

**ENVIRONMENTAL IMPACT REPORT
FOR
PROPOSED WAREHOUSES
BLOCK 177, LOT 8.01
TOWNSHIP OF HOWELL
MONMOUTH COUNTY, NEW JERSEY**

Prepared for:

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I. EXECUTIVE SUMMARY

AAFRHW Property, LLC of Englewood, New Jersey, is proposing a warehouse development project within a 45.2± acre site known as Block 177, Lot 8.01 in the Township of Howell, Monmouth County, New Jersey. The site is largely undeveloped land, with a vacant single-family residence in the northeast portion of the site. The site is characterized as agricultural field, upland forest, and forested wetland. A pond is located in the north portion of the site. The site is bordered to the west by Fairfield Road within undeveloped land and a solar facility beyond; to the north and east by undeveloped forest; and to the south by a plant nursery, agricultural fields, and sparse residential development.

The project consists of the construction of two proposed warehouses. Proposed Warehouse A would occupy approximately 369,242 square feet (SF) within the west portion of the site parallel to Fairfield Road. Proposed Warehouse B would occupy approximately 134,714 SF in the east portion of the site. A total of 297 parking spaces, 35 trailer spaces, and 90 loading docks are proposed. The project will be accessed by two proposed driveways off Fairfield Road.

Stormwater from the developed portions of the site will be collected by a proposed stormwater management system. This system will consist of a series of catch basins and inlets and subsurface piping that will convey stormwater to several stormwater infiltration and bio-retention basins proposed on the site. The stormwater management system has been designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) for runoff volume, ground water recharge, water quality, and green infrastructure. For specific details regarding the proposed stormwater management system, refer to the Stormwater Management Report prepared for the project by Bohler Engineering NJ, LLC of Warren, New Jersey (Bohler) dated October 2021.

The principal impacts of the proposed plan are those associated with a change in land use from agricultural field and upland forest to warehouse development. Long-term impacts to the site include an increase in impervious surfaces and the loss of natural habitats. Temporary impacts will occur during the construction phase of the project and include soil loss, and increased noise and dust levels. All impacts will be minimized through appropriate mitigation procedures and best management practices.

This Environmental Impact Report (EIR) has been prepared by EcolSciences, Inc. of Rockaway, New Jersey in accordance with Township of Howell's Land Use Ordinance §188-6 (Environmental Impact Report) and is intended to support site plans prepared by Bohler (2021). The following chapters provide a project description, a discussion of alternatives, an inventory of existing

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environmental conditions in and around the site, an assessment of potential impacts associated with the proposed development plan, a description of performance controls designed to mitigate adverse impacts, and a listing of required permits and approvals.

II. DESCRIPTION OF DEVELOPMENT PLAN

A. General Description

Active Acquisitions of Englewood, New Jersey, is proposing a warehouse development project within a 45.2± acre site known as Block 177, Lot 8.01 in the Township of Howell, Monmouth County, New Jersey. The site is largely undeveloped land, with a vacant single-family residence in the northeast portion of the site. The site is characterized as agricultural field, upland forest, and forested wetland. A pond is located in the north portion of the site. The site is bordered to the west by Fairfield Road within undeveloped land and a solar facility beyond; to the north and east by undeveloped forest; and to the south by a plant nursery, agricultural fields, and sparse residential development.

The project consists of the construction of two proposed warehouses. Proposed Warehouse A would occupy approximately 369,242 square feet (SF) within the west portion of the site parallel to Fairfield Road. Proposed Warehouse B would occupy approximately 134,714 SF in the east portion of the site. A total of 297 parking spaces, 35 trailer spaces, and 90 loading docks are proposed. The project will be accessed by two proposed driveways off Fairfield Road.

B. Master Planning and Zoning

The site is located within the Special Economic Development (SED) Zone of the Township of Howell. Warehousing is a permitted use in the SED Zone. The proposed project meets the bulk requirements of the SED Zone. For details, please refer to the site plans as prepared by Bohler (2021).

According to the New Jersey State Development and Redevelopment Plan, the site is within the Environmentally Sensitive Planning Area (PA5). In the Environmentally Sensitive Planning Area, the State Plan's intention is to: protect environmental resources through the protection of large contiguous areas of land; accommodate growth in Centers; protect the character of existing stable communities; confine programmed sewers and public water services to Centers; and revitalize cities and towns (New Jersey State Planning Commission, 2001). The State Plan provides for the protection of critical natural resources and for the maintenance of the balance between ecological systems and beneficial growth (New Jersey State Planning Commission, 2001). As demonstrated throughout this EIR, the proposed project has been designed to avoid environmentally sensitive areas on the site.

C. Sanitary Sewage

Sanitary sewage service for the proposed development will be provided through connection to existing facilities located along a proposed sanitary main extension along Fairfield Road. Wastewater for the project will be conveyed through the Manasquan River Regional Sewage

Authority collection system to the Ocean County Utilities Authority (OCUA) sewage treatment plant for treatment. It is estimated that the proposed development will generate 22,275 gallons per day (gpd) of wastewater (Bohler, 2021).

D. Potable Water Supply

Potable water for the proposed development will be obtained from New Jersey American Water by a connection to an existing line located along Fairfield Road. The estimated demand for potable water for the proposed development is 22,275 gpd (Bohler, 2021).

E. Stormwater Management Facilities

Stormwater from the developed portions of the site will be collected by a proposed stormwater management system. This system will consist of a series of catch basins and inlets and subsurface piping that will convey stormwater to several stormwater infiltration and bio-retention basins proposed on the site. The stormwater management system has been designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) for runoff volume, ground water recharge, water quality, and green infrastructure. For specific details regarding the proposed stormwater management system, refer to the Stormwater Management Report prepared for the project by Bohler dated October 2021.

F. Utilities Plan

All other utilities (electricity, gas, cable television, telephone, etc.) will be provided through connections to the existing lines located along Fairfield Road. All proposed utility connections will be located underground.

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 Howell, in conjunction with Monmouth County, has developed a recycling program that requires the recycling of aluminum cans, glass bottles and jars, plastic bottles, steel cans, newspaper, corrugated cardboard, and mixed paper.

III. PROJECT ALTERNATIVES

A. No-Build Alternative

The no-build alternative assumes no development of the site, which would then remain in its present undeveloped condition. This alternative does not satisfy the intended purpose for the site under the Township of Howell's Land Use Ordinance. The site is privately owned, and subject to applicable laws and regulations, can be developed. The No-Project alternative would result in a loss in tax revenues and infrastructure improvements to the Township of Howell. Therefore, this alternative was rejected because it does not allow a reasonable use of the site and does not contribute to temporary and permanent jobs in the Township of Howell.

B. Alternative Uses

The project as designed is in conformance with the SED zoning district of the Township of Howell. Warehousing is a permitted use in the SED Zone. The proposed project meets the bulk requirements of the SED Zone. For details, please refer to the site plans as prepared by Bohler (2021).

The Township of Howell's "Master Plan Reexamination Report" (November 18, 2019) indicates that a continued goal of the Township is to "encourage the redevelopment or revitalization of vacant or underutilized properties". The 2019 Master Plan Reexamination Report notes that while the Township has seen development applications for the revitalization and improvement of vacant and underutilized commercial properties along the primary corridors of Route 9 and Route 33, several underutilized properties remain (Township of Howell, 2019).

The proposed project aligns with the Township goal noted above in providing for warehouse development on a site that is currently vacant and underutilized. The site is situated within the SED Zone, and warehousing is a permitted use making the proposed project consistent with the Township's Land Use Ordinance. The site is in close proximity to one of the Township's main corridors, Route 33. Various concepts were evaluated; the culmination of those evaluations is the proposed development, which is consistent with the Township's "Master Plan Reexamination Report" and the Township's Land Use Ordinance.

IV. 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 Township of Howell is situated within the Atlantic Coastal Plain of the Appalachian Physiographic Province of New Jersey. The Atlantic Coastal Plain is divided into Inner and Outer sections, the dividing line of which runs northeast and southeast through the southern half of the State. The Township of Howell is within the Outer Coastal Plain. The Outer Coastal Plain was laid down by the ocean and developed during the mid-to-late Cenozoic era (65 million years ago to the present). The soils of the Outer Coastal Plain are sandier, less fertile, and more porous than the soils of the Inner Coastal Plain to the north (Township of Howell, 2008).

Four surface geologic deposits are mapped on the site including Weathered Coastal Plain Formations, Lower Colluvium, Upland Gravel, and Alluvium. The majority of the site is mapped as Weathered Coastal Plain Formations, which consists of exposed sand and clay of Coastal Plain bedrock formations. This formation includes thin, patchy alluvium and colluvium, and pebbles left from erosion of surficial deposits (NJDEP, Last Updated August 4, 2021). The north portion of the site is mapped as Lower Colluvium, which consists of sand, silt, minor clay and pebble gravel; yellow, yellowish brown, reddish yellow, light gray. This formation can be as much as 20 feet thick, but is generally less than 10 feet thick (NJDEP, Last Updated August 4, 2021). Alluvium encroaches into the site's northeast boundary, which consists of sand, gravel, silt, minor clay and peat; reddish brown, yellowish brown, brown, gray and can be as much as 20 feet thick (NJDEP, Last Updated August 4, 2021). Finally, the southern portion of the site is mapped as Upland Gravel, which consists of sand,

clayey sand, pebble gravel, minor cobble gravel; yellow to reddish yellow and can be as much as 20 feet thick. (NJDEP, Last Updated August 4, 2021).

Below the surficial deposits, the site is mapped as Vincentown Formation, which consists of quartz sand, medium-grained, clayey; and glauconitic near base; locally a calcarenite or coquina (NJDEP, Last Updated August 4, 2021). According to the Township of Howell's Environmental Resource Inventory (2008), the Vincentown Formation is the largest outcropping confining bed in the Township (Township of Howell, 2008).

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.

The site is gently to moderately sloping with elevations ranging from approximately 106 feet in the southeast corner of the site to approximately 129 feet in the southcentral portion of the site where the site abuts the plant nursery.

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 (USDA) has, through the Soil Conservation Service (SCS), mapped soils in detail; for New Jersey, the results of these soil surveys are issued for each county.

According to the Monmouth County Soil Survey (SCS, 1989, Sheet 35) as prepared by the USDA SCS (Figure 3), seven soil units representing four soil series occur on the site: Evesboro sand, 2 to 5 percent slopes (EvB); Evesboro sand, 5 to 10 percent slopes (EvC); Hammonton loamy sand, 0 to 3 percent slopes (HaB); Hammonton sandy loam, 2 to 5 percent slopes (HbB); Klej loamy sand, 0 to 3 percent slopes (K1A); Klej loamy sand, clayey substratum, 0 to 5 percent slopes (KmB); and Manahawkin muck (Ma). Table 1 lists the soil characteristics, limitations, and suitabilities. A brief description of each soil per the SCS is provided as follows:

Table 1:
Soil Characteristics, Limitations, and Suitabilities*

Parameter	Evesboro (EvB)	Evesboro (EvC)	Hammonton (HaB)	Hammonton (HbB)	Klej (KIA)	Klej (KmB)	Manahawkin (Ma)
Texture	Sand	Sand	Loamy sand	Sandy loam	Loamy sand	Loamy sand	Muck
Slope (%)	2 – 5	5 – 10	0 – 3	2 – 5	0 – 3	0 – 5	0 – 2
Depth to Bedrock (ft.)	>5.0	>5.0	>5.0	>5.0	>5.0	>5.0	>5.0
Depth to Seasonal High Water Table (ft.)	>6.0	>6.0	1.5 – 4.0	1.5 – 4.0	1.5 – 4.0	1.5 – 4.0	0 – >1
Permeability (in./hr.)	6.0 – 20	6.0 - 20	>2.0 - 20	>0.2 – 6.0	>6.0	0.06 – 20	2.0 – 20
Available Water Capacity (in./in. soil)	0.04 – 0.10	0.04 – 0.10	0.03 – 0.16	0.03 – 0.16	0.06 – 0.11	0.06 – 0.20	0.04 – 0.35
pH	3.6 – 5.0	3.6 – 5.0	3.6 – 5.5	3.6 – 5.5	3.6 – 5.0	3.6 – 5.0	3.6 – 5.5
Erosion Hazard - Water	Slight	Moderate	Slight	Slight (general)	Slight	Slight	Slight (general)
Erosion Hazard - Wind	Severe	Severe	Moderate		Moderate	Moderate	
Limitations for Small Commercial Buildings	Slight	Moderate: slope	Moderate: wetness	Moderate: wetness	Moderate: wetness	Moderate: wetness, frost action	Severe: flooding, ponding, low strength
Limitations for Local Roads and Streets	Slight	Slight	Severe: frost action	Severe: frost action	Moderate: wetness, frost action	Moderate: wetness, frost action	Severe: flooding, ponding, frost action

Source: SCS, 1989

Evesboro Series (EvB, EvC) - The Evesboro series consists of excessively drained soils on uplands. These soils formed in acid, sandy, Coastal Plain sediments. Permeability is rapid in the subsoil and the substratum. The available water capacity is low. The depth to seasonal high water table is greater than 6 feet. Ruoff is very slow. Evesboro soils are not listed in a hydric soil group by the SCS (Tiner, 1985).

