal or wastewater disposal is proposed within the site, and no private wells will be used to supply potable water for the project. Potable water for the proposed development will be provided by the North Brunswick Water Department. The estimated demand for potable water is 8,000 gpd for the proposed development (Langan, 2025).

Wastewater generated by the total proposed development, estimated to be a total of 8,000 gpd, will continue to be conveyed to the Middlesex County Utilities Authority's for treatment (Langan, 2025). This off-site treatment of wastewater by a regional municipal facility will eliminate the potential for contamination of ground water by wastewater effluent.

There will be an increase in impervious surfaces as a result of the proposed development; therefore, the potential recharge to ground water reserves will be decreased within the site. The stormwater management system will be designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) and Township's stormwater management standards through the proposed construction of bioretention basins, underground infiltration basins, and constructed wetlands. For additional details, refer to the Stormwater Narrative prepared for the project by Langan, dated June 10, 2025.

E. Surface Water Quantity and Quality

The construction of the proposed development is expected to have a minimal impact to the surface water resources on and in the vicinity of the site. Potential short-term impacts to surface water quality are generally associated with soil loss, erosion, and sedimentation during construction activities. Any adverse impacts will be minimized by the installation and maintenance of strict adherence to the measures specified in the Soil Erosion and Sediment Control Plan, as approved by the Freehold Soil Conservation District. These measures will retain disturbed soil sediment within the areas of construction, and will mitigate the potential for sediment being transported off-site.

The stormwater management system will be designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) and Township's stormwater management standards through the proposed construction of bioretention basins, underground infiltration basins, and constructed wetlands. For additional details, refer to the Stormwater Narrative prepared for the project by Langan, dated June 10, 2025.

F. Vegetation

Construction will require the disturbance of the entire Lot 1.06. These areas are characterized by a maintained field . A landscaping plan will be implemented to enhance the aesthetic features of the development. The concept landscaping plan includes the planting of evergreen trees, deciduous trees, ornamental trees, and meadow mixes.

G. Threatened and Endangered Species and Wildlife

Noise, heavy equipment, and human activity during the construction phase of the project will cause most mobile wildlife species to move from the site into adjacent undeveloped areas, if available. The project will not result in impacts to threatened and endangered species or habitats. Following construction, Lot 1.06 will continue to offer habitat to species tolerant of human disturbance. In addition, a landscaping plan will be implemented that will provide habitat and resources for these species.

H. Wetlands

The NJDEP issued a LOI-Absence Determination on July 21, 2023, which verified the absence of wetlands, State open waters and transition areas on Lot 1.06 (File No. 1215-23-0003.1). Therefore, no wetlands will be disturbed by the proposed project.

I. Floodways and Floodplains

The NJDEP issued a Flood Hazard Applicability Determination on April 8, 2024, which determined that Lot 1.06 is not located within any flood hazard area regulated areas (File No. 1215-23-0003.2). Therefore, no disturbances are proposed to flood hazard areas or riparian zones.

J. Historic and Cultural Resources

The proposed project is not expected to adversely impact any cultural or historical resources.

V. UNAVOIDABLE IMPACTS

The applicant and its engineers have proposed and planned a project that will be compatible with the surrounding land uses in North Brunswick Township. Due to this careful planning, adverse environmental impacts have been avoided or minimized by design. As discussed in the preceding chapter, most potential impacts have been minimized by sound design decisions in the planning stages of the project. This chapter identifies the probable adverse environmental impacts of the proposed project. The unavoidable environmental impacts resulting from construction and operation of the proposed project are anticipated to be:

- Development of Lot 1.06 characterized as maintained field and the associated loss of very limited wildlife habitat.

- Increases in impervious surfaces.

In general, the principal short-term environmental impacts associated with the construction phase of such a project result from temporary disturbances to soils and from the clearing of vegetation. In the absence of appropriate control measures, clearing of vegetated tracts of land for construction and access to construction sites could reduce the productivity of the soil and create unsightly conditions and fugitive dust. Precipitation falling on disturbed areas could tend to erode fine soil particles and, in the absence of appropriate controls, increase loadings to areas receiving stormwater runoff. These potential adverse effects will be managed by adherence to the Soil Erosion and Sediment Control Plan, as approved by the Freehold Soil Conservation District.

The principal long-term impact associated with the project is the conversion of approximately 23.693 acres of maintained field to warehouse/flex space uses. The mitigating measures described in the preceding chapters will serve to minimize the potential impacts to natural resources in the project area.

VII. REFERENCES

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ATTACHMENT A

Figures

EcolSciences, Inc.

