



ENVIRONMENTAL RESOURCE INVENTORY

**BLOCK 1045, LOTS 2, 3, & 4
MIDDLETOWN TOWNSHIP
MONMOUTH COUNTY, NEW JERSEY**

SEPTEMBER 2024

PREPARED FOR:

SPIRO HARRISON & NELSON
200 MONMOUTH STREET, SUITE 310
RED BANK, NJ 07701

PREPARED BY:

PRINCETON HYDRO, LLC
35 CLARK STREET, SUITE 200,
TRENTON, NJ 08611

PRIMARY AUTHORS:

Ivy Babson
Thomas Hopper, GISP
Tara Srinivasan
Eric Zawatski, AWB

PRIMARY EDITORS:

Michael Rehman, CERP, PWS





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EXECUTIVE SUMMARY

This report provides a summary of environmental resources and environmentally sensitive areas identified on Block 1045, Lots 2, 3, and 4 of Township of Middletown, New Jersey (the “Site”), and examines the potential environmental impacts that could or would likely occur if high density development were built on the Site. A series of on-Site environmental resource investigations and assessments in March 2024 found that the Site contains wetland and open water habitats, steep slopes, an abundance of closed canopy forest with several large specimen trees. High density development of the Site is reasonably likely to directly impact several on-Site environmental resources and may also indirectly impact other on-Site and/or downstream environmental resources.

In summary, high-density development of the Site:

- Would require the removal of permeable land, replacing it with impervious surfaces (e.g. roads, buildings) and other less-permeable surfaces (e.g. lawns and other landscaped areas).
- Would require the removal and fragmentation of intact, closed canopy forest.
- Would require the removal of small to mid-sized trees and other understory vegetation.
- Would likely require the removal of several large specimen trees.
- Would likely require the disturbance of currently stable, steep slope areas.

These alterations to the Site:

- Are reasonably likely to increase local stormwater runoff, increase non-point source pollution, and decrease local groundwater recharge capabilities, which may result in the indirect degradation of on-Site and downstream open waters and associated wetlands, depending on mitigating design features and best management practices.
- Are reasonably likely to reduce the quality and value of existing forest habitat by reducing total forest area, interrupting natural forest development, reducing wildlife by habitat capacity, increasing forest vulnerability to disturbance and invasive species, and decreasing other valuable environmental services provided by forest vegetation such as stormwater runoff reduction.
- Are reasonably likely to disturb steep slopes, decrease slope stability, and increase local soil erosion and runoff, which may in turn degrade the water quality of on-Site and downstream open waters and associated wetlands, depending on inclusion, design, and maintenance of mitigating design features and best management practices.

Therefore, to a reasonable degree of professional certainty, it is likely that high density development of this Site would be detrimental to the local environment by reducing and degrading environmental resources and environmentally sensitive areas. Furthermore, such development would also be inconsistent with several environmental goals and recommendations established by the Middletown Township Master Plan.



1.0 BACKGROUND

1.1 INTRODUCTION

Princeton Hydro, LLC (Princeton Hydro) was contracted by Spiro Harrison & Nelson to perform a series of environmental resource inventory surveys on Block 1045, Lots 2, 3, and 4 located in the Township of Middletown, Monmouth County, New Jersey (hereinafter referred to as "Site").

In March 2024, Princeton Hydro performed several on-Site environmental resource investigations and assessments, including a wetland delineation, steep slope analysis, tree and shrub inventory, threatened and endangered (T&E) species assessment, and ecological community assessment. This report serves as a summary of the Site's environmental resources. More detailed supporting data and information can be found in the report appendices.

A high-density development project has been proposed on the currently undeveloped Site, as shown in a concept development plan, published by MidAtlantic Engineering Partners, and provided to Princeton Hydro in July 2024 (**Appendix I**). This concept development plan has been overlain over the environmental resource maps presented in this report (**Appendix II**).

1.2 SITE DESCRIPTION

Based on digital parcel mapping distributed by the NJ Office of GIS (NJOGIS), the Site covers an area of approximately 18.22 acres, just west of the Garden State Parkway (**Figure 1**). The Site is located within the inner coastal plain region of New Jersey (Collins & Anderson 1994) in the headwaters of the Navesink River Estuary Watershed (Hydrologic Unit Code [HUC]-11: 02030104070). According to stream mapping published by The New Jersey Department of Environmental Protection (NJDEP), Nut Swamp Brook lies just off-Site to the west and flows southward, eventually discharging to Shadow Lake, approximately three miles downstream, and, in turn, the Navesink River Estuary. According to NJDEP 2020 Land Cover mapping, the floodplains and riparian areas of Nut Swamp Brook downstream of the Site also contain extensive wetland habitats. An unmapped and unnamed tributary (UNT) to Nut Swamp Brook was identified on-Site during Site assessments, originating on-Site and southward through the Site, discharging to Nut Swamp Brook off-Site.

Based on a review of historic imagery published by the New Jersey Geographic Information Network (NJGIN), much of the Site was used for agricultural production during the early 20th century (**Figure 2**). By the 1980s the Site was predominantly reforested, with open fields comprising the remainder of the Site (**Figure 3**). Site investigations in 2024 identified remnant elements of the Site's past uses, including stone and concrete, and presumed ornamental plantings; however, no habitable structures, agricultural plots, or other maintained areas were present on-Site.