Hammonton loamy sand (HaB) – This soil consists of nearly level to gently sloping moderately well-drained and somewhat poorly drained loamy sand in depressional areas and on low divides. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum, and the available water capacity is moderate. The depth to the seasonal high water table is from 1.5 feet to 4 feet from January to April. Runoff is slow. Hammonton soils are listed as a New Jersey Group 3 Hydric Soil. New Jersey Group 3 hydric soils display hydric conditions in few places, but additional verification is needed (Tiner, 1985).

Hammonton loamy sand (HbB) – This soil consists of gently sloping moderately well-drained or somewhat poorly drained soil in depressional areas and on low divides. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is moderate and the depth to the seasonal high water table is from 1.5 feet to 4 feet from January to April. Runoff is slow. Hammonton soils are listed as a New Jersey Group 3 Hydric Soil. New Jersey Group 3 hydric soils display hydric conditions in few places, but additional verification is needed (Tiner, 1985).

Klej loamy sand (K1A) - This is a nearly level and moderately well drained and somewhat poorly drained soil in depressional areas and on low divides. Permeability is rapid in the subsoil and moderate in the substratum and available water capacity is low. The depth to the seasonal high water table is from 1.5 to 4 feet from December to April. Runoff is very slow. Klej soils are listed as a Group 3 New Jersey Hydric Soil. New Jersey Group 3 hydric soils are soils displaying hydric conditions in few places, but additional verification is needed (Tiner, 1985).

Klej loamy sand, clayey substratum (KmB) - This is a nearly level and gently sloping, moderately well drained and somewhat poorly drained soil on low divides and in depressional areas. Permeability is rapid in the subsoil and slow or moderately slow in the lower part of the substratum. The available water capacity is low. The depth to the seasonal high water table is from 1.5 to 4 feet from December to April. Runoff is very slow. Klej soils are listed as a Group 3 New Jersey Hydric Soil. New Jersey Group 3 hydric soils are soils displaying hydric conditions in few places, but additional verification is needed (Tiner, 1985).

Manahawkin Muck (Ma) – This is a nearly level and very poorly drained soils in wide depressional areas and on broad flats. These soils are subject to frequent flooding. Organic matter content is high. Permeability is moderately slow to moderately rapid in the subsoil and moderately rapid in the substratum, and the available water capacity

is high. The depth to the seasonal high water table is at the surface and 1 foot above the surface from October to July. Runoff is very slow and ponding is common. Manahawkin soils are listed as a Group 1 New Jersey Hydric Soil. New Jersey Group 1 hydric soils are soils that nearly always display consistent hydric conditions (Tiner, 1985).

Melick-Tully & Associates (October 26, 2021) excavated 85 test pits in October 2021 within the site. The test pits were completed to depths ranging from 5 to 16 feet below grade. Topsoil was encountered in most of the test pits ranging from 4 to 18 inches thick. The topsoil and fill were underlain by native soils which varied from fine loamy sand, loamy sand, fine sandy loam, sandy loam, sandy clay loam, loam, silt loam, silty clay loam, and clay loam soils to the maximum depths explored. Silty and sandy clays were observed in many of the test pits within 4 feet of the surface (Melick-Tully & Associates, October 26, 2021).

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.

Five aquifers encompass the Township of Howell including the Kirkwood-Cohansey, Englishtown, Wenonah-Mount Laurel, Potomac-Raritan-Magothy, and Vincentown. The Kirkwood-Cohansey Aquifer outcrops in the majority of the Township and is an unconfined aquifer located on the surface that is not confined between two impenetrable layers. The remaining four aquifers are used by the Township (Township of Howell, 2008).

The site is underlain by the Composite Confining Unit bedrock aquifer (NJDEP, Last Updated August 4, 2021). The Composite Confining Unit consists of silt and clay with localized sand lenses.

Water is generally good, but iron and manganese levels may be locally elevated and require chemical treatment (G.C. Herman et al., 1998). The Composite Confining Unit is given an aquifer rank of C to B, where ground water wells provide a median yield from greater than 100 gallons per minute of water to 500 gallons per minute (NJDEP, Last Updated August 4, 2021).

The NJDEP, NJGS, Bureau of Water Resources (BWR) in conjunction with Mark A. French prepared a GIS layer of “Aquifer Recharge Potential.” The aquifer recharge potential was not calculated in areas of wetlands and open waters, or areas of hydric soils (NJDEP, NJGS, BWR, Mark French, 2005). The majority of the site is mapped as wetlands and open waters. The central and southeast portions of the site are mapped as Rank B Ground Water Recharge Rank (12 to 16 inches per year) and Rank C Water-Table Aquifer Rank (100 to 250 gallons per minute). Rank A is highest rank and Rank E is the lowest rank (NJDEP, NJGS, BWR, Mark French, 2005).

The NJDEP has mapped well head protection areas for public community and non-community supply wells in New Jersey. Well head protection areas are modeled around a well and delineates the horizontal extent of groundwater captured by the well pumping at a rate over a certain period of time (NJDEP, Last Updated August 4, 2021). Based on review of NJ-GeoWeb, there are no community or non-community well head protection areas mapped on or in the immediate vicinity of the site. The nearest well head protection area is a non-community well head protection area, which is located approximately 900 feet south of the site along Fairfield Road (NJDEP, Last Updated August 4, 2021).

Melick-Tully & Associates (October 26, 2021) excavated 85 test pits in October 2021 within the site. The test pits were completed to depths ranging from 5 to 16 feet below grade. Of the 85 test pits, 27 test pits encountered ground water between depths of approximately 7.5 feet to 16 feet below grade. Mottling, which is indicative of seasonally saturated conditions was observed in most of the test pits at depths of 20 to 138 inches below grade (Melick-Tully & Associates, October 26, 2021). Melick-Tully & Associates believe the mottling levels are representative of seasonal high ground water levels (Melick-Tully & Associates, October 26, 2021). Hydrologic Soil Group (HSG) “D” conditions were observed in 49 of the 85 test pits where mottling shallower than 24 inches or relatively impermeable soils based on permeability testing (<0.06 in./hr.) in the upper 40 inches was present. Melick-Tully & Associates believe that the HSG can be reclassified within portions of the site based on the explorations and laboratory testing performed (Melick-Tully & Associates, October 26, 2021).

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.

Overland runoff is generally directed east toward Heron Creek, which is off-site to the east (NJDEP, Last Updated August 4, 2021). Heron Creek been classified by the NJDEP as FW2-TM C2 (trout maintenance, category 2) water (NJDEP, 2020). Heron Creek confluences with Yellow Brook approximately 1 mile southeast of the site. From this confluence, Yellow Brook flows south for approximately 1.3 miles until its confluence with the Manasquan River.

The NJDEP (June 24, 2021) published a “DRAFT 2018/2020 New Jersey Integrated Water Quality Assessment Report (Integrated Report)”, which is intended to provide an effective tool for maintaining high quality waters and improving the quality of waters that do not attain their designated uses. The Integrated Report describes attainment of the designated uses specified in New Jersey's Surface Water Quality Standards (N.J.A.C. 7:9B), which include: aquatic life (general), aquatic life (trout), recreation, public water supply, fish consumption, and shellfish consumption (NJDEP, June 24, 2021). The Integrated Report includes management strategies, including Total Maximum Daily Loads (TMDLs), under development to achieve surface water quality standards and attain the designated uses of the waters (NJDEP, June 24, 2021). TMDLs represent the assimilative or carrying capacity of the receiving water taking into consideration point and nonpoint sources of pollution, natural background, and surface water withdrawals (NJDEP, June 24, 2021).

The NJDEP assesses each applicable designated use for all of the State's 293 subwatersheds (assessment units), to determine whether each subwatershed is “fully supporting” the use, “not supporting” the use, or if insufficient information is available to assess the use. A subwatershed is “fully supporting” a designated use only if data for the minimum suite of parameters are available and there are no exceedances of the applicable criteria for each parameter in the suite. If data are available for only some of the minimum suite of parameters, the use is not assessed due to insufficient information. If any one parameter associated with a designated use exceeds the applicable criteria, then the subwatershed is “not supporting” for the designated use.

The site is within the Manasquan R (West Farms Rd to Rt 9) assessment unit (NJDEP, June 24, 2021). This assessment unit was in “full support” of Water Supply; in “not support” of Aquatic Life (General), Aquatic Life (Trout), and Primary Recreation; and had “insufficient data” for Fish Consumption. For Aquatic Life (General), this assessment unit was in “non-attainment” of biological,

total phosphorus, and turbidity. For Aquatic Life (Trout), this assessment unit was in “non-attainment” of temperature, phosphorus, and turbidity. For Primary Recreation, this assessment unit was in “non-attainment” of *Escherichia coli* (*E. coli*) (NJDEP, June 24, 2021).

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 Trout Maintenance (TM) suffix indicates that the waters possess the properties suitable for the maintenance of trout species throughout the year (NJDEP, 2020).

The Manasquan River watershed is also the largest watershed in the Township of Howell, draining approximately 62 percent of the Township’s land (Township of Howell, 2008). The Manasquan Watershed Management Association (MWMA) has prepared a map of ranked critical areas in the watershed to guide potential land acquisition activities. Critical areas for acquisition are ranked from 1 to 6, with Rank 1 being the lowest priority and Rank 6 being the highest. The site includes areas mapped from Rank 1 to Rank 4, with most of the site rank 1 or 2 (Township of Howell, 2008).

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 Coastal Plain Physiographic Province of New Jersey, which includes the Inner and Outer Coastal Plains is characterized by broad areas of relatively uniform elevation, with only occasional topographic relief (Robichaud and Buell, 1973). This low degree of habitat diversity results in broad distributions of a limited number of major vegetative communities, rather unlike the fine-scale heterogeneity found in the more topographically diverse physiographic provinces in northern New Jersey. The general types of terrestrial plant habitats described by Robichaud and Buell for the Outer Coastal Plain include salt water marshes, fresh water marshes, bogs, swamps and floodplains, not excessively drained upland flats, excessively drained upland flats, and sand dunes.

The Natural Heritage Program (NHP) of the NJDEP Office of Natural Lands Management identifies the state's most significant natural areas through a comprehensive inventory of rare plant and animal species and representative ecological communities (NHP, 2021). Through this program, Natural Heritage Priority Sites were identified which include critically important areas to conserve New Jersey’s biological diversity, with particular emphasis on rare plant species and ecological communities. Based on review of NJ-GeoWeb, there are no Natural Heritage Priority Sites on or in

the immediate vicinity of the site. The nearest Natural Heritage Priority Site, the Manasquan Reservoir Woods, is located approximately 3.3 miles south of the site (NJDEP, Last Updated August 4, 2021).