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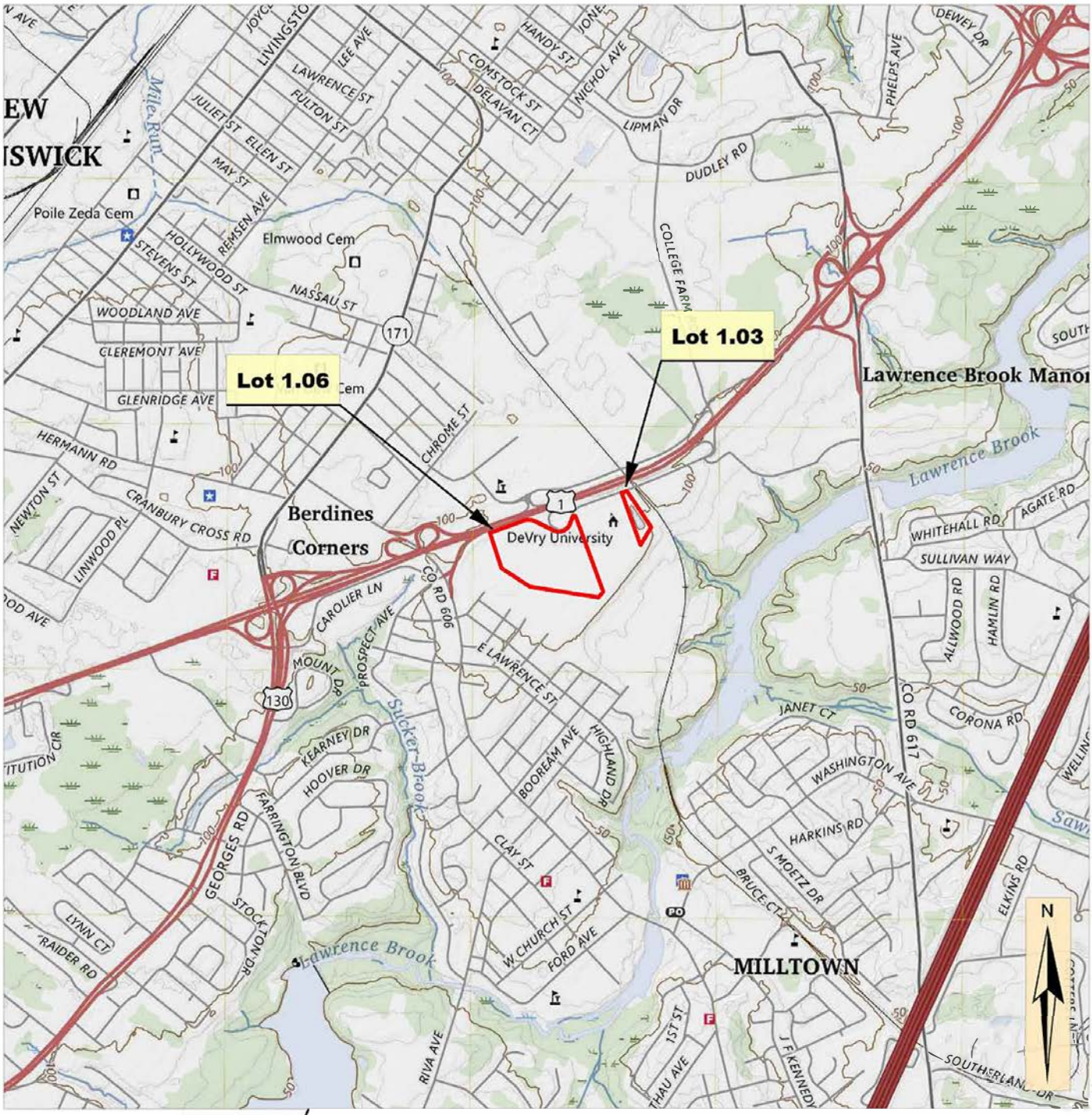

State Plane Coordinates (New Jersey NAD 83)
508,240E 594,134N ft

FIGURE 1: USGS SITE LOCATION

Block 252, Lots 1.03 and 1.06
Township of North Brunswick
Middlesex County, New Jersey

USGS. 2023. New Brunswick, NJ 7.5' quadrangle.

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

Date: 6/4/25

Scale 1:24,000

F:\Jobs2022\HW22-064\GIS\Projects\USGS_1.aprx

0 500 1,000 Feet

Site boundary

FIGURE 2: 2020 AERIAL IMAGERY

Block 252, Lots 1.03 and 1.06
Township of North Brunswick
Middlesex County, New Jersey

Source: NJOIT, OGIS. 2021. NJ 2020 High Resolution Orthophotography.

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

Date: 6/4/25

Scale 1:6,000

F:\Jobs2022\HW22-064\GIS\Projects\Aerial_1.aprx

0 750 1,500 Feet

Approximate site boundary

Species-Based Habitat

RANK

- Rank 1 - Habitat specific requirements
- Rank 2 - Special Concern
- Rank 3 - State Threatened
- Rank 4 - State Endangered
- Rank 5 - Federal Listed

FIGURE 3: LANDSCAPE PROJECT

Block 252, Lots 1.03 and 1.06
Township of North Brunswick
Middlesex County, New Jersey

Sources:
NJDEP, DFW, ENSP. 2024. New Jersey's Landscape Project (Version 3.4).
NJOIT, OGIS. 2021. NJ 2020 High Resolution Orthophotography.

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

Date: 6/4/25

Scale 1:6,000

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ATTACHMENT B

Pertinent Correspondence

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE PARKS, FORESTS & HISTORIC SITES
OFFICE OF NATURAL LANDS MANAGEMENT
501 East State Street
P.O. Box 420, Mail Code 501-04
Trenton, New Jersey 08625-0420
Tel. (609) 984-1339 * Fax (609) 984-1427
https://www.nj.gov/dep/parksandforests/natural/index.html

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

SHAWN M. LATOURETTE
Commissioner

January 30, 2025

Daniel Brill
EcolSciences, Inc.
75 Fleetwood Drive, Suite 250
Rockaway, NJ 07866

Re: Route 1
Block(s) - 252, Lot(s) - 106
North Brunswick Township, Middlesex County

Daniel Brill:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.4) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the map(s) submitted with the Natural Heritage Data Request Form into our GIS. We do not typically verify that your project bounds are accurate or check them against other sources.

We have checked the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Biotics Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Biotics Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

We have also checked the Landscape Project habitat mapping for all occurrences of rare wildlife species or wildlife habitat within one mile of the referenced site. Please refer to Table 3 (attached) to determine if any rare wildlife species or wildlife habitat is documented within one mile of the project site. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on the project site.

For requests submitted in order to make a riparian zone width determination as part of a Flood Hazard Area Control Act (FHACA) rule application, we report records for all rare plant species and ecological communities tracked by the Natural Heritage Program that may be on, or in the immediate vicinity of, your project site. A subset of these plant species is also covered by the FHACA rules when the records are located within one mile of the project site. One-mile searches for FHACA plant species will only report precisely located occurrences for those wetland plant species identified under the FHACA regulations as being critically dependent on the watercourse. Please refer to Table 3 (attached) to determine if any

precisely located rare wetland plant species covered by the FHACA rules have been documented. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on, or in the immediate vicinity of, the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1, 2 and 3 (attached) to determine if any priority sites are located on, in the immediate vicinity, or within one mile of the project site.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from https://nj.gov/dep/parksandforests/natural/heritage/database.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from https://nj.gov/dep/parksandforests/natural/docs/nhpcodes_2010.pdf.