Figure 1: Site Overview – 2020

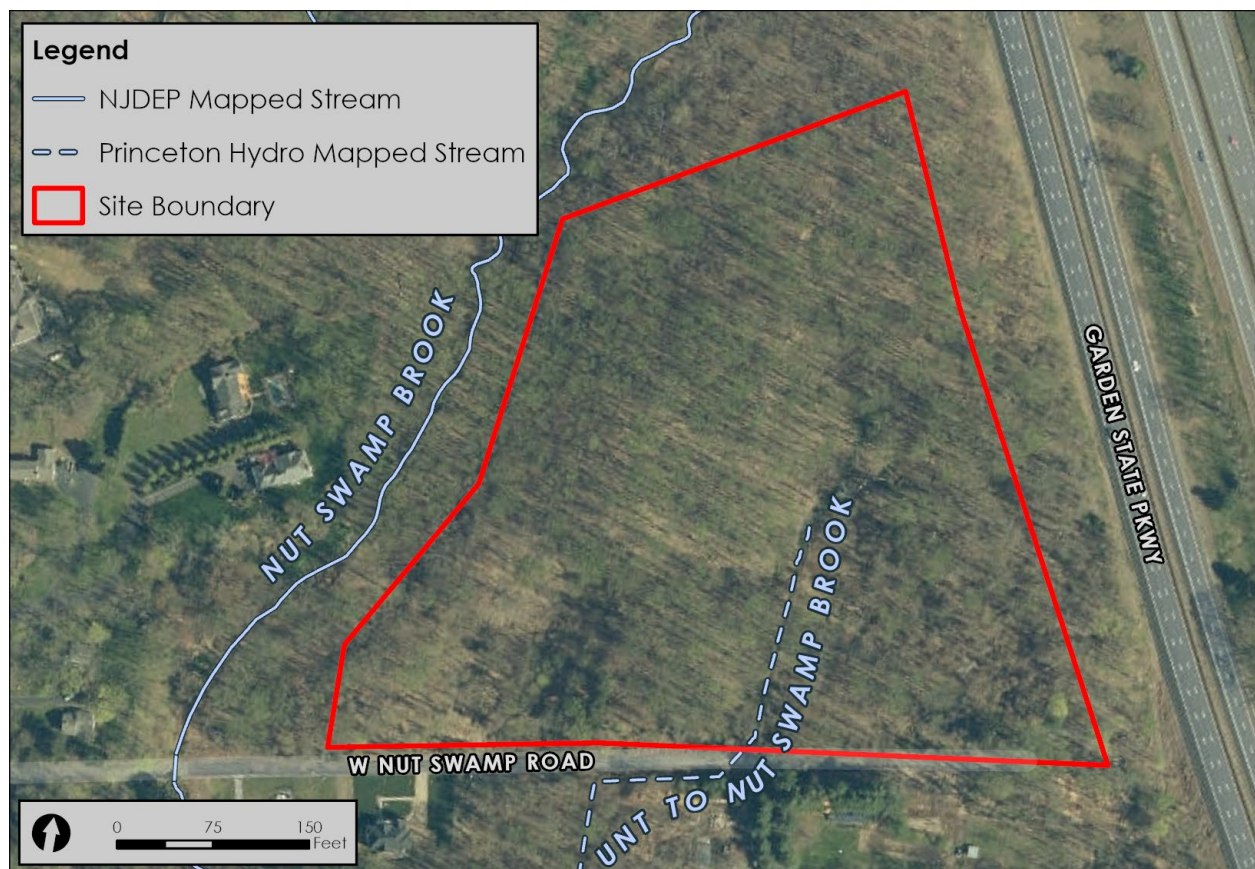


Figure 2: Site Overview – 1930s



Figure 3: Site Overview – 1980s





2.0 WETLANDS AND STATE OPEN WATERS DELINEATION

2.1 METHODOLOGY

The delineation of wetlands on-Site was conducted in accordance with the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Manual)* (Federal Interagency Committee for Wetland Delineation [FICWD] 1989) and the U.S. Army Corps of Engineers' (USACE) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0 (AGCP Regional Supplement)* (Environmental Laboratory 2010). The *Federal Manual*'s 'Routine On-Site Determination Method' was applied for both the collection and review of existing available background information on vegetation, soils and hydrology, and the on-Site delineation, with supplemental information provided by the *AGCP Regional Supplement*. The delineation was performed on March 25 and 26, 2024.

Based on the "three parameter" approach, an area is defined as a wetland if it exhibits, under normal circumstances, all of the following characteristics:

1. The land supports a dominance of hydrophytic vegetation.
2. The substrate is hydric soil.
3. The soil/substrate is at least periodically saturated or inundated during a portion of the growing season.

Princeton Hydro's wetland investigation involved the establishment of representative sampling points along wetland lines and at representative locations within each plant assemblage. At each sampling point, data regarding the vegetation, soil, and hydrology were collected. The data collected provided the information required to determine whether the area met the definition of a wetland. State open waters include, but are not limited to, lakes, ponds, and stream channels. State open waters were delineated based upon their top of bank, which NJDEP defines as the upper limit of the bank of a regulated water, which is typically characterized by an observable change or break in the slope of the land (N.J.A.C. 7:7-9.26(c)). Delineated wetlands and State open water boundaries were marked and numbered using colored survey flagging and subsequently geolocated by Princeton Hydro using an EOS Arrow Gold RTK GNSS Receiver, with RTK corrections received through the HxGN SmartNet RTK network.

2.2 RESULTS

A summary of the wetland and State open waters identified and delineated on-Site, and the total acreage and the percent area of each is presented in **Table 1**. A map of all wetland and State open water communities identified on-Site is presented on **Page 10**. A full list of species observed on the Site is available in **Appendix III**. A wetland determination data form prepared for a wetland identified just off-Site is available in **Appendix IV**. A copy of the Freshwater Wetlands Letter of Interpretation (LOI) for the Site, issued by NJDEP on August 23, 2023, is available in **Appendix V**.

Table 1: Summary of the Site's Wetlands and Open Waters

WETLAND / OPEN WATER HABITAT	TOTAL ACREAGE ON-SITE	PERCENT AREA OF THE SITE
State Open Water	0.05 ac	0.3%
Palustrine Forested Wetland	0.79 ac	4.3%
Palustrine Scrub-Shrub Wetland	0.27 ac	1.5%
Total	1.11 ac	6.1%

Wetlands and State open waters collectively comprised approximately 1.11 acres, or 6.8% of the Site. On-Site State open waters consisted of one UNT to Nut Swamp Brook, which was perennial in nature and formed a channel with bank widths ranging from ~2 to 10 feet (**Figure 4**). The headwaters of the UNT to Nut Swamp Brook originated from a groundwater seep on-Site. Two distinct wetland plant communities were observed on-Site: palustrine forested (PFO) wetland (**Figure 4**) and palustrine scrub-shrub (PSS) wetland (**Figure 6**). One off-Site palustrine emergent (PEM) wetland was also observed and delineated (**Figure 6**).

The off-Site PEM wetland comprised approximately 1,742-square feet (0.04 acres). Off-Site wetlands were also observed along the river-left side of Nut Swamp Brook and were partially

Figure 4: Photo of UNT to Nut Swamp Brook and Forested Wetland



delineated along their upper edge. The regulated wetland transition area associated with these off-Site wetlands partially extend into the Site itself.

The tree stratum of the PFO wetlands was dominated by broad-leaved deciduous species including pin oak (*Quercus palustris*) and red maple (*Acer rubrum*). The sapling/shrub stratum was dominated by northern spicebush (*Lindera benzoin*). The herbaceous stratum was dominated by Nepalese browntop (*Microstegium vimineum*) and sweet woodreed (*Cinna arundinacea*). Other species that were observed, but not dominant, included skunk cabbage (*Symplocarpus foetidus*), common reed (*Phragmites australis*), and common rush (*Juncus effusus*).

The sapling/shrub stratum of the PSS wetland was dominated by northern spicebush. The herbaceous stratum was dominated by skunk cabbage, common rush, and Nepalese browntop. Other species that were observed, but not dominant, included common reed, shallow sedge (*Carex lurida*), and sweet woodreed.