In addition to Natural Heritage Priority Sites, the NHP Database includes Natural Heritage Grid Maps, which provide a generally portrayal of the geographic location of rare plant species and rare ecological communities for New Jersey, without providing sensitive detailed location information. Each grid that is mapped is classified into one of three categories: 'S', which indicates the location of the rare plant and/or ecological community is precisely known within the grid; 'M', which indicates the location of the rare plant and/or ecological community is only known to within 1.5 miles; or 'BOTH', which indicates the grid includes locations of rare plants and/or ecological communities that are precisely known and less precise occurrences are found (NJDEP, Last Updated August 4, 2021). Based on review of NJ-GeoWeb, there are no Natural Heritage Grid Maps on or in the immediate vicinity of the site. The nearest Natural Heritage Grid Map, ID 14841, is located approximately 1.4 miles north of the site (NJDEP, Last Updated August 4, 2021).

EcolSciences performed a field investigation on October 27, 2021 to record dominant vegetation, and wildlife observed throughout the site. The field investigation was conducted from 11am to 1pm. Temperature ranged from 59 to 61 degrees Fahrenheit, with 100 percent cloud cover. Humidity ranged from 64 to 75 percent and wind speed ranged from 14 to 20 miles per hour (mph), with higher humidity and wind in the morning. Based upon species composition, soils, and apparent hydrology noted during a field investigation, three vegetative communities were identified within the site: agricultural field, upland forest, and palustrine deciduous forested (PFO1) wetlands. Each community is briefly described below.

Agricultural Field – This community encompasses the majority of the west portion of the site along Fairfield Road. The agricultural field is routinely mowed, and therefore lacks significant vegetation cover. The dominant herbaceous species include mugwort, plantain, field garlic, common milkweed, curly dock, deadnettle, clover, common dandelion, horsenettle, big bluestem, and little bluestem. Grass species dominate the mowed portion of the agricultural field. Scattered trees are present along Fairfield Road including eastern red cedar and black locust. Poison ivy was also observed along Fairfield Road.

Upland Forest - This community encompasses the east portion of the site and surrounds the forested wetlands in the north portion of the site. Canopy vegetation is dominated by black locust, black cherry, sweetgum, black gum, red maple, white oak, red oak, and sassafras with associates of mulberry, black birch, pignut hickory, white ash, chestnut oak, pitch pine, crabapple, princess tree, white pine, and silver maple.

The woody understory commonly includes autumn olive, Allegheny blackberry, black haw, privet, American holly, Japanese barberry, spice bush, coastal sweet pepperbush, lowbush blueberry, highbush blueberry, and huckleberry. The herbaceous layer commonly includes mugwort, woodland strawberry, Japanese stiltgrass, Japanese knotweed, garlic mustard, interrupted fern, and switchgrass. Japanese honeysuckle, oriental bittersweet, grape vine, and greenbriar are present in the vine stratum.

Palustrine Forested Deciduous (PFO1) Wetland - This community occurs in the north portion of the site to the north and south of the pond. Red maple, sweetgum and black gum dominate the canopy vegetation. The woody understory commonly includes spice bush, coastal sweet pepperbush, highbush blueberry, and saplings of sweetgum and American holly. Common herbs include cinnamon fern, soft rush, Japanese stilt grass, and wild mint. Greenbriar dominates the vine stratum.

G. Wildlife

The utility of an area as wildlife habitat depends on many factors. All wildlife species require food, water, cover, and space. The relative abundance or lack of these resources in relation to each species' particular requirements will, in part, determine the species composition and distribution of a particular area. In addition, the types of vegetative communities present, the size, shape, and complexity of the habitat(s), and the surrounding land uses will further interact to determine the success of various wildlife species at the location being considered. Some wildlife species have demonstrated great adaptability and tolerance to the human presence; others are less able to tolerate such activities and are displaced to more suitable habitats, if such are available and accessible.

Starting in July 2002, the NHP of the NJDEP Office of Natural Lands Management adopted 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). It is a wildlife habitat-mapping program that is used to identify and map critical habitats for endangered, threatened, and special concern species. This approach takes documented records of threatened and endangered wildlife and, based on a species-specific model or “occurrence area”, maps areas of suitable habitat contiguous to the record as critical wildlife habitat. Each critical habitat patch appears as a shaded color from light to dark (5 Ranks) indicating its relative priority ranking. Rank 1 is the lowest priority ranking, while Rank 5 is the highest priority ranking. Rank 1 meets the minimum area requirement, but no data exists for the presence of priority species (New Jersey Division of Fish and Wildlife, 2017). This is the NJDEP’s lowest priority ranking and is defined as areas meeting the minimum size requirements but with no documented sightings of threatened or endangered species. Rank 2 contains records for priority species, which are species of special concern. Ranks 3, 4, and 5 indicate that the identified land cover type has been identified as

providing habitat for State threatened (Rank 3), State endangered (Rank 4), or Federally threatened or endangered (Rank 5) species.

According to the NJDEP's Landscape Project (Version 3.3), the entire site is mapped as Rank 1 habitat (Figure 4). The Rank 1 habitats do not contain any documented occurrences of endangered, threatened, or special concern species but are identified as suitable for such species. The Township of Howell's Environmental Resource Inventory also notes Rank 1 and Rank 2 habitats as suitable, not critical habitat (Township of Howell, 2008).

The NJDEP's Landscape Project (Version 3.3) has mapped the pond in the north portion of the site as potential vernal habitat (Figure 4). Vernal habitats are typically ephemeral wetlands that are seasonally ponded and which provide breeding and other habitats for various species of reptiles and amphibians. The habitat is not a NJDEP certified vernal habitat, but potential habitat, meaning that it has not been verified as meeting vernal habitat criteria, but has the potential to meet them. Potential vernal habitat are areas identified by Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) as possibly containing a vernal pool that meets the criteria of a "vernal habitat" pursuant to the NJDEP FWW Rules. These sites include sites that have been field inspected and have been found to meet the physical characteristics of a vernal habitat, but for which biological criteria have not yet been measured, as well as sites that have not been checked by NJDEP staff (NJDEP, Last Updated August 4, 2021). All areas mapped as "potential vernal habitat areas" and "vernal habitat areas" are derived from a point location estimated to be the center of an individual vernal pool and include all areas within 300 meters of the point as shown on Figure 4. The 300-meter area buffer is for planning purposes and represents an area where the vernal species may disperse post-breeding. An additional 300-meter area buffer from an off-site potential vernal habitat encroaches into the site's southeast boundary. The 300-meter buffer is not a NJDEP regulated area and its presence does not preclude development activities.

During EcolSciences' field investigations of the site on October 27, 2021, the following species were observed by sight, call, tracks, or by other signs: white-tailed deer, gray squirrel, Canada goose, turkey vulture, red-tailed hawk, sharp-shinned hawk, ring-billed gull, cardinal, blue jay, red-winged blackbird, starling, white-throated sparrow, mourning dove, herring gull, northern flicker, red-bellied woodpecker, American robin, and house finch. Sharp-shinned hawk is ranked by New Jersey as a special concern species. These are species whose status is being monitored and which may meet criteria for being listed as threatened or endangered in the future. The sharp-shinned hawk observed was most likely a fall migrant.

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 United States 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 (1987), 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 limits of freshwater wetlands and State open waters were delineated on the site by DuBois & Associates in January 2021. An application for a Letter of Interpretation-Line Verification (LOI) was submitted to the NJDEP and is currently under review (File No. 1319-05-0023.1 FWW 210001). It is anticipated that the wetlands will be classified as intermediate resource value. Intermediate resource value wetlands have a standard 50-foot transition area. The pond in the north portion of the site was delineated as State open water. The wetland boundary line, standard transition area line, and State open water line, to be verified by the NJDEP, are shown on the site plans prepared by Bohler (2021). It is anticipated these lines will be approved as shown.

I. Aquatic Biota

Aquatic biota comprise various macroinvertebrates including insects (largely immature forms), worms, mollusks (snails, clams), and crustaceans (scuds, shrimp, water fleas etc.) generally found within freshwater and estuarine environments. Macroinvertebrate species play an integral role in the aquatic food web and their presence and relative abundance is governed by environmental conditions and by the pollution tolerance of the respective species. The overall community thus is holistically reflective of conditions in its environment, and can be used as an indicator of the water or habitat quality of a waterbody (NJDEP, December 2012). The NJDEP (December 2012) conducts biological monitoring studies of the state's waterbodies and ranks water quality for these sites using the Rapid Bioassessment Protocol II method devised by the EPA. The Ambient Biomonitoring Network (AMNET) is one of the major ongoing monitoring programs (NJDEP, December 2012).

Based on review of the NJDEP Division of Water Monitoring and Standards, Bureau of Freshwater & Biological Monitoring publications, the latest AMNET sampling for the Atlantic Coastal Drainage Basin occurred in 2010-2011 (NJDEP Division of Water Monitoring and Standards, 2020). The nearest AMNET biological monitoring station is located along the Manasquan River, approximately 3.2 miles downstream of the site (AN0490) (NJDEP, Last Updated August 4, 2021). During the 2010/2011 sampling, this station was found to have a fair Coastal Plain Macroinvertebrate Index (CPMI), with a suboptimal habitat analysis (NJDEP, December 2012). A total of 89 macroinvertebrates were observed across 16 different genus at this monitoring site during the 2010 sampling (NJDEP, December 2012).

The CPMI is used for low gradient streams and the result of this index is considered reflective of the water and/or habitat quality the monitoring site. The CPMI was developed using guidelines outlined in the Rapid Bioassessment Protocol II (NDJEP, December 2012). A fair CPMI result indicates the monitoring site falls below the acceptable regulatory range and is considered impaired and in non-attainment (NJDEP, December 2012). The four categories of the habitat analysis include optimal, suboptimal, marginal, and poor. A variety of habitat parameters are considered when scoring the monitoring site's habitat analysis including epifaunal substrate/available cover, pool substrate characterization, pool variability, sediment deposition, channel flow status, channel alteration, channel sinuosity, bank stability, bank vegetation protection, and riparian vegetative zone width (NJDEP, December 2012).

The NJDEP does not provide a monitoring station for "Fish Index of Biotic Integrity" anywhere downstream of the site (NJDEP, Last Updated August 4, 2021). As discussed in Section IV.E. of this EIR, the nearest mapped stream, Heron Creek has been classified by the NJDEP as FW2-TM C2 (trout maintenance, category 2) water (NJDEP, 2020). Maintenance (TM) suffix indicates that the waters possess the properties suitable for the maintenance of trout species throughout the year (NJDEP, 2020).

The potential for aquatic biota is limited to the pond feature as the streams discussed above in this section are located off-site. The pond was delineated as a State open water and is shown on the site plans prepared by Bohler (2021). No aquatic biota were observed within the pond during EcolSciences' October 27, 2021 field investigation.

J. 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.

Overland runoff is generally directed east toward Heron Creek (NJDEP, Last Updated August 4, 2021). According to FEMA mapping (Community Panel Nos. 340225C0301F & 34025C0302F, effective September 25, 2009), the site is mapped within areas of minimal flood hazard (Zone X).

In addition to regulating activities within floodways and floodplains, the Flood Hazard Area Control Act Rules (N.J.A.C. 7:13 et seq.) also protect a riparian zone adjacent to all regulated waters. The riparian zones are 50, 150 or 300 feet in width along each side of regulated surface waters throughout the State. The riparian zone width depends on the environmental resources being protected, with the most protective 300-ft riparian zone applicable to waters designated as Category 1 (C1) and certain upstream tributaries. Waters supporting trout, or habitats of threatened or endangered species critically dependent on regulated waters for survival receive a 150-ft riparian zone. Regulated waters not identified above would have a 50-foot riparian zone.