Beginning January 6, 2025, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.4. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, https://dep.nj.gov/njfw/landscapeapp/, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

Occurrences of Bald Eagle nest and roost habitat have "special concern" rank and are included in Landscape Project Version 3.4. The DEP also recognizes that the U.S. Fish & Wildlife Service maintains additional jurisdiction pursuant to the Bald and Golden Eagle Protection Act (BGEPA). They provide guidance to avoid negative impacts in the "National Bald Eagle Management Guidelines" document found at https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf. They also provide a screening tool to help identify activities that may require a Federal permit, at https://www.fws.gov/media/northeast-bald-eagle-project-screening-form.

For occurrences of Osprey nests and other bird nests that persist year to year, active nests continue to be protected from disturbance that can result in "take" (i.e., disturbance that can cause abandonment or loss) pursuant to the NJ Endangered and Nongame Species Conservation Act (ENSCA) and the Federal Migratory Bird Treaty Act. As a result of delisting of Osprey to "stable" conservation status, Osprey nests are not represented in Landscape Project maps, but nest locations are available online at www.Osprey-Watch.org.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html.

Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements (species and/or ecological communities) or their locations. 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.

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

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 25-4007444-32449

Table 1: On Site Data Request Search Results (6 Possible Reports)

Report Name	Included	Number of Pages
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.4 Species Based Patches	No	0 pages included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.4	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.4 Stream Habitat File	No	0 pages included

Table 2: Vicinity Data Request Search Results (6 possible reports)

Report Name	Included	Number of Pages
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.4 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.4	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.4 Stream Habitat File	No	0 pages included

Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.4 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N

Table 3: Within 1 Mile for Riparian Zone Width Determination
(6 possible reports)

Report Name	**Included**	**Number of Pages**
1. Rare Plant Species Occurrences for Riparian Zone Width Determination (Flood Hazard Area Control Act Rule Appplication) - Within One Mile of the Project Site Based on Search of Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites for Riparian Zone Width Determination - Within One Mile of the Project Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.4 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.4	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.4 Stream Habitat File	No	0 pages included

Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.4 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Wood Thrush	Hylocichla mustelina	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
Mammalia								
	Northern Hoary Bat	Lasiurus cinereus	Active Season Sighting	2	NA	Special Concern	G3G4	S3
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Endangered	State Endangered	G2G3	S1
Reptilia								
	Woodland Box Turtle	Terrapene carolina carolina	Occupied Habitat	2	NA	Special Concern	G5T5	S3

Vernal Pool Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.4

Vernal Pool Habitat Type	Vernal Pool Habitat ID
Potential vernal habitat area	428

Total number of records: 1

Thursday, January 30, 2025

NHP File No.: 25-4007444-32449

State of New Jersey

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Resource Protection
Mail Code 501-02A
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/landuse

SHAWN M. LATOURETTE
Commissioner

July 21, 2023

William Iafe
90 Woodbridge Center Drive, Suite 600
Woodbridge, New Jersey 07095

RE: Letter of Interpretation: Presence/Absence Determination
File No.: 1215-23-0003.1
Activity Number: LLI230001
Applicant: NORTH BRUNSWICK EXECUTIVE PARK-N BRUNSWICK
Block(s) and Lot(s): [252, 1.06]
North Brunswick Township, Middlesex County

Dear Mr. Iafe:

This letter is in response to your request for a Letter of Interpretation from the Division of Land Resource Protection indicating the presence or absence of freshwater wetlands and waters on the referenced property.

In accordance with agreements between the State of New Jersey Department of Environmental Protection (NJDEP), the U.S. Army Corps of Engineers (USACOE) Philadelphia and New York Districts, and the U.S. Environmental Protection Agency (USEPA), the NJDEP, Division of Land Resource Protection is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACOE retains the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted, and upon a site inspection conducted by the staff of the Department on July 12, 2023, the Division of Land Resource Protection has determined that **freshwater wetlands and waters are not present** on the referenced property. In addition, the Department has determined **that no part of the above referenced property occurs within a transition area or buffer** as designated in N.J.A.C. 7:7A-3.3(d)1 and 2.

Pursuant to the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter. This letter in no way legalizes any fill which may have been placed, or other regulated activities which may have been conducted on this site. This determination does not affect your responsibility to obtain any State, Federal, county, or municipal permits which may be required.

In accordance with N.J.A.C. 7:7A-21, any person who is aggrieved by this decision may request a hearing within 30 days of the date the decision is published in the DEP Bulletin by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, Mail Code 401-04L, P.O. Box 402, 401 East State Street, 7th Floor, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist found at www.state.nj.us/dep/landuse/forms. Hearing requests received after 30 days of publication notice may be denied. The DEP Bulletin is available on the Department's website at www.state.nj.us/dep/bulletin. In addition to your hearing request, you may file a request with the Office of Dispute Resolution to engage in alternative dispute resolution. Please see the website www.nj.gov/dep/odr for more information on this process.

Please contact Kate LaMotta of our staff by e-mail at Kate.LaMotta@dep.nj.gov or (609) 940-4581 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

Sincerely,

Michael Tropiano, Environmental Specialist III
Division of Land Resource Protection

e-copy: Municipal Clerk
Municipal Construction Official
Agent (original)

State of New Jersey

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Resource Protection
Mail Code 501-02A
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/landuse

SHAWN M. LATOURETTE
Commissioner

North Brunswick Executive Park, LLC
C/O David Halpern
90 Woodbridge Center Suite 600
Woodbridge, New Jersey 07095

April 8, 2024

RE: Flood Hazard Area Applicability Determination
File and Activity No.: 1215-23-0003.2 APD 230001
Applicant: North Brunswick Executive Park, LLC
Project: North Brunswick Executive Park
Block and Lots: [252, 1.06] [252, 103]
Municipality: North Brunswick; County: Middlesex

Dear Mr. Halpern:

This is with reference to your letter of October 25, 2023, concerning the proposed redevelopment project at the above-referenced location.

Decision:

A review of the submitted material indicates that the above referenced location is not situated within any regulated areas. Therefore, a flood hazard area permit **is not required** for this project.