The sapling/shrub stratum of the off-Site PEM wetland was dominated by northern spicebush. The herbaceous stratum of the wetland was dominated by skunk cabbage. Other species that were observed, but not dominant, included Japanese wineberry (*Rubus phoenicolasius*) and garlic mustard (*Alliaria petiolata*). This wetland was not identified on the previously issued LOI, as such, a wetland determination data form has been prepared and provided in **Appendix IV** to support the wetland determination.

Figure 6: Photo of Scrub-Shrub Wetland



Figure 6: Photo of the Off-Site Wetland





2.3 COMPARISON WITH 2023 LOI

On August 23, 2023, a Freshwater Wetlands LOI – Line Verification application (NJDEP PI No. 1331-06-0004.1 [FWW230001]), submitted by the Adoni Property Group, was approved by the NJDEP (**Appendix V**). The LOI confirmed one freshwater wetland and one State open water on-Site, and off-Site freshwater wetlands, located to the west of the Site, were also confirmed. All wetlands were determined to be of intermediate resource value with an associated 50-foot transition area. State open waters do not possess a transition area under N.J.A.C. 7:7A, but regulated waters do possess a riparian zone under N.J.A.C. 7:13

The results of the March 2024 wetland delineation were largely consistent with the LOI received by the Adoni Property Group, with two differences:

1. the 2024 delineation included a partial delineation of upper limits of the off-Site wetlands along the east side of Nut Swamp Brook, whereas the 2023 LOI only depicted a centerline of the Brook. However, this difference is functionally inconsequential, as the 2023 LOI included the portion of the transition area associated with these off-Site wetlands that extends on-Site.
2. the 2024 delineation identified an additional freshwater wetland that was not identified in the 2023 LOI, adjacent to the hill slope along the northwest Site border (**Figure 6**). This off-Site wetland was a groundwater-fed PEM wetland. This wetland does not meet the criteria for either an exceptional resource value or ordinary resource value wetland; as such, this wetland is preliminarily determined to be of intermediate resource value, which carries a 50-foot transition area buffer according to N.J.A.C. 7:7A-3.2. This preliminary determination of the transition area is subject to NJDEP confirmation. A portion of this off-Site wetland's transition area would extend on-Site, but does not appear to overlap the area of proposed development (**Appendix II**).



2.3 DISCUSSION

Wetlands and State open waters are valuable environmental resources that provide a variety of ecological and socioeconomic benefits, including the improvement of water quality, reduction of stormwater runoff, mitigation of flooding, and provision of wildlife habitat. The loss or degradation of wetlands and State open waters, such as through land development, can reduce or eliminate these benefits. Due to these public benefits, and the historic loss and degradation of wetland habitats throughout New Jersey, wetlands and open waters receive broad regulatory protections and are often prioritized for conservation.

In New Jersey, wetlands, State open waters, and transition areas (i.e., upland buffers adjacent to freshwater wetlands) are protected and regulated by the New Jersey Freshwater Wetlands Protection Act (N.J.S.A. 13:9B) and its implementing rules, the New Jersey's Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A). Regulated activities include, but are not limited to, any physical or hydrologic disturbances to these areas. NJDEP implements the Freshwater Wetlands Protection Act Rules and is responsible for the review and permitting of all regulated activities.

New Jersey's waters and their floodplains are also regulated under the New Jersey Flood Hazard Area Control Act Rules (N.J.A.C. 7:13), which establishes regulated flood hazard areas (FHAs) and riparian zones around regulated waters. The UNT to Nut Swamp Brook that was observed on-Site, the segments of Nut Swamp Brook west of the Site, would be considered a regulated water under the Flood Hazard Area Control Act Rules. Because the on-Site waters drain an area less than 50 acres, it would not receive a regulated FHA. However, all regulated waters, including those on-Site, receive a regulated riparian zone, which varies in width from 50 feet to 300 feet. As per N.J.A.C. 7:13-4.1 the on-Site regulated waters would likely be assigned a 50-foot-wide riparian zone, as measured landward from the top of bank. Any regulated activities within the Riparian Zone, including, but not limited to, the alteration of topography, removal of vegetation, or creation of impervious surface, would require regulatory review and permitting under the Flood Hazard Area Control Act Rules.

Historically, New Jersey's wetlands and State open waters were often lost or degraded directly and with intention, through development activities such as filling or draining to create usable land for farming and building. However, direct impacts to wetlands and State open waters are no longer common in New Jersey due to regulatory protections. Instead, indirect impacts to wetlands and open waters are more prevalent. Indirect impacts can arise from any land development near a wetland or State open water, or in their watershed, comprised of the area of land which drains to the wetland or State open water. Land development generally increases the rate and volume of stormwater runoff into nearby surface waterbodies (NJDEP 2016). Increased stormwater runoff can overwhelm the natural capacity of downstream waterbodies, leading to structural issues such as stream bank erosion, stream migration, stability issues, and increased flooding. Land development also generally increases non-point source water pollution (i.e. diffuse contamination that does not originate from a single discrete source), because stormwater runoff flowing through developed landscapes tends to mobilize



and transport pollutants into local waterways, such as excess nutrients from lawn fertilizers, oils and lubricants from automobiles, salt from winter road maintenance, and sediment from construction sites and eroding slopes. Any increase in non-point source water pollution may indirectly impact downstream waterbodies and wetlands by reducing their water quality.

The Site's wetlands and State open waters are groundwater-fed headwaters, the upper reaches of a watershed where surface waters first begin to form, increasing both their value and vulnerability. Headwaters strongly influence the function and quality of all downstream waterbodies and are essential to overall watershed health (Kaplan et al. 2008). However, due to the small size of a headwater's watershed, they are highly vulnerable to even small-scale land disturbances (Lowe and Liken 2005, Kaplan et al. 2008). Groundwater-fed waterways, such as the UNT to Nut Swamp Brook that was observed on-Site, are additionally important because they help maintain base flow in downstream waterways during times of reduced rainfall.

Land development on the Site, if compliant with the NJ Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), is unlikely to directly remove or destroy on-Site wetlands and open waters. However, on-Site land development would remove permeable land in uplands, replacing it with impervious surfaces (e.g., roads, buildings) and other less-permeable surfaces (e.g., lawns and other landscaped areas). Such alterations are reasonably likely to increase local stormwater runoff, increase non-point source pollution, and decrease local groundwater recharge capabilities. This may result in the indirect degradation of on-Site and downstream wetlands and open waters, depending on inclusion, design, and maintenance of mitigating features such as storm sewers, stormwater basins, vegetated buffers, and/or other stormwater best management practices.