The nearest mapped stream, Heron Creek, is not mapped as a C1 water and does not drain into a C1 within the same HUC-14 watershed. Heron Creek has been classified as a trout maintenance water, and therefore is anticipated to have a 150-foot riparian zone.

K. Air Quality

The Federal and State environmental regulatory agencies have established permissible concentrations, termed the National Ambient Air Quality Standards (NAAQS), for six principal pollutants including carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution, and sulfur dioxide. These standards have been shown to reduce to an acceptable level the risk of health effects to vulnerable human populations, primarily the young, the elderly, and those with respiratory ailments. Primary standards define air quality levels intended to protect the public health including “sensitive” populations such as asthmatics, children, and the elderly. The secondary standards define levels of air quality intended to protect the public welfare including protection against decreased visibility and damage to animals, crops, vegetation, and buildings (EPA, 2021).

The NJDEP annual air quality reports summarize the air quality monitoring data for that particular year in New Jersey. The State of New Jersey has been monitoring air quality since 1965. The most recent NJDEP Air Quality Summary Report available is for the year 2019. Based on the

2019 annual air quality report, the entire state of New Jersey is in non-attainment for the ozone NAAQS, and northern New Jersey is classified as being “moderate”. A “moderate” area has an ozone range from 0.081 to 0.093 parts per million (ppm) (EPA, 2018). New Jersey was in attainment in 2019 for the remaining five principal pollutants including PM, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead (NJDEP, November 23, 2020).

The Air Quality Index (AQI) is a national air quality rating system based on the NAAQS. An index value of 100 is equal to the primary, or health-based, NAAQS for each pollutant. This allows for a comparison of each of the pollutants used in the AQI. These pollutants are ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. The Rutgers University station had three days in 2019 and the Colliers Mills station had two days in 2019 where the AQI reached the “Unhealthy for Sensitive Groups” (“USG”) threshold due to ozone, but neither station had any days in 2019 where the AQI reached “Unhealthy” (UG) threshold (NJDEP, November 23, 2020). The USG threshold means that members of sensitive groups may experience health effects and that the general public is not likely to be affected. The UG threshold means that everyone may begin to experience health effects and that members of sensitive groups may experience more serious health effects.

The NJDEP annual air quality reports also provide information on longer-term trends in the state, providing summary data for all monitoring locations from 1965 to the latest year reported. Examination of those data indicates that New Jersey has shown a somewhat erratic downward trend in the ozone standard, and is getting close to meeting the ozone NAAQS. There has been a steady decline in overall particulate matter (PM)_{2.5}, which is now in compliance with the NAAQS. A sharp increase and subsequent decrease in sulfur dioxide concentrations in New Jersey occurred in 2013 as a result of a coal-burning facility across the Delaware River in Pennsylvania. The facility has since ceased operations under a court agreement, and sulfur dioxide levels in New Jersey have returned to meeting the NAAQS for sulfur dioxide. The State of New Jersey has long been in compliance with the NAAQS for the remaining three principal pollutants including nitrogen dioxide, carbon monoxide, and lead (NJDEP, November 23, 2020).

The Monmouth University, Colliers Mills, Toms River, Cattus Island, and Rutgers University air quality monitoring station are located in the general vicinity of the site. The Monmouth University and Colliers Mills stations only measure ozone; the Toms River station only measures particulates; and the Cattus Island station only measures acid deposition. The Rutgers University station monitors nitrogen oxides (NO_x), ozone, particulates, photochemical assessment monitoring (PAMs), toxics, mercury, and weather conditions. The summary data included in the 2019 report indicates no

contravention of standards for nitrogen dioxide, sulfur dioxide, and carbon monoxide (NJDEP, November 23, 2020).

These positive trends in air quality have been occurring despite significant population increases in the central and southern regions of the state, and the concomitant increase in vehicular traffic associated with population growth. These countervailing trends appear to be the result of more effective emissions controls on vehicle exhausts and on industrial emissions, the net result of which is a decline in overall air loadings since air monitoring began in 1965 as summarized in the NJDEP report for 2019.

L. Sound Characteristics and Levels

Sound is conducted through air as a series of pressure waves having kinetic energy. The kinetic energy of these sound waves can be quantified in decibels - scalar units that are geometrically related to the energy of the sound at the receptor. A doubling in the sound energy will yield an increase of 6 dB. The decibel (dBA) scale ranges from 0 for the threshold of perception of sound to approximately 130 dBA for the threshold of pain at the ear; a quiet residential street may have noises in the 55 to 60 dBA range, while heavy street traffic generates noises in the 85 to 95 dBA range (EPA, 1976). The "A" suffix means that the sound energy characteristics have been weighted to emphasize the upper audible frequency ranges (A-weighting).

The site is located in a suburban area primarily surrounded by sparse residential, industrial, and commercial uses. The site is undeveloped, vacant land that is characterized as agricultural field, upland forest, and forested wetland. The site is bordered to the west by Fairfield Road and State Highway 33 (aka Route 33) is located approximately 0.2 miles north of the site.

Sounds generated by traffic on State Highway 33 are minimal within the site due to the sites distance from the roadway. During peak hours, traffic along State Highway 33 could generate sound levels of 75-80 dBA at points approximately 25 feet from the roadway (EPA, 1976).

M. Land Use

The development of a site is in many cases a major alteration of the features of a property. The extent to which such change in land use is significant depends in part on the existing land use(s) on the site and in surrounding areas, and on the zoning constraints selected for the land by the governing municipality.

The site is largely undeveloped land, with a vacant single-family residence in the northeast portion of the site. The site is characterized as agricultural field, upland forest, and forested wetland. A pond is located in the north portion of the site. The site is bordered to the west by Fairfield Road within undeveloped land and a solar facility beyond; to the north and east by undeveloped forest; and to the south by a plant nursery, agricultural fields, and sparse residential development.

N. Aesthetics

The aesthetic quality of a particular area is a general representation of how the area is perceived by humans. Literally, it is how the sensory information provided by an area is interpreted. Pleasing visual, auditory, and olfactory stimuli will combine to provide a perception of high aesthetic appeal. Offensive sights, sounds or odors will yield the opposite impression. Aesthetics, of course, vary from observer to observer; generally though, rural and natural landscapes offer higher aesthetic appeal than do urban, highly modified landscapes.

The site could be considered aesthetically pleasing to persons passing by along Fairfield Road or on adjacent properties due to the undeveloped agricultural field, upland forest, and forested wetlands that characterize the site.

O. 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 site is largely undeveloped land, with a vacant single-family residence in the northeast portion of the site. The site is characterized as agricultural field, upland forest, and forested wetland. A pond is located in the north portion of the site. The New Jersey and National Registers of Historic Places (NJDEP, 1995, last updated April 26, 2021) does not list any registered historic or eligible for listing resources on the site. Based on a review of the GIS layers “NJDEP Historic Districts, Properties, and Site Grid Map of New Jersey” (NJDEP, NHR, HPO, 2020), there are no historic districts, historic properties, or historic archaeological site grids on the site. The nearest historic resource, the James Winters House, is located across Fairfield Road from the site’s southwest boundary (Figure 5). The James Winters House is an Identified Individual historic property designated in November of 2007 (NJDEP, NHR, HPO, 2020).

P. Demography

The demographic characteristics of a municipality define the characteristics of the human population living in this municipality - the population size, rate and direction of change in size, age structure, etc. These characteristics provide a perspective for assessing the degree to which a proposed development will affect the municipality.

According to the 2020 Census, the Township of Howell had a population of 53,537 people, a 4.8% increase over the 2000 census population of 51,075 (State of New Jersey Department of Labor and Workforce, 2021). This translates into a 0.5% annual growth rate in population, larger than the Monmouth County annual growth rate of 0.2% (State of New Jersey Department of Labor and Workforce Development, 2021).

V. 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 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, to be approved by the Freehold District of the Soil Conservation Service.

The principal environmental impact associated with the proposed project would be the change in land use and the direct and indirect influences on the surrounding natural communities associated with the use of the site as a warehouse development. Construction of the development will convert approximately 30.9 acres of agricultural field and upland forest to warehouse use.

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

A. Geology

Potential impacts to the project site's geological integrity are typically related to the location and extent of bedrock disturbance resulting from the construction phase. The construction of the project will occur in primarily unconsolidated sandy sediments. Thus, no significant impacts to the site'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 warehouse development. The topography within the area of proposed development is of 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 access driveways, buildings, parking areas, and stormwater management system. 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 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 construction, the potential for soil disturbance will be limited to the area surrounding the proposed buildings, driveways, parking areas, and stormwater management system. 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, to be approved by the Freehold Soil Conservation District.

These soil erosion measures include the use of stabilized construction entrance made up of clean stone at the proposed driveways, installation of inlet protection for all catch basins, and installation of silt fences along the limits of disturbance. Immediately following rough grading, all disturbed soils will be protected from erosion and soil loss by temporary seeding and mulching. Permanent vegetation will be established as soon as possible after final grading, as specified in the site plans. In areas where grading is necessary, rapid stabilization of all disturbed soil areas will minimize adverse effects related to soil loss or erosion. For a complete description of the soil erosion and sediment control measures, please refer to the site plans prepared by Bohler (2021).

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 site and surrounding 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 New Jersey American Water Company. The daily water demand from the development will be approximately 22,275 gpd (Bohler, 2021).

Wastewater generated by the development, estimated to be 22,275 gpd, will be conveyed to the Manasquan River Regional Sewage Authority and the OCUA sewage treatment plant for

treatment (Bohler, 2021). 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. The stormwater management system has been designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) for ground water recharge. Therefore, ground water recharge is provided.

As discussed in Section IV.E above, there are no community or non-community well head protection areas mapped on or in the immediate vicinity of the site. Therefore, impacts to water supply wells are not anticipated.

E. Surface Water Quantity and Quality

The construction of the proposed warehouse 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. As previously described in Section C (Soils) of this chapter, soil disturbance will be largely confined to areas surrounding the proposed buildings, driveways, parking areas, and stormwater management system. Any adverse impacts will be minimized by the installation and maintenance of proven soil erosion and sediment control measures presented in the plans. These measures will retain disturbed soil sediment within the areas of construction and will mitigate the potential for sediment being transported off-site.

Stormwater from the developed portions of the site will be collected by a proposed stormwater management system. This system will consist of a series of catch basins and inlets and subsurface piping that will convey stormwater to several stormwater infiltration and bio-retention basins proposed on the site. The stormwater management system has been designed to be in compliance with the requirements of the NJDEP's Stormwater Management Rules (N.J.A.C. 7:8) for runoff volume, ground water recharge, water quality, and green infrastructure. For specific details regarding the proposed stormwater management system, refer to the Stormwater Management Report prepared for the project by Bohler dated October 2021.

F. Vegetation

Construction will require removal of existing vegetation from the majority of the site, affecting approximately 30.9 acres of agricultural field and upland forest. Impacts to the on-site forested wetlands have been avoided. Approximately 15.3 acres of the site will not be impacted by

construction activities. A landscaping plan will be implemented to enhance the aesthetic features of the development. The landscaping plan includes deciduous trees, evergreen trees, ornamental trees, shrubs, and ground cover.

Because the proposed project requires tree removal in conjunction with a site plan approval from the Township of Howell, a Woodlands Management Plan is required in accordance with Article XXII of the Township code (Township of Howell, 2021). The proposed Woodlands Management Plan has been provided in the site plans prepared by Bohler (2021). Following approval of the Woodlands Management Plan by the Township, an application for a Tree Removal Permit will be submitted prior to any construction. Any tree replacement required that cannot be provided on-site will be compensated for via payment into the Township Tree Fund by the applicant.

As discussed in Section IV.G of this EIR, there are no Natural Heritage Priority Sites or Natural Heritage Grid Maps on or in the immediate vicinity of the site that would suggest rare plants may occur on the site. No threatened or endangered plant species were observed during EcolSciences' field investigation on October 27, 2021. Therefore, impacts to threatened or endangered plant species are not anticipated.