Conditions:

This determination is valid for five years and is conditioned upon the receipt of all other necessary approvals and permits. Any change in the scope or design of this project may result in the need for a flood hazard area permit. Also, any activity proposed within freshwater wetlands, transition areas or open waters will require a freshwater wetland approval from this office prior to construction.

All disturbed areas should be stabilized in accordance with the requirements of the local soil conservation district. Your municipal construction official should also be contacted to determine if this project complies with local flood ordinances and building codes. The municipality may modify the design of this project or deny its construction if such ordinances or codes are not met.

If you have any questions regarding this letter, please contact Sheldon Piggot by email at sheldon.piggot@dep.nj.gov or by phone at (609)777-3760. Please reference the Program's file number in all communication.

Sincerely,

Dennis Contois
Supervisor
Watershed & Land Management

c: Applicant, Greggory Woodruff (Langan Engineering and Environmental Services, Inc.)
Municipal Clerk (Township of North Brunswick)
Municipal Construction Official (Township of North Brunswick)
Municipal Engineer (Township of North Brunswick)

ATTACHMENT C

Custom Soil Resource Report

EcolSciences, Inc.

Environmental Management & Regulatory Compliance

United States Department of Agriculture

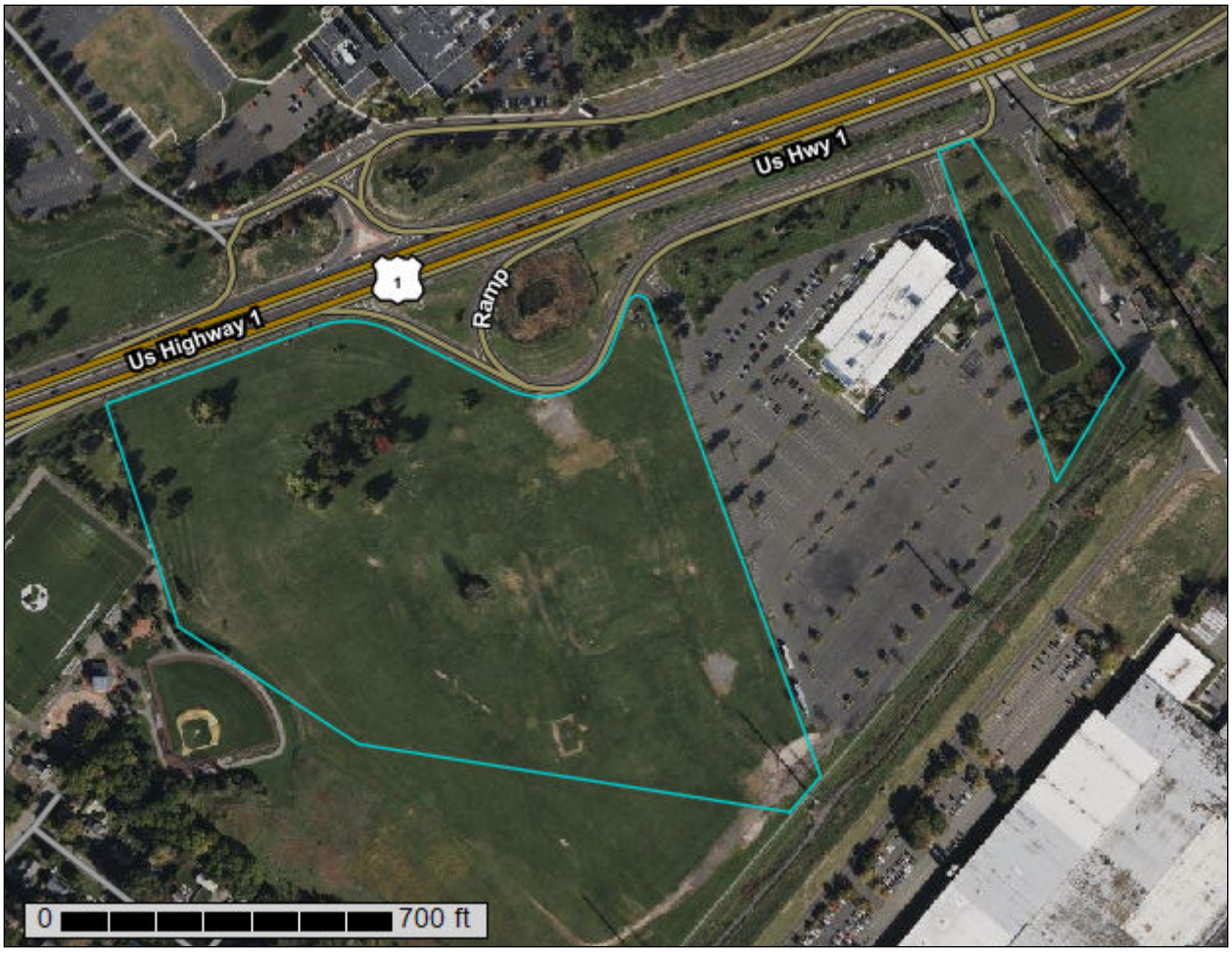
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Middlesex County, New Jersey

Block 252, Lots 1.03 & 1.06 - Township of North Brunswick



June 11, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, New Jersey
Survey Area Data: Version 20, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 9, 2022—Oct 16, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MbrA	Matapeake silt loam, 0 to 2 percent slopes	23.8	90.5%
MbrB	Matapeake silt loam, 2 to 5 percent slopes	1.2	4.4%
NknB	Nixon loam, 2 to 5 percent slopes	0.3	1.2%
SadD	Sassafras gravelly sandy loam, 10 to 15 percent slopes	1.0	3.8%
Totals for Area of Interest		**26.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Middlesex County, New Jersey

MbrA—Matapeake silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 4jx0
Elevation: 10 to 370 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Matapeake and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Matapeake

Setting

Landform: Flats, terraces, ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Silty eolian deposits over marine deposits and/or coarse fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: silt loam
Bt1 - 10 to 25 inches: silt loam
Bt2 - 25 to 33 inches: silt loam
2C1 - 33 to 50 inches: stratified sandy loam to loamy sand
2C2 - 50 to 72 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F153CY030MD - Well Drained Loess Upland
Hydric soil rating: No