3.0 STEEP SLOPE ANALYSIS

3.1 METHODOLOGY

Chapter 540 (Planning and Development Regulations) of Middletown Township's municipal code defines "steep slopes" as those areas where the average slope is 15% or greater as measured over a ten-foot interval. The code further defines steep slopes which are 25% or greater as "critical slopes". Site topography data was obtained from the Northeast NJ Post-Sandy 2014 LiDAR Digital Elevation Model (DEM), published by the U.S. Geological Survey Coastal and Marine Geology Program (CMGP), and distributed through the New Jersey Geographic Information Network. Percent slope was calculated using the DEM and ESRI's ArcGIS Pro Spatial Analysis Toolbox. Areas with a calculated slope of 15% - 25% or >25% over a ten-foot interval were extracted and their acreage was calculated.

3.2 RESULTS

A summary of the steep slopes identified on-Site, and the total acreage and the percent area of each is presented in **Table 2**. A map of steep slopes identified on-Site is presented on **Page 14**.

Table 2: Summary of the Site's Steep Slopes

STEEP SLOPE CLASS	TOTAL ACREAGE ON-SITE	PERCENT AREA OF THE SITE
15% - 25% Slope	2.89 ac	15.8%
>25% Slope	2.82 ac	15.5%
Total	5.71 ac	31.3%

Steep slopes (>15% slope) comprise approximately 5.71 acres, or 31.3% of the Site. Of those steep slopes, approximately 2.82 acres, or 15.5% of the Site, would be classified as critical slopes (>25% slope) under Middletown Township municipal code. The Site's steep slopes primarily occur along its western boundary, rising from the floodplain of Nut Swamp Brook, and bisecting the Site generally along a southwest-northeast axis.



3.3 DISCUSSION

In general, steeply sloping terrain is less stable, more prone to erosion, and more vulnerable to disturbance than gently sloping terrain. Steep slopes tend to become naturally stable over long time periods, as erosional forces shape the terrain into a stable topography and vegetation establishes, binding the soil and reducing water runoff.

Disturbances to steep slopes, such as construction, removal of vegetation, or increased water runoff, can destabilize a slope and lead to changes in topography, erosion, soil loss, and degradation of water quality. Once a steep slope has been destabilized, erosional forces can create a positive feedback loop in which erosion continues to decrease stability of the slope leading to even further erosion. Because of this, it is often difficult to restabilize a disturbed steep slope and slope erosion can become a chronic issue on a developed steep slope site. Middletown Township has recognized that the disturbance of steep slopes should be prevented or limited where possible and regulates the development and disturbance of steep slopes under Chapter 540 (Planning and Development Regulations) of the Township municipal code.

The Site's steep slope areas appear to be largely stable under current conditions; no signs of significant slope erosion, such as gully formation, were observed in these areas during on-Site assessments in March 2024. The Site's steep slope areas were generally vegetated with shrubs and/or large, mature trees, which are providing additional stabilization to these slopes.

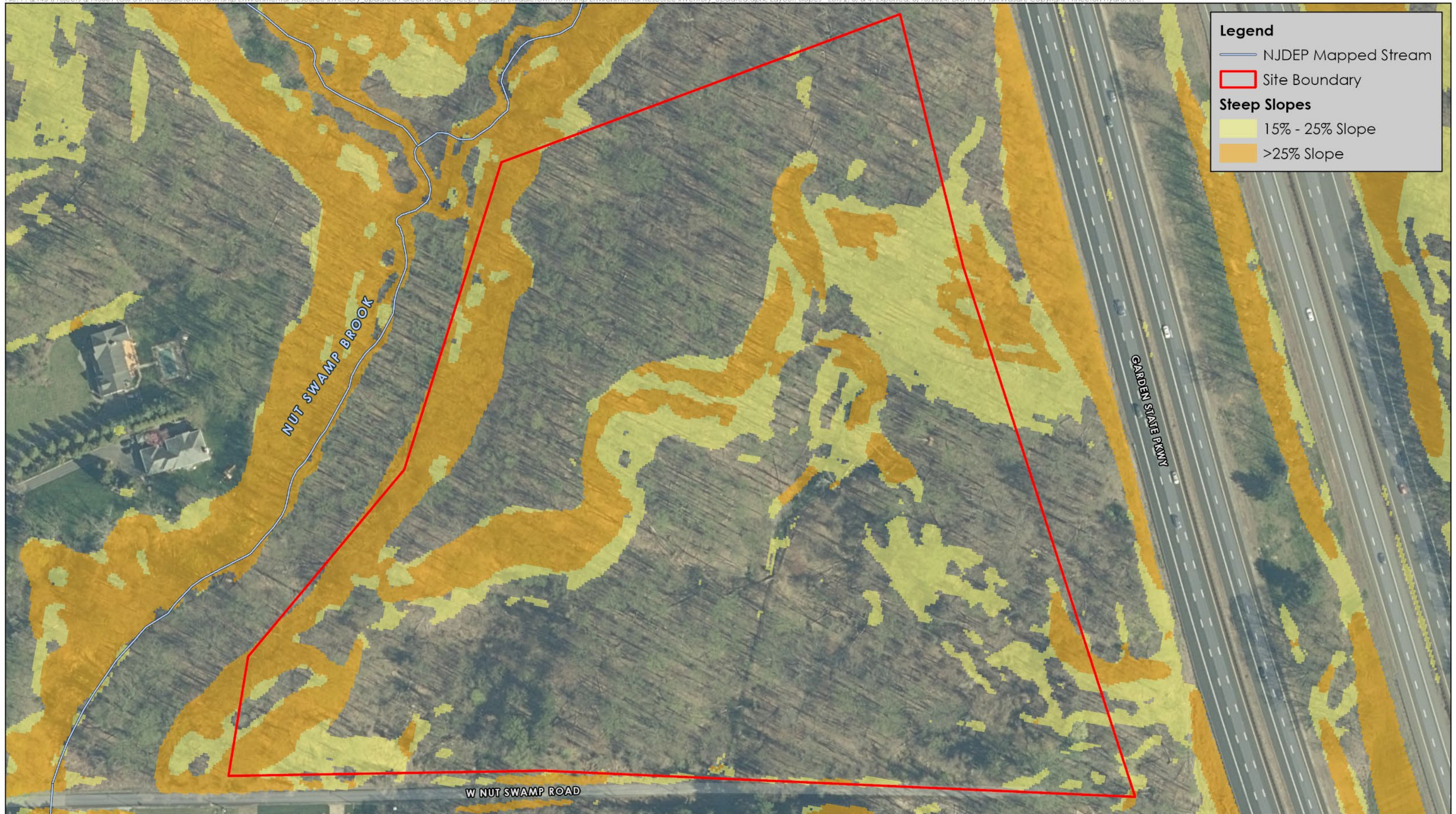
Based on the conceptual development plan, the footprints of the proposed buildings, paved surfaces, amenity areas, and stormwater basins would cover approximately 1.78 acres (~31%) of the Site's steep slope areas (>15% slope), including 0.58 acres (~20%) of the Site's critical slope areas (>25% slope), as defined by Middletown Township's municipal code. Actual disturbances to steep slopes would exceed these estimates, because the overall limit of disturbance required to construct the proposed development (e.g. including all Site clearing, earthwork/grading, landscaping, etc.) would extend beyond the exact footprints of these proposed features. Furthermore, because the Site's steep slopes form a contiguous area bisecting the Site, the northern part of the Site cannot be accessed or developed without crossing a steep slope. Land development and/or the removal of vegetation within these areas are reasonably likely to disturb steep slopes and increase local soil erosion and runoff, which may in turn degrade the water quality of on-Site and downstream wetlands and open waters, depending on inclusion, design, and maintenance of mitigating design features and