G. 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. The project will disturb approximately 30.9 acres of agricultural field and upland forest. This area will be developed with a warehouse development.

Approximately 15.3 acres of the site will not be impacted by construction activities, which will continue to provide wildlife habitat for the species observed on site as listed in Section IV.G. This area contains the on-site forested wetlands and some of the upland forest in the north and east portion of the site. A landscaping plan will be implemented to maintain aesthetics and provide soil stabilization throughout the site. The landscaping plan includes a mixture of deciduous trees, evergreen trees, ornamental trees, shrubs, and ground cover. These landscaped areas will offer habitat to species tolerant of human disturbance. No impacts to threatened and endangered species are anticipated as none have been documented on the site based on review of NJDEP's Landscape Project (Version 3.3). Furthermore, no threatened or endangered wildlife species were observed on the site during EcolSciences' field investigation on October 27, 2021. There are no special provisions for the New Jersey special concern species, sharp-shinned hawk, at this time.

As previously discussed, an LOI application has been submitted to NJDEP. It is our understanding a site inspection has been performed by NJDEP staff and are not making any changes to the wetland delineation. In addition, the NJDEP has not indicated that there are any vernal habitats on the site. Portions of the Landscape Project-mapped 300-meter buffer on the potential vernal habitat area are proposed to be developed. This buffer is not a NJDEP regulated area and does not preclude development. The on-site forested wetlands adjacent to the pond, which are not proposed to be impacted, as well as the off-site Heron Creek habitats will continue to offer dispersal habitat for any species utilizing the pond.

H. Wetlands

Encroachments into the on-site wetland transition areas will be required for the proposed project. Therefore, an application for a Freshwater Wetland Transition Area Waiver-Averaging Plan will be submitted to the NJDEP for the proposed impacts. An Averaging Plan allows a reduction in the wetland transition area with compensation provided by increasing the transition area width in another part of the site. This Transition Area Waiver will be obtained prior to project development.

A complete list of anticipated permits and/or approvals for the project is provided in Section IX of this EIR.

I. Aquatic Biota

The potential for aquatic biota is limited to the pond feature as the streams discussed throughout this EIR are located off-site. No activity is proposed to the pond. Soil erosion and sediment controls will be in place during construction to prevent siltation and sedimentation from reaching the off-site streams and on-site pond.

As mentioned in Section E of this chapter (Surface Water Quantity and Quality), stormwater from the developed portions of the site will be collected by a series of catch basins and conveyed to a proposed stormwater management system. This system has been designed to detain stormwater such that sediment and associated pollutants will be removed from the stormwater and will not be released to the on-site pond. This system is also designed to release stormwater at a controlled rate.

J. Floodways and Floodplains

No disturbances are proposed to floodways, floodplains, or riparian zones.

K. Air Quality

Short-term air quality impacts during construction are related to production of fugitive dust and generation of emissions from exhausts of construction vehicles. Mitigating measures, including dust control practices and the use on construction equipment of efficient air pollution control devices meeting applicable State/Federal specifications, will minimize adverse effects on local air quality.

Long-term air quality impacts will be related primarily to vehicle exhaust emissions, primarily carbon monoxide (CO), hydrocarbons, and nitrogen oxides (NO_x). However, the magnitude of the environmental effects attributable to the vehicle traffic associated with the proposed project should not affect regional air quality.

L. Sound Characteristics and Levels

Short-term generation of noise levels elevated over existing ambient levels will be generated during the construction of the proposed development. Sound levels generated during the construction phase can be expected in the range of 72 to 94 dBA at a distance of 50 feet from construction equipment, based upon the use of best available technology for noise reduction (EPA, 1976). The construction equipment included in this range consists of backhoes, concrete mixers, pavers, and trucks. To minimize adverse impacts to ambient noise levels during the construction period, construction equipment will only be operated during construction periods permitted by local law.

During the operational phase of the project, the principal sources of sound will be vehicular traffic. It is expected that the principal sources of noise in the area will continue to be traffic along State Highway 33 and Fairfield Road. The project will comply with the Township's requirements related to noise.

M. Land Use

The proposed development will result in the conversion of the presently undeveloped site into warehouse development. The project as designed is in conformance with the SED Zone of the Township of Howell.

N. Aesthetics

The majority of the site proposed for development is currently agricultural field and upland forest. A landscaping plan will be implemented to enhance the aesthetic features of the development. The landscaping plan includes a mixture of deciduous trees, evergreen trees, ornamental trees, shrubs, and ground cover.

O. Historic and Cultural Resources

The proposed project is not expected to adversely impact any known cultural or historical resources. There does not appear to be any historical or cultural resources mapped on the site as discussed in Section IV.O of this EIR.

P. Demography

The proposed warehouse development should have a nominal effect on the demography of the Township of Howell. The proposed project will contribute to temporary and permanent jobs in the Township of Howell, however, this increase in job availability is not anticipated to have a significant impact on the Township's population.

VI. STEPS TO MINIMIZE ENVIRONMENTAL IMPACTS

A number of potential impacts associated with construction and operation of the proposed project were identified in Chapter V. Environmental protective measures that can minimize or eliminate environmental impacts are summarized below. Some have already been included in the site plans; others will be implemented during the construction phases. Many of the measures identified below have already been discussed in the preceding chapter, in the context of the particular environmental features in which they are identified.

A. Soils and Surface Water Resources

- Existing topography will be maintained to the greatest extent possible in the site planning to minimize the amount of grading required.
- Crushed stone-tracking pads will be installed at the site exit with Fairfield Road to reduce tracking of sediment onto adjacent roadways during construction activities.
- Sediment filter fences will be erected around and/or down slope of disturbed areas to prevent sediment from being transported off-site.
- Upon completion of final grading, all disturbed areas will receive a final seeding and mulching in accordance with the Soil Erosion and Sediment Control Plan.
- All side slopes shall be protected from erosion by top soiling, seeding, and mulching as soon as possible after final grading.
- All soil erosion and sediment control measures shall be kept in place until construction is complete and/or the disturbed area is stabilized.
- All work will be done in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey.
- The stormwater management basins will be maintained free of debris and sediment that would interfere with the effective operation of these facilities.

B. Air Quality

- Construction vehicles that are to operate upon the public highways of the State of New Jersey will comply with the regulations as required by N.J.A.C. 7:27-14 and 15.
- Disposal of incinerable wastes by open burning will not be permitted.
- Exhaust systems and emission control devices on all construction machinery will be maintained in good operating condition.
- Vehicles transporting fill, dirt, or other materials will be covered with canvas or similar material.

C. Sound Levels

- To minimize noise generated by construction equipment, mufflers or similar noise abatement devices will be in good operating condition on all construction machinery.
- Silencers, shields, or enclosures will be used around all stationary noise-generating equipment.
- Operation of machinery will be limited to work periods permitted by local law.

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The major irreversible and irretrievable commitment of resources will be the conversion of 30.9 acres of agricultural field and upland forest to warehouse use, consistent with Township zoning. The freshwater wetlands and pond in the north and northeast portions of the site will be preserved. A discussion of a no-action alternative is provided in Section II of this EIR.

VIII. UNAVOIDABLE IMPACTS

The applicant and its engineers have proposed and planned a project that will be compatible with the surrounding land uses in the Township of Howell. No project can be built and operated without generating some degree of adverse impact on some aspect of the natural or man-made environment. As discussed in the preceding chapter, impacts have been minimized to the extent possible by sound design decisions in the planning stages of the project. Moreover, compliance with State permit and Township ordinance conditions for regulated activities will protect the site's natural resources in the project vicinity. 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 the site within the agricultural field and upland forest to warehouse use and the associated loss of wildlife habitat.
- Increases in impervious surfaces.
- Increases in loadings of common constituents in stormwater runoff.

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 commitment of natural resources resulting from the change in land use. The construction of the project will convert approximately 30.9-acres of agricultural field and upland forest to warehouse development consistent with Township zoning. The mitigating measures described in the preceding chapters will serve to minimize the potential impacts to natural resources in the site and surrounding area.

The long-term benefits of the project are related to improving the economy of the Township of Howell through the provision of new jobs and increased tax revenues to support public services.

IX. LIST OF LICENSES, PERMITS AND OTHER APPROVALS

The following constitutes a list of licenses, permits and approvals required for the proposed project:

Table 2:

List of Licenses, Permits, or Other Approvals Needed

Granting Authority	License, Permit, or Approval	Status
Township of Howell Planning Board	Preliminary & Final Major Site Plan Application	Subject of this application
Monmouth County Planning Board	Preliminary & Final Major Site Plan Application	To be submitted
Freehold Soil Conservation District	Soil Erosion and Sediment Control Plan Certification	To be submitted
NJDEP Division of Land Resource Protection	Letter of Interpretation-Line Verification	Submitted (File No. 1319-05-0023.1)
	Transition Area Waiver-Averaging Plan	To be submitted
NJDEP Division of Water Quality	National Pollutant Discharge Elimination System (NPDES) General Permit 5G3 No. NJG0088323 Stormwater Discharge Associated with Construction Activity	To be submitted
	Treatment Works Approval (Sewer Extension)	To be submitted
NJDEP Bureau of Safe Drinking Water	Water Main Extension Permit	To be submitted

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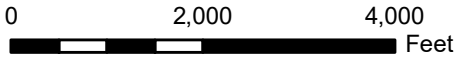
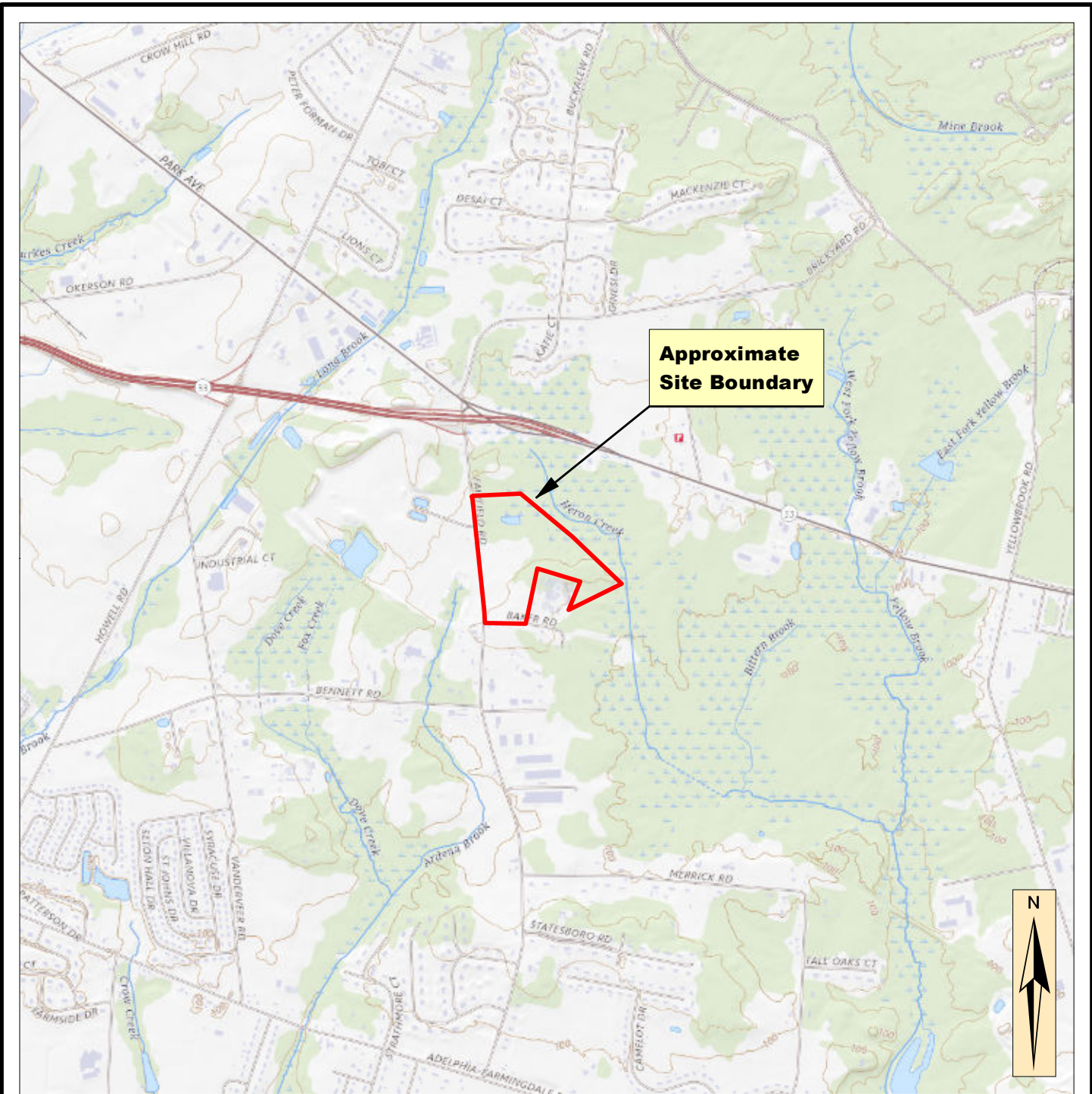
ATTACHMENT A