Minor Components

Mattapex

Percent of map unit: 5 percent
Landform: Terraces, ridges, flats
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F153CY020MD - Moist Loess Upland
Hydric soil rating: No

Chillum

Percent of map unit: 5 percent
Landform: Ridges, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F153CY030MD - Well Drained Loess Upland
Hydric soil rating: No

MbrB—Matapeake silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 4jx1
Elevation: 10 to 370 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Matapeake and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Matapeake

Setting

Landform: Terraces, ridges, flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Silty eolian deposits over marine deposits and/or coarse fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: silt loam
Bt1 - 10 to 25 inches: silt loam

Bt2 - 25 to 33 inches: silt loam
2C1 - 33 to 50 inches: stratified sandy loam to loamy sand
2C2 - 50 to 72 inches: sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F153CY030MD - Well Drained Loess Upland
Hydric soil rating: No

Minor Components

Aura

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153DY160NJ - Well Drained Coarse-Loamy Upland
Hydric soil rating: No

Chillum

Percent of map unit: 5 percent
Landform: Terraces, ridges
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Ecological site: F153CY030MD - Well Drained Loess Upland
Hydric soil rating: No

NknB—Nixon loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 4jx9
Elevation: 10 to 330 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Nixon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nixon

Setting

Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old fine-loamy alluvium derived from arkose and/or shale

Typical profile

A - 0 to 8 inches: loam
AB - 8 to 11 inches: loam
B - 11 to 30 inches: loam
2BC - 30 to 40 inches: sandy loam
2C - 40 to 60 inches: stratified loamy sand to gravelly sandy loam to sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Minor Components

Woodstown

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Sassafras

Percent of map unit: 5 percent
Landform: Hills, knolls
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex

Across-slope shape: Linear
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Lansdowne

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F148XY025PA - Moist, Triassic, Upland, Mixed Oak - Hardwood - Conifer Forest
Hydric soil rating: No

SadD—Sassafras gravelly sandy loam, 10 to 15 percent slopes

Map Unit Setting

National map unit symbol: 4jy5
Elevation: 10 to 600 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Not prime farmland

Map Unit Composition

Sassafras and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sassafras

Setting

Landform: Hillslopes, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy and/or gravelly fluviomarine deposits

Typical profile

A - 0 to 3 inches: gravelly sandy loam
AB - 3 to 15 inches: gravelly sandy loam
Bt1 - 15 to 20 inches: sandy clay loam
Bt2 - 20 to 35 inches: sandy clay loam
BC - 35 to 42 inches: sandy loam
C - 42 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 10 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 48 to 122 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Minor Components

Downer

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153DY160NJ - Well Drained Coarse-Loamy Upland
Hydric soil rating: No

ATTACHMENT D

Qualifications of Preparers

EcolSciences, Inc.

Environmental Management & Regulatory Compliance

DAVID P. MOSKOWITZ, Ph.D., SPWS

EDUCATION:

Ph.D. 2016 -Entomology
Rutgers University, New Brunswick, N.J.

M.S. 2000 -Environmental Policy Studies
New Jersey Institute of Technology, Newark, N.J.

B.A. 1984 -Environmental Studies
George Washington University, Washington, D.C.

PROFESSIONAL AFFILIATIONS:

Society of Wetland Scientists
Entomological Society of America
American Entomological Society
Lepidopterists' Society

PROFESSIONAL CERTIFICATIONS:

Senior Professional Wetland Scientist -SPWS
Certified Wetland Delineator -Corps of Engineers
USEPA Wetland Delineation -WTI
Qualified Ornithologist -NJDEP
Qualified Bog Turtle Surveyor – USFWS

EXPERIENCE:

Dr. Moskowitz is a Principal with EcolSciences, Inc. During the past 38 years with EcolSciences, Inc., Dr. Moskowitz has conducted more than 7,500 environmental studies for a wide range of clients including government agencies, and the development, legal, engineering and financial professions. These studies have focused on wetland and wildlife issues including delineations, field surveys, mitigation and regulatory compliance as well as Phase I, Phase II and Brownfields Redevelopment. Dr. Moskowitz has also provided expert testimony before numerous municipal boards and the New Jersey Meadowlands Commission and has been qualified as an expert in Superior Court of New Jersey, New Jersey Office of Administrative Law, New Jersey Condemnation Commission, and the Morris County Board of Taxation.

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Accepted and in press: Gotham City History Blog: The Life and Rediscovered 20th Century Boy Scout Fiction Artwork of New York City Artist Edward C. Caswell.

KARIN TEKEL, SPWS

EDUCATION:

M.S. Hydrologic Sciences, June 2001
University of California, Davis, California

B.S. Environmental Science, May 1997
Rutgers University, New Brunswick, New Jersey

B.S. Natural Resource Management, May 1997
Rutgers University, New Brunswick, New Jersey

AREAS OF EXPERTISE:

Environmental Impact Statement
Regulatory Analysis and Compliance
Wetland Delineation and Permitting
Threatened and Endangered Species Surveys
Ecological Field Studies and Habitat Assessment
Geographic Information Systems (GIS)

CERTIFICATIONS:

Senior Professional Wetland Scientist (Society of Wetland Scientists) #1621
Wetland Delineation Certificate – Rutgers University OCPE
NJDEP's Flood Hazard Area Certification Program – Montclair State University
Birder Certification Online – Certification Level 3, Bird Conservation Regions 28, 29, and 30 (www.birdercertification.org/)
Approved Wood Turtle Monitor – NJDEP

PROFESSIONAL ASSOCIATIONS:

Member of Society of Wetland Scientists since 2001

EXPERIENCE:

Ms. Tekel is a Vice President with EcolSciences, Inc. Her responsibilities include: the delineation of wetlands based on the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, the preparation of applications for Letters of Interpretation, Transition Area Waivers, General Permits, and Individual Permits in accordance with the New Jersey Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, Coastal Zone Management Rules, the implementation and documentation of wildlife and botanical habitat assessments and species surveys, and the use of Geographic Information Systems (GIS) in its capacity as an instrument of environmental analysis.