Figure 7: Photo of an On-Site Steep Slope





best management practices. The replacement of existing vegetation in steep slope areas, such as removing established trees and shrubs and replacing them with turf grass or ornamental plantings, is also reasonably likely to decrease slope stability, because mature, well-established vegetation tends to more effectively bind and stabilize a slope.



0 60 120
Feet

Spatial Reference: NAD 1983 2011 StatePlane New Jersey FIPS 2900 Ft US

STEEP SLOPES MAP

ENVIRONMENTAL RESOURCE INVENTORY
BLOCK 1045, LOTS 2, 3, & 4
MIDDLETOWN TOWNSHIP
MONMOUTH COUNTY, NEW JERSEY



4.0 TREE AND SHRUB INVENTORY

4.1 METHODOLOGY

In March of 2024, Princeton Hydro inspected the Site and inventoried all trees and shrubs falling under the following criteria:

- **Specimen Trees** – trees with a diameter at breast height (DBH) of 30 in. or greater
- **Tree Species of interest** – trees with a DBH of 1 in. or greater, and belonging to one of the following species:
 - American holly (*Ilex opaca*)
 - Flowering dogwood (*Cornus florida*)
- **Shrub Species of interest** – Shrubs with a root crown diameter of 3 in. or greater, and belonging to one of the following species:
 - Native species of the genus *Kalmia*; including, but not limited to, mountain laurel (*Kalmia latifolia*) and sheep laurel (*Kalmia angustifolia*).

Species of interest were selected due to typical associations between these species and the overall condition and quality of the surrounding forest habitat. Tree species of interest were also selected because these species do not typically grow to the diameters that would classify them as “specimen trees”, even at maturity, so to exclude them on diameter alone could misrepresent the composition of the forest's mature trees. On-Site trees and shrubs fitting these criteria were identified, measured, and geolocated by Princeton Hydro using an *EOS Arrow Gold* RTK GNSS Receiver, with RTK corrections received through the *HxGN SmartNet* RTK network.



4.2 RESULTS

A summary of the Site's tree and shrub inventory, broken down by species and abundance, is presented in **Table 3**. A map of all trees and shrubs fitting the inventory criteria is presented on **Page 19**, and a table listing each tree/shrub, their characteristics, and their geographic coordinates, is presented in **Appendix VI**. Other tree and shrub species observed on-Site that did not satisfy the criteria of the tree and shrub inventory, can be found in the full list of species observed in **Appendix III**.

110 individual trees fitting the inventory criteria were identified on-Site. This included 102 specimen trees, those trees with a DBH of 30 inches or greater, and 8 tree species of interest. No shrub species of interest were identified on-Site. The DBH of specimen trees ranged from 30 to 76 inches. The most prevalent specimen tree species was tuliptree (*Liriodendron tulipifera*), which accounted for 87% of all observed specimen trees. Specimen trees were identified throughout the Site but were observed in much greater density in those portions of the Site that have not been cleared since at least the 1980s (**Figure 3**).

Table 3: Summary of the Site's Tree & Shrub Inventory

TREE/SHRUB INVENTORY CATEGORY	NO. OF INDIVIDUALS
Specimen Trees (DBH ≥ 30")	102
American beech (<i>Fagus grandifolia</i>)	2
Black cherry (<i>Prunus serotina</i>)	1
Northern red oak (<i>Quercus rubra</i>)	5
Norway spruce (<i>Picea abies</i>)	2
Pin oak (<i>Quercus palustris</i>)	1
Sassafras (<i>Sassafras albidum</i>)	2
Tuliptree (<i>Liriodendron tulipifera</i>)	89
Tree Species of Interest (DBH ≥ 6")	8
American holly (<i>Ilex opaca</i>)	6
Flowering dogwood (<i>Cornus florida</i>)	2
Shrub Species of Interest (Root collar dia. ≥ 3")	0
Laurel (<i>Kalmia</i> sp.)	0
Total	110



4.3 DISCUSSION

All trees and shrubs are valuable environmental resources; they provide numerous environmental services such as reducing urban heat, reducing stormwater runoff, improving water quality, sequestering carbon dioxide, and providing wildlife habitat. These environmental services generally increase over time. Large-diameter specimen trees also have a strong influence on a forest's ecology, altering a forest's microclimate, shaping the understory environment through shading, influencing patterns of forest succession, and producing a larger portion of seed and fruit (Lutz et al. 2018).