Figures

- Figure 1: USGS Site Location
- Figure 2: 2020 Aerial Imagery
- Figure 3: SCS Soils Mapping
- Figure 4: Landscape Project
- Figure 5: Historic Resources

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SITE LOCATION

State Plane Coordinates (New Jersey NAD 83)
 571,075' E; 508,145' N

FIGURE 1: USGS SITE LOCATION

Block 177, Lot 8.01
 Township of Howell
 Monmouth County, New Jersey

USGS The National Map, 2020, Farmingdale, NJ Quadrangle.

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Date: 10/25/21

Scale 1:24,000



0 500 1,000
Feet


 Approximate Site Boundary

FIGURE 3: 2020 AERIAL IMAGERY

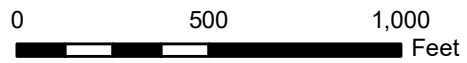
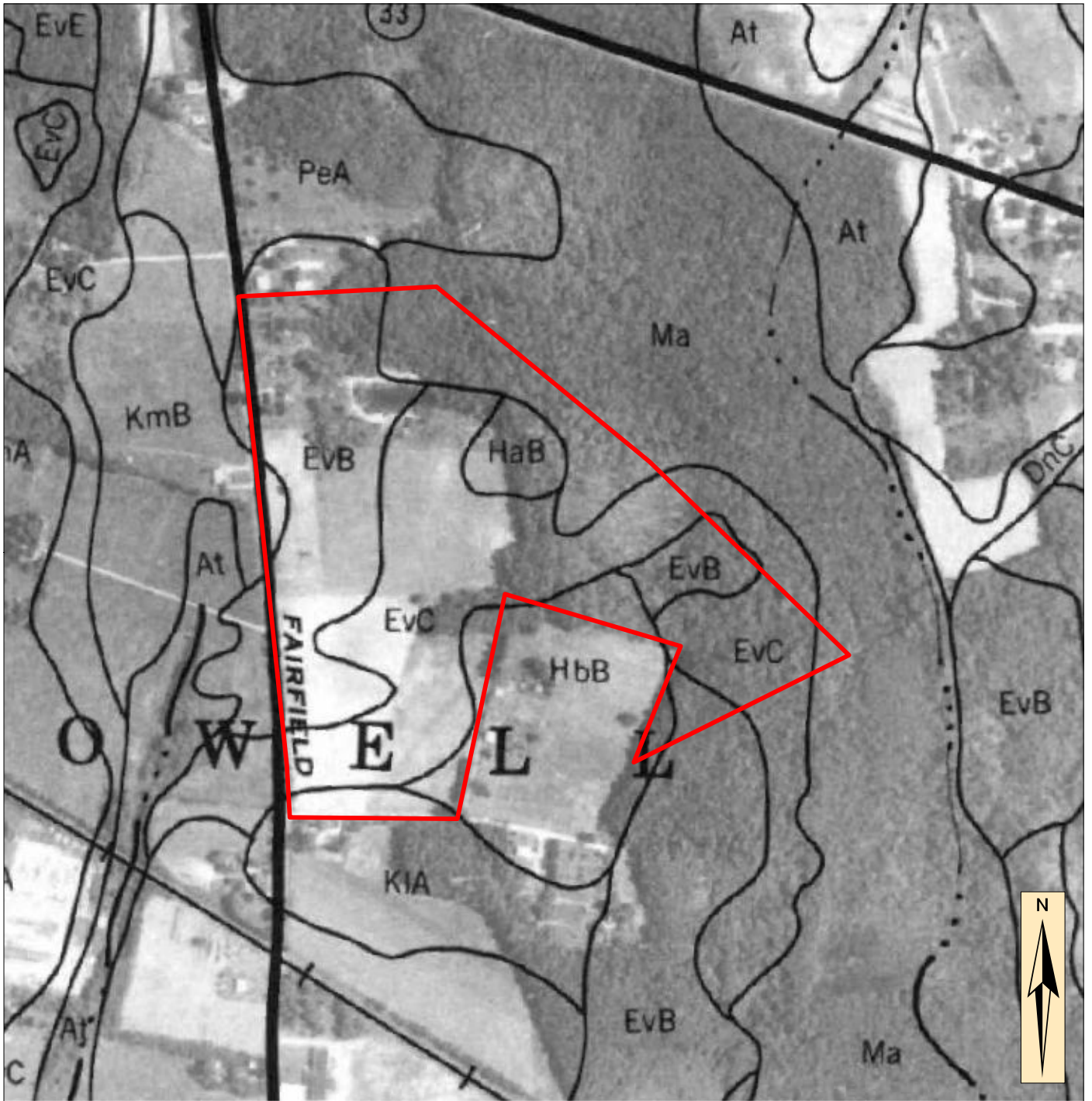
Block 177, Lot 8.01
Township of Howell
Monmouth County, New Jersey

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

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Date: 10/25/21

Scale 1:6,000




 Approximate Site Boundary

FIGURE 3: SCS SOILS MAPPING

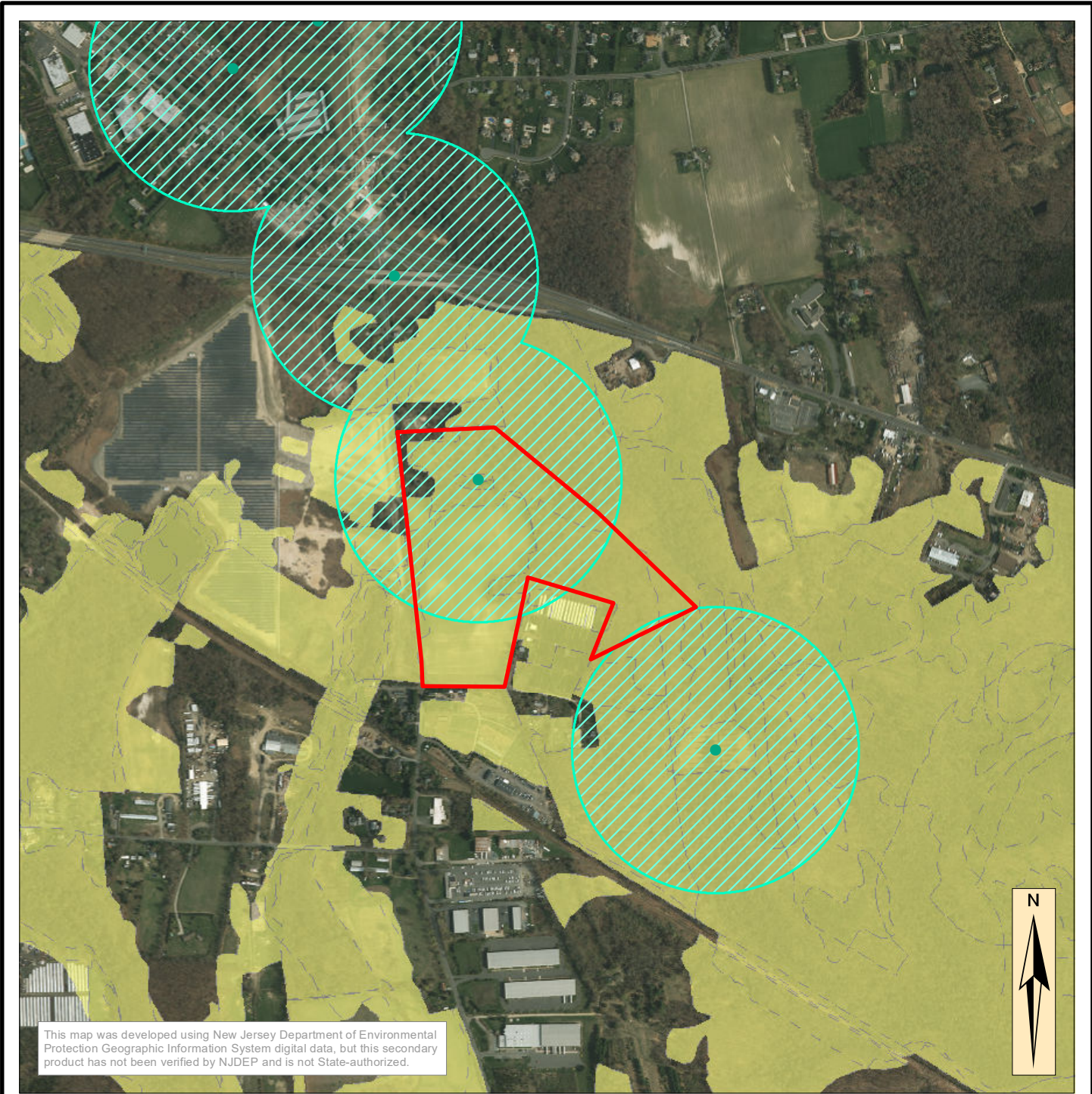
Block 177, Lot 8.01
 Township of Howell
 Monmouth County, New Jersey

Source: USDA, SCS, 1989, Soil Survey of Monmouth County, New Jersey (Sheet 35)


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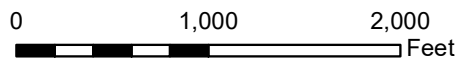
Date: 10/25/21