Prior to joining EcolSciences, Inc., Ms. Tekel was employed as a Research Assistant at the Water Resources Center of the University of California in conjunction with obtaining a Master of Science in Hydrologic Sciences. A summary of Ms. Tekel relevant experience includes:

Wetland Delineations

- Conducted wetland delineations using the Federal Manual three-parameter approach using vegetation, soils, and hydrology.

- Assisted in the wetland delineation on a 243-acre property in the Township of Lafayette, New Jersey.

- Led a wetland delineation on a 274-acre property in the Township of Andover, New Jersey.

- Assisted in the wetland delineation for a 1,510±-acre Duke Farms property in New Jersey.

Permitting

- Prepared and obtained New Jersey Department of Environmental Protection (NJDEP) Freshwater Wetlands and Waterfront Development Permits and U.S. Army Corps of Engineers (USACE) Nationwide Permits for the closure of three abandoned landfills and the construction on the landfill cap of over 1,000,000 square feet of state-of-the-art warehousing. The waterfront development permits ultimately authorized filling below mean high water for the landfill closure and the development of the project on the landfill cap.

- Prepared and obtained over 600 applications for Letters of Interpretation, General Permits, Transition Area Waivers, and Individual Permits pursuant to the NJDEP Freshwater Wetlands Protection Act.

- Prepared and obtained NJDEP Freshwater Wetlands and Coastal Area Facility Review Act (CAFRA) Permit for a 10-acre property in the City of Pleasantville, New Jersey. The project involves the construction of multi-family residential units divided on the site of the former Pleasantville High School, which has since been demolished. All of the required permits were obtained for the project.

- Prepared and obtained NJDEP Highlands Preservation Area Resource Area Determinations for two properties in the Township of Roxbury, New Jersey.

- Prepared and obtained Highlands Exemptions for proposed single-family residences in the Highlands Preservation Area.

- Prepared Joint Applications for USACE Section 404 Permit and Pennsylvania Water Obstruction and Encroachment Permit for sites in Pennsylvania.

- Prepared Wetlands Individual Permit application for a major residential development on ±100 acres of a former golf course spanning two towns in Bergen County, New Jersey. The development plan includes the remediation of pesticide contaminated soils through blending. Also prepared Flood Hazard Area Permit supporting documentation, which included information concerning the restoration of a stream corridor, and prepared municipal Environmental Impact Statements for submission to the two towns. The permits were obtained and the project has begun construction.

- Prepared Freshwater Wetlands and CAFRA permit applications, with supporting documentation, for the expansion of several sand mines on ±1,000 acres in Cumberland County, New Jersey. The permits were obtained, and the expansions are ongoing.

- Prepared Waterfront Development and Freshwater Wetlands permit applications, with supporting documentation, for the construction of a hotel on an existing shopping center site in Hudson County, New Jersey. Public access, threatened and endangered species, and stormwater management were of primary concern. The permits were obtained.

- Prepared and obtained Flood Hazard Area Verifications, Individual Permits, and Hardship Exceptions pursuant to the NJDEP Flood Hazard Area Control Act Rules. Evaluated properties for riparian zone widths.

- Evaluated properties for environmental sensitive areas and prepared Habitat Suitability Determinations for possible inclusion in the sewer service areas in New Jersey.

Corridor/Utility Experience

- Prepared necessary permitting for a petroleum product pipeline relocation underneath the Arthur Kill and Newark Bay and adjacent uplands and wetlands. Applications were submitted to the USACE, New York State Department of Environmental Conservation, New York State Department of State, New York State Office of General Services, NJDEP, and New Jersey Bureau of Tidelands. Issues addressed within the application support documents included impacts to essential fish habitat, freshwater and tidal wetlands, and navigation. All of the required permits were obtained for the project and the project was completed.

- Designed, directed, and participated in wetland delineations, ecological studies, regulatory assessment and regulatory compliance for several proposed underground oil pipelines, upgrade/replacement to electric transmission rights of ways (ROW), and sanitary sewer alignments, and their associated access roads throughout New Jersey.

- Managed complex electronic transmission ROW upgrade projects from planning to construction stages. This included the leading of large-scale field efforts including wetland delineations, threatened and endangered wildlife and plant assessments and surveys, vernal habitat assessments and surveys, and pre-construction monitoring. Worked with project teams to minimize disturbances to regulated areas, managed permitting efforts when needed, and negotiated with NJDEP to solve permitting concerns.

- Monitoring of construction and/or maintenance activities within environmentally sensitive areas along various overhead electric transmission and gas pipeline ROWs. Tasks include delineating and monitoring regulated activities within environmentally sensitive areas for the purposes of natural resources protection (wetlands, waters, and threatened and endangered species), soil and sediment erosion control, access road maintenance and repair, and ROW vegetation maintenance, including herbicide application, mowing, hand-cutting, and tree-cutting.

Wetland/Riparian Zone Mitigation

- Assisted in the preparation of a riparian zone and freshwater wetlands mitigation plan for remediation and subsequent redevelopment within regulated areas for a site in the Borough of Upper Saddle River, New Jersey.

- Conducted multi-year monitoring of remediated and restored wetlands and transition areas pursuant to an approved NJDEP Freshwater Wetlands General Permit Number 4 for a site in Hanover Township, New Jersey. The monitoring includes the evaluation of wetlands hydrology and hydric soils.

- Prepared a transition area restoration planting plan pursuant to a NJDEP Special Activity Waiver for a site in Denville Township, New Jersey.

- Conducted multi-year monitoring of wetlands habitat restoration project. This included the establishment and surveys of plant quadrats, supervision of planting of native shrubs and herbaceous species, and supervision of invasive species treatment and removal using herbicide and manual removal.

Municipal Environmental Impacts Statements

- Prepared over 100 Environmental Impact Statements and Assessments for residential, industrial, and commercial projects throughout New Jersey.

- Prepared an Environmental Impact Assessment for Virgin Spa at Natirar on a 90-acre property in the Borough of Peapack and Gladstone, New Jersey.

- Provided expert testimony concerning wetlands and flood hazard area issues at a municipal hearing for a preliminary and final site plan approval application for a site in Wayne Township, New Jersey.