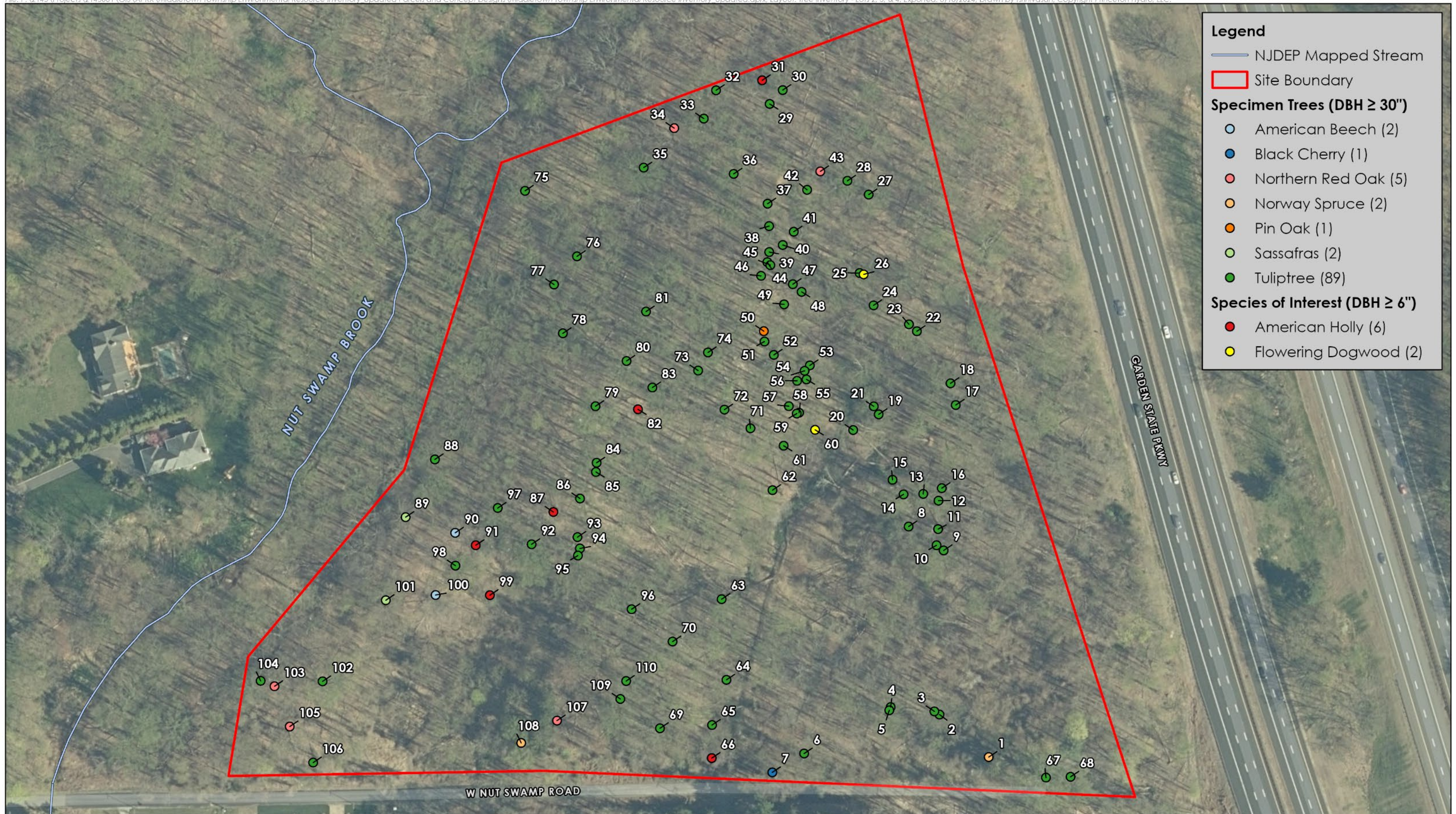
Overall, the Site was dominated by mid to large-sized trees. The majority of large-diameter specimen trees found on-Site were tuliptree. Tuliptree is a rapidly growing, shade-intolerant tree (NRCS 2002). They tend to be among the first tree species that colonize a site during reforestation, but then decline in abundance as the forest matures, the canopy closes, and more shade tolerant trees begin to establish. It is likely that the specimen tuliptrees found on-Site are among the earliest generations of trees to colonize the Site during the reforestation of historic agricultural plots, sometime between the 1930s and the 1980s (**Figure 2, Figure 3**). The majority of the Site features a closed tree canopy, in part due to the presence of these large-diameter specimen trees.

The species and size class composition of the Site's forest indicates that the Site is currently transitioning from an early to mid-stage of forest development. Forests mature and evolve in stages spanning decades to centuries, and the existing tree cover on-Site already reflects several decades of natural reforestation. Most notably, the development of a mostly closed canopy, as is present on Site, is an essential milestone in a forest's maturation from an early successional forest to a mature climax forest. It is expected that, over time, barring a large-scale disturbance to the Site's tree canopy, the diversity of specimen trees will increase as the forest composition evolves and more shade-tolerant species establish and reach maturity.

Given the prevalence of forest on the Site, any land development on the Site would require the removal of small to mid-sized trees, and likely also require the removal of some large specimen trees. Disturbance to the on-Site forest through the removal of trees is reasonably likely to interrupt and hinder the ongoing forest maturation process by removing mature trees, creating canopy openings, and fragmenting the forest. Any remaining forest habitat after development is reasonably likely to be of lower ecological quality and higher vulnerability due to habitat fragmentation; Fragmented habitat generally has a lower diversity of plant and animal species, lower tolerance to disturbance, and greater vulnerability to non-native and/or invasive species which typically outcompete native species in disturbed settings (NJDEP 2020). The removal of trees, and other forest vegetation, is reasonably likely to increase the soil erosion and stormwater runoff, which may in turn degrade the water quality of on-Site and downstream wetlands and open waters, depending on inclusion, design, and maintenance of mitigating design features and best management practices.



The Middletown Township Code establishes several local regulations governing trees and forests in the Township, generally encouraging tree conservation and limiting tree removal. Any land development on the Site would require compliance with these local regulations, most notably Township Code §540-651 ("Wooded areas"), which sets limitations on the clearing of wooded areas, and Township Code §540-534 ("Tree removal and clearing on property"), which establishes a township review and approval process for certain tree removal and clearing activities. Per §540-651A, because the Site is within the R-45 zoning district with a maximum total lot coverage of 15%, no more than 20% of the Site's existing wooded areas may be cleared or developed, and the remaining 80% must be maintained as permanent open space or preserved within the lot. Per §540-651C, certain individual trees must also be preserved wherever possible, and any Site development plans must incorporate the preservation of said trees in relationship to proposed buildings, parking and open space. The trees on-Site which would receive such protection under §540-651C include all healthy specimen and mature shade trees of twelve-inch caliper or greater, healthy specimen trees of eight-inch caliper or greater, and healthy ornamental trees of four-inch caliper or greater. Additionally, the extent of tree removal and clearing activities required by development of the Site would likely constitute a regulated activity under §540-534B. As such, per §540-534C and §540-534D, any Site development plans must undergo a review and approval process with the Township Zoning Officer and Township Engineer, and shall be reviewed for potential drainage or erosion impacts to adjoining properties, and potential alternative or optional measures that could mitigate the impacts of tree removal and clearing activities.





5.0 THREATENED AND ENDANGERED SPECIES HABITAT ASSESSMENT

5.1 METHODOLOGY

Threatened & Endangered (T&E) species habitat assessments involved both a desktop and field-based component. T&E species habitat mapping data was obtained from the New Jersey Landscape Project (version 3.3), published by the New Jersey Division of Fish and Wildlife (NJDFW 2017). This data was reviewed to screen for potential T&E species based on habitat characteristics and past species observations of record. T&E species observation records were later confirmed against an official search of the New Jersey Natural Heritage Program Database (NJNHP 2024). T&E species that could potentially inhabit the Site were identified with a subsequent field assessment conducted in March 2024. The T&E species field assessment consisted of documenting the existing habitat elements present throughout the entirety of the Site and comparing them to suitable habitat elements for listed T&E species. Suitable habitat was based on species habitat descriptions from the *Protocols for the Establishment of Exceptional Resource Value Wetlands Pursuant to the Freshwater Wetlands Protection Act* (N.J.S.A. 13:9b-1 et seq.) (NJDEP 2023).