Scale 1:6,000





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

 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

Vernal Pools

VERNAL POOL STATUS

-  Vernal pool location
-  Potential vernal pool location

Vernal Habitat

VERNAL HABITAT TYPE



-  Potential vernal habitat area
-  Vernal habitat area

FIGURE 4: LANDSCAPE PROJECT

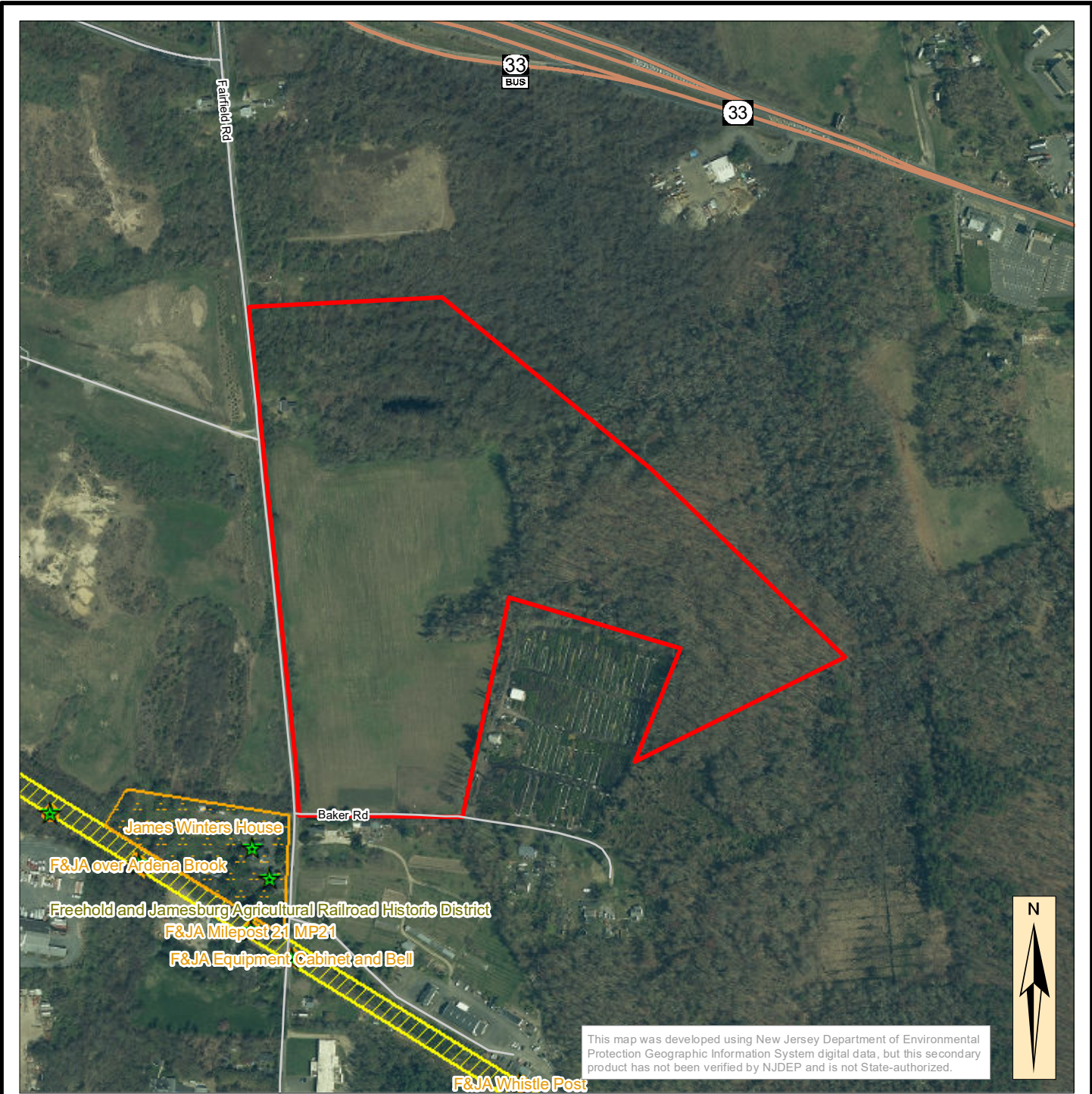
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Township of Howell
Monmouth County, New Jersey

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Date: 10/21/21

Scale 1:12,000



-  Approximate Site Boundary
-  Historic Property Features
-  Historic Properties
-  Archaeological Site Grid
-  Historic Districts

0 500 1,000
Feet

FIGURE 5: HISTORIC RESOURCES

Block 177, Lot 8.01
Township of Howell
Monmouth County, New Jersey

Sources: NJDEP, NHR, HPO. 2021. NJDEP Historic Properties, Districts, & Site Grid Map of NJ. NJOIT, OGIS. 2021. NJ 2020 High Resolution Orthophotography.

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Date: 10/21/21

Scale 1:6,000

ATTACHMENT B

Qualifications of Preparers

EcolSciences, Inc.

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THOMAS M. AUFFENORDE

- EDUCATION:** *M.S., 1982, Botany
Ohio University
B.S., 1980, Biology
University of Alabama in Huntsville*
- AREAS OF EXPERTISE:** *Wetlands Identification, Ecology and Mitigation
Environmental Analysis and Impact Assessment
Environmental Compliance - Construction
Threatened and Endangered Species
Stormwater Pollution Prevention Plan (SWPPP) Compliance*
- PROFESSIONAL AFFILIATIONS:** *Society of Wetland Scientists*
- PROFESSIONAL CERTIFICATIONS:** *USEPA Wetland Delineation Methodology
Certified Stormwater Pollution Prevention Plan (SWPPP) Preparer
Certified Compliance Inspector of Stormwater*

EXPERIENCE:

Mr. Auffenorde is a Vice President and has been employed at EcolSciences, Inc. since 1986. He has directed or participated in over 1,500 construction-related environmental studies for a wide range of clients including the development, legal, engineering and financial professions, as well as local, state and federal government agencies. During his employment with EcolSciences, Inc., his responsibilities have included construction-related wetland regulatory analysis and compliance, environmental impact assessment, Stormwater Pollution Prevention Plan (SWPPP) preparation and compliance, and threatened / endangered species studies. Mr. Auffenorde's project experience also includes extensive client contact, project management, and expert testimony pursuant to the municipal development approval process. Mr. Auffenorde has also been accepted as an expert in wetland regulatory compliance in New Jersey Superior Court. A summary of Mr. Auffenorde's relevant project experience includes:

Environmental Compliance - Construction

Reviewed hundreds of construction site plans for environmental compliance including preparation, submittal, and follow-up on State and Federal wetland permitting. Prepared hundreds of Environmental Impact Statements for the New Jersey municipal development approval process. Involved in the preparation of SWPP Plans and provided construction oversight of SWPPP compliance

- Provided SWPPP compliance oversight for a major utility on a 2-year 44-mile electric transmission line upgrade project in northern New Jersey.
- Active in preparation of SWPP Plans and in an oversight capacity on SWPPP compliance for residential and commercial construction projects



Wetland Studies

Directed and participated in more than 1,000 field studies in NJ, NY and PA for wetland regulatory compliance. Representative experience includes:

- The evaluation of more than 5,000 acres in the New Jersey Highlands.
- The evaluation of more than 2,000 acres in the complex red-shale soils of the New Jersey Piedmont.
- The evaluation of more than 1,000 acres in the sandy soils of the New Jersey Coastal Plain.
- The design and implementation of water table/soil saturation monitoring programs to determine the presence or absence of wetland hydrology in drained organic and mineral soils.

Wetlands Mitigation

Participated in the design, implementation, and monitoring of wetlands mitigation projects pursuant to regulatory violations and to compensate for wetland losses from approved wetland fills. Representative project experiences include:

- Design and coordination with state environmental agency personnel for a 20-acre wetlands restoration/enhancement project required pursuant to a settlement agreement involving wetland disturbances in Mt. Olive, New Jersey. The project involves hydrologic manipulation, extensive wetland plantings, and enhancement of wildlife habitat.
- Design, implementation, monitoring and coordination with state environmental agency personnel of a one acre wetlands restoration project pursuant to authorized wetland disturbances for clean-up of hazardous materials, Holmdel, New Jersey. Project is in the monitoring phase.
- Design, implementation, monitoring and coordination with state environmental agency personnel of a 2-acre wetlands creation project pursuant to authorized wetland fills for a Toys "R" Us warehouse, Mt. Olive, New Jersey. Project is in the monitoring phase.
- Design, implementation and coordination with state environmental agency personnel of a 3-acre wetlands restoration project for Exxon Research and Engineering Company, Florham Park, New Jersey. Project has received agency approval.
- Preparation and implementation of a one acre wetland creation project pursuant to authorized wetland fills for a residential development in Roxbury, New Jersey. Project has received agency approval.



Corridor/Utility Experience

- Designed, directed and participated in ecological studies, regulatory assessment and regulatory compliance for more than 200 linear miles of road corridors, gas and electric transmission right of ways and sewer and water alignments. Studies have been performed for the New Jersey DOT, Public Service Electric and Gas, Jersey Central Power and Light, New Jersey Natural Gas, and numerous local governments.
- Conducted and/or managed comprehensive investigations of regulated wetlands/waters and threatened and endangered species for the Public Service Electric and Gas 44-mile Susquehanna – Roseland electric transmission line upgrade project. Provided regulatory support for environmental permitting. Managed environmental compliance during construction, interfacing with management for the oversight contractor and construction contractor. Duties included troubleshooting soil erosion and sediment control discharge issues, installation of functional wildlife crossings, working with contractors to minimize environmental impacts of construction, and design reviews of plan changes for environmental compliance and minimization of impacts.
- Investigation of Public Service Electric and Gas electric transmission lines for wetlands/waters and threatened or endangered species for vegetation maintenance activities. Worked collaboratively in the field with vegetation maintenance contractors and PSE&G right-of-way managers to ensure compliance with environmental permits and to minimize environmental impacts.

Threatened and Endangered Species Studies

Active in the design and implementation of numerous field studies for rare plant and animal species including, but not limited to: Bog Turtle, Wood Turtle, Pine Barrens Treefrog, Northern Pine Snake, Barred Owl, Coopers Hawk, Grasshopper Sparrow, Savannah Sparrow, Swamp Pink, Knieskern's Beaked Rush, and the plants listed in the Pinelands Comprehensive Management Plan.

- Performed an evaluation of eight NJ Superfund sites to determine the potential occurrence of the federally threatened plant species, Swamp Pink and Knieskern's Beaked-rush, for the USEPA.
- Participated in the design and implementation of a comprehensive threatened and endangered plant and animal studies on numerous large and small holdings in southern New Jersey and southern New York. Conducted field surveys for target Federal and State listed species identified by regulatory agencies, including the New Jersey Pinelands Commission, leading the botanical survey and plant identification efforts. Applied the timed-meander search technique for threatened and endangered plant species. A partial list of species surveyed for include: Swamp Pink, Knieskern's Beaked-rush, Spreading Globeflower, Sickle-leaved Golden Aster, Pine Barrens Reedgrass, Southern Twayblade, Little Ladies Tresses, Broom Crowberry, Yellow Asphodel, Curly Grass Fern, Fairy Wand, Hookers Orchid, Puttyroot, and Globe-flowered Ludwigia.



Avifaunal Studies

- Intensive avifaunal field and literature studies associated with the preparation and implementation of a Bird Deterrent Plan required by the Federal Aviation Administration for a proposed ash-bypass landfill in Onondaga County, NY.
- Wintering/migratory bird field studies for the proposed redevelopment of Flushing Airport by the NY City Economic Development Corporation (formerly Ports and Trade).
- Assessment of the vegetation and surrounding landscape characteristics of long-eared owl (*Asio otus*) winter roosts in central New Jersey.

Commercial/Industrial/Residential Studies

- Wetlands delineation, impact assessment and mitigation for more than 1000 commercial, industrial and residential development projects in NJ, NY and PA for use in site planning, U.S. Army Corps of Engineers 404 permit acquisition, and acquisition of State wetland permits.
- Preparation of municipal EIS's for major developments in New Jersey for use in planning board submissions. Major issues commonly include wetlands, endangered or threatened species, stormwater drainage and floodplains.
- Expert testimony on wetlands delineation, regulatory compliance and environmental impact analysis.

Special Environmental Studies

A wide range of ecological studies have been conducted for various private clients, the USEPA and other government agencies. Representative studies include:

- An evaluation of the impacts of peat extraction on the functions and values of peatlands in the Pocono Mountain area of Pennsylvania for the USEPA, Region III.
- Conducted field studies, prepared the report and presented the results of the study at a public meeting for the Advance Identification of Wetlands along Moshannon Creek near Philipsburg, PA for the USEPA, Region III.
- Conducted field studies and prepared a report for the Advance Identification of Wetlands in Silkman's Swamp near Scranton, PA for the USEPA, Region III.
- Prepared a sampling plan, established permanent quadrats and prepared a report for the first year in a NJDEP-mandated 20-year study of the effects of the removal of groundwater upon the existing plant communities of Budd Lake Bog due to the construction of sanitary sewerage



facilities. Budd Lake Bog is known to harbor several species of rare plants and is the northernmost occurrence of the Federally-threatened plant, Swamp Pink.