Vernal Habitats

- Led over 200 vernal habitat assessments and surveys in accordance with survey protocols developed by the NJDEP. Pertinent information was gathered on hydrology, vegetation, observed reptile and amphibian species, and weather conditions.

- Assisted in the preparation of two vernal habitat creation plans, which involved the selection of suitable native vegetation and consultation with the project engineer concerning hydrologic budget, lining material, topographic contours, and construction methodology.

Avian Studies

- Led surveys for the State-endangered (breeding) Northern Goshawk (*Accipiter gentilis*), (breeding) Red-Shouldered Hawk (*Buteo lineatus*), State-threatened Barred Owl (*Strix varia*), special concern (breeding) Broad-Winged Hawk (*Buteo platypterus*), (breeding) Cooper's Hawk (*Accipiter cooperii*), and (breeding) Sharp-Shinned Hawk (*Accipiter striatus*) in New Jersey. Surveys included call surveys and nest/tree cavity searches.

- Led surveys for the State-endangered (breeding) Golden-Winged Warbler (*Vermivora chrysoptera*) in accordance with the Cornell Lab of Ornithology's Golden-Winged Warbler Atlas Project (1999-2005). Surveys included call surveys and habitat assessments.

- Led surveys for the State-threatened Red-Headed Woodpecker (*Melanerpes erythrocephalus*) in New Jersey. Surveys included call and cavity nest surveys.

- Assisted in grassland bird surveys for State-threatened Grasshopper Sparrow (*Ammodramus savannarum*), Savannah Sparrow (*Passerculus sandwichensis*), and Bobolink (*Dolichonyx oryzivorus*) in New Jersey.

Snake Studies

- Assisted in diurnal and nocturnal road cruising, grid searches, and drift fence trapping surveys for State-threatened Northern Pine Snake (*Pituophis melanoleucus melanoleucus*) for multiple properties in the Townships of Barnegat, Stafford, and Toms River New Jersey. The surveys were approved by the NJDEP and Pinelands Commission.

- Conducted radio telemetry for Northern Pine Snakes for multiple properties in the Townships of Stafford and Toms River, New Jersey.

- Assisted in grid searches and drift fence trapping for Northern Pine Snake and State-endangered Timber Rattlesnake (*Crotalus horridus*) on multiple properties in the Townships of Manchester and Stafford. The surveys were approved by the NJDEP and Pinelands Commission.

- Assisted in Timber Rattlesnake gestation surveys at two survey locations associated with an overhead electric transmission line in Morris and Sussex Counties, New Jersey.

Salamander Studies

- Conducted field surveys for the State-endangered Blue-Spotted Salamander (*Ambystoma laterale*) and State-Threatened Long-Tailed Salamander (*Eurycea longicauda longicauda*).

- Led Blue-Spotted Salamander surveys on multiple overhead electric transmission lines in Essex and Morris Counties, New Jersey.

Turtle Studies

- Led Phase I and Phase II Surveys for Federally-threatened and State-endangered Bog Turtle (*Glyptemys muhlenbergii*).

- Assisted in Phase III trapping and radio telemetry for Bog Turtle.

- Prepared over 25 Bog Turtle Phase II Survey Reports for many sites in New Jersey and York County, Pennsylvania.

- Prepared Bog Turtle Phase I Survey Reports for Pocono Manor Inn and Resort and Transcontinental Gas Pipeline Corporation ROW in Pennsylvania, and Tennessee Gas Pipeline ROW in New Jersey.

- Led Bog Turtle Phase I and Phase II surveys on multiple overhead electric transmission line upgrade projects or for routine maintenance for multiple sites in New Jersey.

- Conducted surveys for the State-threatened Wood Turtle (*Clemmys insculpta*) for several sites throughout New Jersey.

- Conducted a long-term Wood Turtle survey that involves radio telemetry of adults and hatchlings, hibernacula surveys, nesting surveys, and nest protection.

- Formerly Recognized Qualified Bog Turtle Surveyor in New Jersey (USFWS) from 2010-2022.

- Formerly Recognized Qualified Bog Turtle Surveyor in Hudson River/ Housatonic Recovery Unit in New York, Massachusetts, and Connecticut (USFWS) from 2010-2024

Rare Plant Studies

- Conducted several surveys for rare plants including the Federally-threatened and State-endangered Small Whorled Pogonia (*Isotria medeoloides*), Swamp Pink (*Helonias bullata*), and Knieskern's Beaked-Rush (*Rhynchospora knieskerni*), State-endangered Willow-Leaf Aster (*Symphyotrichum praealtum* var. *praealtum*), and Pinelands Commission-listed Little Ladies' Tresses (*Spiranthes tuberosa*).

University Research Studies

- Collected field observational data on individual wetland plant species pertaining to nutrient resorption.

- Conducted vegetation surveys for percent cover, biomass estimations, and community composition for inland Californian freshwater marshes.

- Performed streamflow measurements, groundwater, and infiltration analyses.

- Conducted mesocosm experiments to assess the response of selected wetland plant species (native and introduced) to nutrient enrichment and two different water levels.

PUBLICATIONS:

Rejmánková, Eliska and Karin Tekel. Start July 1, 1998. Technical Completion Report. Life History Strategies of California Native Plants: Implications for Wetland Creation and Restoration. University of California, Davis, Center for Water Resources. http://www.waterresources.ucr.edu/wrc/publications/rejmankova_W-907.pdf

Tekel, Karin Jean. 2001. Thesis (M.S.). The relationship between water quality and plant functional groups in freshwater wetlands. University of California, Davis.

DANIEL BRILL

EDUCATION: *B.A., 1996 – Environmental Studies*
Richard Stockton College
Galloway, New Jersey

AREAS OF EXPERTISE: *Threatened & Endangered Species Habitat Assessments and Surveys*
Geographic Information Systems

PROFESSIONAL CERTIFICATIONS: *Rutgers Cook College Office of Continuing Professional Education*
- *Wetlands Delineation Certificate Series*
- *Professional Certificate Program in Geomatics*

Birder Certification Online – Certification Level 3 (highest), Bird Conservation Regions 28, 29 & 30 (www.birdercertification.org/)

EXPERIENCE:
Mr. Brill is a senior ornithologist/senior environmental scientist with EcolSciences, Inc. His specialties are in threatened and endangered species studies and the use of Geographic Information Systems (GIS) software as an instrument of environmental analysis.