5.2 RESULTS

A map of potential T&E species habitat on-Site, as determined by the New Jersey Landscape Project, is presented on **Page 22**. The results of a search of the New Jersey Natural Heritage Program Database for the Site are presented in **Appendix VII**. Per the Landscape Project, approximately half of the Site was classified as either Rank 1 or Rank 3 T&E species habitat.

Rank 1 habitats are those areas that meet one or more habitat specific requirements of T&E species, but where no observed occurrences of T&E species exist. Rank 1 habitats were identified on the Site around the UNT to Nut Swamp Brook and on the western edge of the Site, in and around the Nut Swamp Brook floodplain. The Site's Rank 1 habitats were ranked as being either wetlands or riparian corridors, which provide potential habitat for several T&E species.

Rank 3 habitats are those areas that meet one or more habitat specific requirements of T&E species and where there has been an observed occurrence of a species considered threatened by the State of New Jersey. Rank 3 habitats were identified along the western edge of the Site, in and around the Nut Swamp Brook floodplain. The Site's Rank 3 habitats were ranked by virtue of being either wetlands or riparian corridors and by their proximity to an observed occurrence of Black-crowned Night-heron (*Nycticorax nycticorax*), a threatened species in New Jersey. The Natural Heritage Database Results for the Site (**Appendix VII**) lists Black-crowned Night Heron as possessing foraging habitat within the Site.



5.3 DISCUSSION

Black-crowned Night Heron is, primarily, a nocturnal forager, being generalist predators and feeding on a wide range of prey including, but not limited to fish, crustaceans, tadpoles, lizards, snakes, and the eggs and young of other bird species (NJDEP 2023). The highly preferred habitat of Black-crowned Night Herons is along the edges of tidal creeks, ponds, and pools, as well as within salt marshes and estuary systems. In addition to saltwater and brackish marshes and ponds, freshwater ponds and mudflats are also considered to be suitable for Black-crowned Night Heron foraging.

The Black-crowned Night Heron's preferred habitat, which includes tidal creeks, ponds, pools, or salt marshes, is not present on-Site; as such, optimal foraging habitat was not observed. However, the on-Site non-tidal, freshwater stream and wetland complex is reasonably likely to support target prey species, offering potential foraging opportunities for Black-crowned Night Heron, particularly during spring and fall migration. While optimal foraging habitat was not observed, transient utilization of the Site by Black-crowned Night Herons is possible.

Development of the Site may reduce this potential for transient utilization of the Site by Black-crowned Night Heron, especially if development were to result in a degradation of local water quality affecting the abundance of target prey species.





6.0 ECOLOGICAL COMMUNITY ASSESSMENT

6.1 METHODOLOGY

An ecological community is a variable assemblage of interacting plant and animal populations that share a common environment (Edinger *et al.* 2014). The Site's ecological communities were identified and delineated in March 2024 in conjunction with desktop analysis of geospatial datasets. During field investigations, plant assemblages were identified and the location of transitions between unique plant assemblages were geolocated. Field observations were compared to geospatial datasets, including 2015 and 2020 orthoimagery obtained from the New Jersey Geographic Information Network, and Site topography obtained from the Northeast NJ Post-Sandy 2014 LiDAR Digital Elevation Model (DEM), published by the U.S. Geological Survey Coastal and Marine Geology Program (CMGP) and distributed through the New Jersey Geographic Information Network. These geospatial datasets served to correlate in-field plant assemblage observations with other geographic patterns, such as topographic features observed in LiDAR data (e.g. ditches, depressions) or differing imagery signatures (e.g. varying color or texture). The limits of wetland community types were delineated based on the Site's wetland and State open water delineation, performed in March 2024 as part of this environmental resource inventory and discussed in greater detail in **Section 2.0**.

Based on these field and desktop observations, on-Site ecological communities were classified, and their approximate limits were delineated. Ecological community classification was guided by classification systems used in *Plant Communities of New Jersey: A Study in Landscape Diversity* (Collins and Andrews 1994), *Ecological Communities of New York State, Second Edition* (Edinger *et al.* 2014), and U.S. Fish and Wildlife Service wetland classification (Cowardin *et al.* 1979).



6.2 RESULTS

A summary of the ecological communities identified on-Site, and the total acreage and the percent area of each is presented in **Table 4**. A map of all ecological communities identified on-Site is presented on **Page 28**.

Table 4: Summary of Site's Ecological Communities

ECOLOGICAL COMMUNITY CLASSIFICATIONS	TOTAL ACREAGE ON-SITE	PERCENT AREA OF THE SITE
Upland Forest	17.11 ac	93.9%
Oak-Tuliptree Forest	17.11 ac	93.9%
Wetland	1.11 ac	6.1%
Open Water	0.05 ac	0.3%
Palustrine Forested Wetland	0.79 ac	4.3%
Palustrine Scrub-Shrub Wetland	0.27 ac	1.5%
Total	18.22 ac	100.0%

The majority (93.9%) of the Site consisted of upland forest communities, specifically oak-tuliptree forest. The remaining 6.1% of the Site consisted of wetland communities, including PFO wetland, PSS wetland, and State open waters (i.e., UNT to Nut Swamp Brook).

Each ecological community identified on-Site is described in detail below. The ecological community descriptions include dominant species (species observed on-Site with the greatest abundance or percent cover), codominant species (species observed on-Site with relatively high abundance or percent cover) and characteristic species (species that were not observed on-Site but that are commonly found in that type of community, although not necessarily abundant). The species listed are a representative sample and do not list all species that may be present in a community. A full list of all plant species observed on-Site is available in **Appendix III**.

Figure 8: Photo of the Oak-Tuliptree Forest Community





OAK-TULIPTREE FOREST

The oak-tuliptree forest community was widely dispersed and common throughout the Site, covering 17.22 acres or 93.9% of the Site. This community generally aligned with the “mixed oak forest” as described in *Plant Communities of New Jersey* (Collins and Andrews 1994), and the “oak-tuliptree forests” as described in *Ecological Communities of New York State* (Edinger *et al.* 2014). On-Site, this community generally had a fully closed tree canopy and an understory layer that varied in density from moderate to sparse (**Figure 8**).

The dominant tree of this community was tuliptree. Tuliptree was found ubiquitously throughout the Site and accounted for most of the largest trees on-Site. Codominant trees varied throughout the Site and included sassafras (*Sassafras albidum*), northern red oak (*Quercus rubra*), and red maple. Other characteristic trees included American beech (*Fagus grandifolia*), American holly, flowering dogwood, and black cherry (*Prunus serotina*). In general, the smaller, immature trees of the Site showed a greater diversity of species than the largest, mature trees.