PUBLICATIONS:

Moskowitz, D.P. and T.M. Auffenorde. 2003. Bird Use of Two Simulated-Tree Cellular Towers in New Jersey. *Records of New Jersey Birds* 28(4): 88-91.

Moskowitz, D.P. and T.M. Auffenorde. 2000. Persistence of Skunk Cabbage (*Symplocarpus foetidus*) in a Drained Wetland. *Wetland Journal* 12(3): 23-29.

Moskowitz, D., T. Auffenorde and M. Kovacs. 1997. Vegetation and surrounding landscape characteristics of long-eared owl (*Asio otus*) winter roosts in central New Jersey. *Records of New Jersey Birds* 23(1): 2-6.

Auffenorde, T.M. and W.A. Wistendahl. 1985. The composition, structure and phenology of the vegetation at the O. E. Anderson Compass-Plant Prairie in unglaciated southeastern Ohio. *Ohio Journal of Science* 85:50-59.

Auffenorde, T. M. 1983. Demography and persistence of *Silphium laciniatum* at the O. E. Anderson Compass-Plant Prairie in southeastern Ohio. *Proceedings of the Eighth North American Prairie Conference*, R. Brewer (ed.), Department of Biology, Western Michigan University, p. 30-32.



DANIEL BRILL

- EDUCATION:** *B.A., 1996 – Environmental Studies
Richard Stockton College
Galloway, New Jersey*
- EMPLOYMENT:** *EcolSciences, Inc. (2001-present)*
- AREAS OF EXPERTISE:** *Threatened & Endangered Species Habitat Assessments and Surveys
Geographic Information Systems*
- PROFESSIONAL CERTIFICATIONS:** *Rutgers Cook College Office of Continuing Professional Education
- Professional Certificate Program in Geomatics
Birder Certification Online – Certification Level 3, Bird Conservation
Regions 28, 29 & 30 (www.birdercertification.org/)*

EXPERIENCE:

Mr. Brill is presently a Senior Environmental Scientist with EcolSciences, Inc. with over 17 years of experience with the company. His particular specialties are in threatened and endangered species studies and the use of Geographic Information Systems (GIS) software as an instrument of environmental analysis.

Mr. Brill has been a birder for over 25 years with 360 bird species observed in New Jersey. He is knowledgeable in their habitats, distribution, and seasonal occurrence. With regards to GIS, Mr. Brill is well-versed in the methodology and species models used to assemble the NJDEP Landscape Project critical habitat map from Versions 1.0 through 3.3.

Prior to his employment with EcolSciences, Mr. Brill was an educator at the Cattus Island Cooper Environmental Center with Ocean County Parks and Recreation and has volunteered with the New Jersey Department of Environmental Protection and New Jersey Audubon Society.

Selected Bird Studies

Contribute to the design, implementation, documentation, and analysis of habitat evaluations and surveys of endangered, threatened, special concern, and other birds. Such studies include:

- Lead Bald Eagle monitor 2012-2014 on a multi-year Public Service Electric & Gas (PSE&G) overhead transmission line right-of-way (ROW) construction project in northern New Jersey in accordance with United States Fish and Wildlife Service (USFWS) permit conditions. Three eagle territories in Morris County were in close proximity to construction activities that included intense helicopter use.
- Bald Eagle monitor 2014-2015 at Lake Tappan in Rockland County, New York. A proposed helicopter pad at a corporate facility would be located 1,200 feet from an active nest. EcolSciences prepared a Habitat Assessment Report concluding that measures such as minimizing flights for emergency purposes only and maintaining a 1,000-foot flight buffer from the nest at all times would likely not result in a “take” of Bald Eagle. Therefore, no permit was required from the New York Department of Environmental Conservation (NYSDEC) pursuant to the New York State Endangered Species Act.



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- Bald Eagle monitor 2014-2019 of a pair that nested on the site of a previously approved residential development at Lake Hopatcong. A take permit was obtained from USFWS. There was no lost productivity from this eagle pair as a result of the development, with young successfully fledged each year from both the on-site nest (even during land clearing and construction activities) and later a second nest less than one half mile away.
- Investigated a suspected alternate Bald Eagle nest located immediately adjacent to the site of a proposed residential development in Schuylkill Township, Pennsylvania. The nest was likely attributable to an eagle pair with an active nest located on the opposite side of a reservoir and in close proximity to an occupied office building. EcolSciences successfully convinced USFWS that the local eagle pair are acclimated to nearby human activity and that the proposed development would not negatively impact the potential future usage of the alternate nest nor the reservoir as foraging habitat. As such, the proposed development did not require an eagle take permit.
- Avian monitor April – July 2014 at a ROW construction project on the Raritan Estuary in Middlesex County as required in a NJDEP Waterfront Development Permit. Work activities approached multiple Osprey nests. Several other State-listed birds were observed in the work area including Black-crowned Night-heron, American Bittern, Bald Eagle, Northern Harrier, Least Tern, and Black Skimmer.
- Breeding bird survey of two dredge disposal areas totaling approximately 500 acres along the Delaware River. The survey was conducted to address a special condition of a NJ Department of Environmental Protection (NJDEP) issued Waterfront Development Permit limiting activities including the placement of dredged material inside the disposal areas March 15 through July 31 to avoid and minimize impacts to nesting birds and prevent impacts to nesting Bald Eagles. A small fraction of the 94 bird species identified during the survey likely nested within the disposal areas. Based on the survey results and site conditions within the disposal areas, EcolSciences determined a plan could be developed to eliminate the timing restrictions.
- Helped conduct a bird/radio tower collision study at five 300 to 400-foot high towers in the New Jersey Meadowlands during the spring and fall migrations in 2004. A total of 108 bird species were observed and feathers or other parts of twelve bird species were located beneath the towers or guy wires.
- Conducted a grassland bird survey on over 500 acres of hayfields surrounding a corporate facility in Hunterdon County. Three obligate grassland birds (Savannah Sparrow, Grasshopper Sparrow, and Bobolink) were found nesting here.
- Other avian studies of raptors such as Red-shouldered Hawk, Cooper's hawk, and Barred Owl; grassland species including Upland Sandpiper, Horned Lark, and Vesper Sparrow; wading birds like Black-crowned Night-heron, Yellow-crowned Night-heron, and Great Blue Heron; secretive marsh birds such as Pied-billed Grebe, Virginia Rail, Sora, Common Gallinule, Least Bittern, and American Bittern; and other birds such as Red-headed Woodpecker and Golden-winged Warbler.

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 constraints on a given site including critical wildlife habitat.



- Plot results of 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 birds such as Bald Eagle, Black-crowned Night-heron, Barred Owl, and Red-headed Woodpecker.

Other Applicable Experience

- Co-authored an Avian Survey Protocol for the PSE&G overhead transmission ROWs. The objective of the protocols is to provide a consistent framework in which to survey and evaluate habitat for birds addressed in the Utility ROW No Harm Best Management Practices (BMPs) developed by the NJ Endangered and Nongame Species Program (ENSP) ahead of scheduled vegetation maintenance activities. Data collected will be reviewed by PSE&G environmental managers, who will authorize relief from seasonal restrictions listed in the BMPs where warranted.
- Participated in a panel assembled by ENSP to assess or reassess the status of over 170 bird species occurring in New Jersey. This was accomplished via the Delphi Technique that entailed five rounds of voting and considered materials provided by ENSP and comments and expert opinions of panel members.
- 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.
- Assisted the annual Sandy Hook Hawk Watch for New Jersey Audubon Society in spring of 2000 and 2001. Fifteen or more species of diurnal raptors can be expected at this location.
- Project assistance for Neotropical Passerine Critical Areas: Pinelands Survey (Landscape Project for Protection of Rare Species). The objective of this 1999 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.
- Present volunteer monitor of a nesting pair of State-endangered Peregrine Falcons in New Brunswick.
- Submitted multiple ENSP Rare Wildlife Sighting Report forms documenting observations of endangered, threatened, and special concern birds.
- Frequent contributor to eBird, submitting multiple rare and unusual local records.
- Present coordinator of the Assunpink Christmas Bird Count (CBC). Participant in other CBCs.



JENNIFER R. POTRIKUS, PWS

EDUCATION: *M.S., 2015 – Conservation Biology
SUNY College of Environmental Sciences and Forestry, Syracuse, N.Y.
Thesis: Ecological and Genetic Assessments of the Invasive Potential of
Actinidia Arguta (Hardy Kiwi) in the Northeast United States*

*B.A., 2012 – Biological Science
Harpur College of Arts and Sciences,
Binghamton University, Binghamton, N.Y.*

**AREAS OF
EXPERTISE:**

*Regulatory Assessments and Constraints Analysis
Wetland Delineations & Regulatory Review
Threatened & Endangered Species Surveys*

**PROFESSIONAL
CERTIFICATIONS:**

*Professional Wetland Scientist (PWS) #3423 – Society of Wetland Scientists
Wetland Delineation Certificate – Rutgers University OCPE
OSHA 1910.120 40-hour HAZWOPER Training*

**PROFESSIONAL
ASSOCIATIONS:**

Member of the Society of Wetland Scientists

EXPERIENCE:

Ms. Potrikus is an Environmental Scientist with EcolSciences, Inc. and has more than 6 years of environmental experience. She has professional experience in wetland and stream delineations; threatened & endangered species surveys; environmental permitting, planning, and monitoring; and constraints analyses with a focus on renewable energy, electric generation, and natural gas projects. Additional experience includes construction oversight to ensure compliance with permit conditions, preparation of permit applications and GIS mapping. Ms. Potrikus has extensive experience with power utility clients and has expertise in local and state regulations in NY and NJ as well as federal regulations as they apply to electric generation and transmission projects.

Prior to joining EcolSciences, Inc., Ms. Potrikus was the technical project manager and point of contact for a utility client at an engineering and environmental consulting firm where she was responsible for assisting in the growth of the Siting, Licensing, and Permitting program. As a technical project manager, Ms. Potrikus was responsible for the development of ecology-related project scopes, schedules, budgets, and overall project direction to ensure successful environmental compliance. A summary of Ms. Potrikus' relevant experience includes:



EcolSciences, Inc.
Environmental Management and Regulatory Compliance

Wetland Delineations and Regulatory Compliance

- Conducted numerous wetland delineations based on the Federal Manual three-parameter approach using indicators of hydrophytic vegetation, hydric soils, and wetland hydrology.
- Preparation of Environmental Impact Statements, Letters of Interpretation, Transition Area Waivers, General / Individual Permits, CAFRA / Waterfront Development Permits, as various U.S. Army Corps permits for both development and utility projects throughout NJ.
- Preparation of Article VII and Article 10 applications for major utility projects, Freshwater Wetlands Permit (Article 24) and Protection of Waters Permit (Article 15) applications, and State Environmental Quality Review (SEQR) compliance for both development and utility projects throughout NY.

Threatened and Endangered Wildlife Species

- Performs avian habitat evaluations and/or species presence/absence surveys for the New Jersey State-threatened barred owl (*Strix varia*) and the New Jersey State-endangered, red-shouldered hawk (*Buteo lineatus*) along utility rights-of-way. Avian surveys included performing call surveys, nest searches, and assessing suitability of habitat for nesting and/or foraging.
- Conducted day and night surveys of vernal pools for an annual monitoring effort following installation of an underground gas line. Assessed for the presence of vernal-dependent species.

Construction/ROW Maintenance Monitoring

- Monitoring of construction and/or maintenance activities within environmentally sensitive areas along various overhead electric line ROWs to ensure compliance with permit conditions.
- 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 & repair, and ROW vegetation maintenance, including spraying, mowing, hand-cutting, and tree-cutting.

Geographic Information Systems

- Evaluates potential environmental constraints using land use/land cover, wetlands, vernal habitat, riparian zones, flood hazard area information, and NJDEP Landscape Project mapping for both development and utility projects.