Responsibilities include support in the planning, implementation, documentation, and analysis of plant and wildlife habitat assessments and surveys, the delineation of wetlands based on the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, and the preparation of various wetland-related permit applications and reports.

Mr. Brill was an educator at the Cooper Environmental Center with Ocean County Parks and Recreation and a frequent volunteer with the New Jersey Department of Environmental Protection and New Jersey Audubon Society prior to his employment with EcolSciences.

Threatened and Endangered Plant and Wildlife Studies
Contribute to the design, implementation, documentation, and analysis of habitat evaluations and surveys of endangered, threatened, and special concern flora and fauna. Such studies include:

- Lead Bald Eagle monitor 2021-2024 of an active nest at the site of a warehouse development in central New Jersey in accordance with conditions set by the New Jersey Department of Environmental Protection.

- Lead Bald Eagle monitor 2022-2023 of an eagle pair in the New Jersey Meadowlands that had their nest platform removed from a utility pole out of safety for the birds. The pair relocated to a new nest that successfully fledged two young.

- Lead Bald Eagle monitor 2020-2022 of two nests on an overhead transmission line right-of-way construction project in northern New Jersey in accordance with United States Fish and Wildlife Service permit conditions. The project included the successful transplant of an active eagle nest from an old transmission tower scheduled for demolition to a new tower with no lost productivity.

- Lead Bald Eagle monitor 2012-2014 on an overhead transmission line right-of-way construction project in northern New Jersey in accordance with United States Fish and Wildlife Service permit conditions. Construction activities, including intense helicopter usage, approached three eagle territories in Morris County and resulted in no lost productivity.

- Avian monitor April – July 2014 at ROW construction project on the Raritan Estuary in Middlesex County as provided in a NJDEP Waterfront Development Permit. Work activities approach multiple Osprey nests. Several other State-listed birds had been observed in the work area including Black-crowned Night-heron, American Bittern, Bald Eagle, Northern Harrier, Least Tern, and Black Skimmer.

- Other avian studies of raptors such as Peregrine Falcon, Red-shouldered Hawk, Cooper's Hawk, and Barred Owl; grassland species including Horned Lark, Vesper Sparrow, Savannah Sparrow, Grasshopper Sparrow, and Bobolink; wading birds like Yellow-crowned Night-heron and Great Blue Heron; and other birds such as Red-headed Woodpecker and Golden-winged Warbler.

- Large-scale and long-term studies of the New Jersey State-endangered Corn Snake and Timber Rattlesnake and State-threatened Northern Pine Snake, including the use of trapping and radio telemetry equipment.

- Other NJ State-listed herptiles such as Bog Turtle, Wood Turtle, Southern Gray Treefrog, Pine Barrens Treefrog, and Long-tailed Salamander.

- Plants such as the Federally-threatened and New Jersey State-endangered Swamp Pink (*Helonias bullata*) and Knieskern's Beaked-rush (*Rhynchospora knieskernii*) and Pinelands-listed Little Ladies Tresses (*Spiranthes tuberosa*).

Geographic Information Systems

Almost all projects have a geographic component that can be expressed via maps. Geographic Information Systems software has been used to:

- Quickly determine and effectively communicate potential environmental and cultural constraints on a given site such as historic features, wetlands, vernal habitat, riparian zones, floodplains, rare plants and ecological communities, and critical wildlife habitat.

- Plot results of plant and wildlife species surveys, establish and quantify critical nesting and foraging habitat according to peer-reviewed models, and develop species management strategies.

- Analyze land use/land cover change over time in areas with records of threatened and endangered species such as Bald Eagle, Black-crowned Night-heron, Barred Owl, Red-headed Woodpecker, and Northern Pine Snake to determine if these areas remain suitable habitat.

- Prepare portions of a Natural Resource Inventory for the Borough of Milltown, Middlesex County, New Jersey.

- Successfully demonstrate to NJDEP that the width of a wetlands transition area can be reduced or that a site should remain within a sewer service area.

Other Applicable Experience

- Presented at the Endangered and Nongame Species Advisory Committee meeting September 21, 2010 as part of a gathering of various users of the NJDEP Landscape Project critical wildlife habitat map to discuss its application, strengths, limitations, and suggested improvements.

- Participated in the 2007 Special Pinelands Plants Course offered by the Pinelands Preservation Alliance, consisting of fourteen full-day sessions designed to instruct students in the identification, habitat, distribution, threats, and possible management strategies of rare Pinelands plants.

- Assisted in the delineation of wetlands using the Federal Manual three-parameter approach using vegetation, soils, and hydrology.

- Assembled application packages for submission to the NJDEP including Letters of Interpretation, Statewide General Permits, Transition Area Waivers, and CAFRA Permits (including Endangered or Threatened Wildlife Habitat Evaluations and Impact Assessments).

- Contributed in the composition of Environmental Impact Statements and Assessments for residential, industrial, and commercial projects.

- Helped conduct a bird/tower collision study during the spring and fall migrations in the New Jersey Meadowlands.

- Assisted the annual Sandy Hook Hawk Watch for New Jersey Audubon Society. Upwards of fifteen or more species of diurnal raptors can be expected at this location. Results over a number of years can help determine long-term trends in raptor populations and migratory movements. Work included educating the public on raptor identification and conservation.

- Project assistance for Neotropical Passerine Critical Areas: Pinelands Survey (Landscape Project for Protection of Rare Species). The objective of this NJDEP-sponsored study was to determine the distribution, abundance, and habitat characteristics of neotropical birds and other observed species.

- Participation in the New Jersey Breeding Bird Atlas with data contributed towards *Birds of New Jersey* (Walsh, Elia, Kane, and Halliwell, 1999) published by the New Jersey Audubon Society. Work involved identifying and recording all breeding bird species and observed behaviors in predetermined survey blocks.

- Compiler of the Assunpink Christmas Bird Count 2016 to present.