The Site's understory, where vegetated, contained mostly saplings, shrubs, and a sparse woody vine and herbaceous stratum. The dominant shrub of the understory was northern spicebush. Other characteristic shrub species included multiflora rose (*Rosa multiflora*), Morrow's honeysuckle (*Lonicera morrowii*), Japanese knotweed (*Polygonum cuspidatum*), and Japanese wineberry. The most common woody vine observed was poison ivy (*Toxicodendron radicans*). Other characteristic vine species included Japanese honeysuckle (*Lonicera japonica*), English ivy (*Hedera helix*), and an unidentified species of grape (*Vitis* sp.). Herbaceous species consisted of ruderal and non-native species, including garlic mustard, Nepalese browntop (*Microstegium vimineum*), purple dead-nettle (*Lamium purpureum*), and Japanese bristlegrass (*Setaria faberi*).

There was evidence of heavy deer pressure in the Site's oak-tuliptree forest, including observed deer forage and rumination on-Site, a low understory density with the exception of northern spicebush (a generally deer-resistant species), and a distinctive deer browse line about 5 – 6 feet above the ground.

OPEN WATER

Open water covered 0.05 acres or 0.3% of the Site and consisted of the UNT to Nut Swamp Brook. The Site's open waters were contained in a small channel with bank widths ranging from about 2 to 10 feet. The open water originates on-Site proximate to the center of the Site and extends downstream approximately 360 feet where it crosses under West Nut Swamp Road through a culvert.



PALUSTRINE FORESTED WETLAND

The PFO wetland community was hydrologically associated with the UNT to Nut Swamp Brook and covered 0.79 acres or 4.3% of the Site. This community generally aligned with the “hardwood swamp forest” as described in *Plant Communities of New Jersey* (Collins and Andrews 1994), and the “red maple-hardwood swamp” as described in *Ecological Communities of New York State* (Edinger et al. 2014). This community was observed to possess a generally closed tree canopy and an understory layer that varied in density from moderate to sparse (**Figure 4**). The dominant trees of this community included red maple and pin oak. Where present, the understory was dominated by shrubs, primarily northern spicebush, or sparse herbaceous vegetation, including skunk cabbage, common reed, and Nepalese browntop.

PALUSTRINE SCRUB-SHRUB WETLAND

The scrub-shrub wetland community was observed as being hydrologically associated with the upper reach of the UNT to Nut Swamp Brook, covering 0.27 acres or 1.5% of the Site. The species composition within this community generally aligned with the “hardwood swamp forest” as described in *Plant Communities of New Jersey* (Collins and Andrews 1994), and the “shrub swamp” as described in *Ecological Communities of New York State* (Edinger et al. 2014). This community was observed to possess a generally open tree canopy and a moderately dense understory layer (**Figure 6**). The dominant shrub species observed was northern spicebush.



6.3 DISCUSSION

The Site's forest and wetland communities provide ecological value and services, including wildlife habitat, carbon sequestration, stormwater runoff reduction, water quality improvement, urban heat mitigation, and urban noise reduction.

The oak-tuliptree forest of the Site is more heavily dominated by tuliptree than the prototypical oak-tulip tree forests of New Jersey as described in *Plant Communities of New Jersey*, in which there are a greater mixture of other species such as white oak (*Quercus alba*), black oak (*Quercus velutina*), American beech, and other hardwood species (Collins and Andrews 1994). It is likely that the dominance of tuliptree is reflective of the forest's relatively young age. Most of the Site was reforested between 40 and 90 years ago, with some areas beginning the process less than 40 years ago (**Figure 2, Figure 3**). It is generally expected that over time, barring a large-scale disturbance to the Site's tree canopy, the diversity of trees will increase as the forest composition evolves and more shade-tolerant species establish and reach maturity. As this forest community matures it is expected that the aforementioned ecological value and services provided will increase as well.

Development of the Site would directly decrease the area of the Site's extant ecological communities. In addition to reducing the overall area of ecological communities on-Site, development is also reasonably likely to degrade the quality and character of any ecological communities remaining after development due to habitat fragmentation. Fragmented habitat generally has a lower diversity of plant and animal species, lower tolerance to disturbance, and greater vulnerability to non-native and/or invasive species which typically outcompete native species in disturbed settings (NJDEP 2020).



0 60 120 Feet

Spatial Reference: NAD 1983 2011 StatePlane New Jersey FIPS 2900 Ft US

ECOLOGICAL COMMUNITY ASSESSMENT MAP

ENVIRONMENTAL RESOURCE INVENTORY
BLOCK 1045, LOTS 2, 3, & 4
MIDDLETOWN TOWNSHIP
MONMOUTH COUNTY, NEW JERSEY



7.0 MASTER PLAN CONSISTENCY ASSESSMENT

To a reasonable degree of professional certainty, it is likely that high density development of this Site would be detrimental to the local environment by reducing and degrading environmental resources and environmentally sensitive areas. As a result, it is Princeton Hydro's professional opinion that high density development of the Site would be inconsistent with several environmental goals and recommendations established by the Middletown Township Master Plan, as published in October 2004, and last amended in March 2023 (Middletown Twp. Planning Dept. 2023). Most notably, high density development of the Site would be inconsistent with the Master Plan's overall objective to prevent the degradation of environmental resources by improper land use:

- "To promote the conservation of open space through protection of wetlands, stream corridors, steep slopes and valuable natural resources and prevent degradation of the environment through improper use of land." (Objective #12)

High density development of the Site would also be inconsistent with other elements of the Master Plan. The Township Conservation Plan, published as part of the *Open Space, Recreation, and Conservation* element of the Master Plan, establishes objectives to protect several distinct environmental resources, including several found on-Site:

- Wetlands and transitional areas (2.B)
- Floodplains (2.C)
- Waterbodies (2.D)
- Steep slopes (2.E)
- Mature woodlands (2.F)
- Stream corridors and headwaters (2.G)
- Habitats for flora & fauna (2.I)

The Stormwater Management Plan element of the Master Plan reinforces these Conservation Plan objections by establishing that a key goal of municipal stormwater management is to:

- "Promote conservation of open space through the protection of wetlands, stream corridors, steep slopes and valuable natural resources and prevent the degradation of the environment through improper use of land." (Goal #11).

Furthermore, the Conservation Plan also acknowledges that:

- Wetlands are heavily influenced by adjacent upland transitional areas; and increasing stormwater flows can negatively impact wetlands (2.B).
- Stream flooding can be altered substantially by development; and stormwater runoff can be accelerated by stripping trees and shrubs, changing slopes, or covering the absorptive soil surface with buildings and pavement (2.C).



- Building on steep slopes requires excessive cut and fill which strips soils and vegetation; and steep slopes stripped of stabilizing natural vegetation can quickly be eroded or undercut, leading to water pollution and unstable ground conditions (2.E).
- Mature woodlands provide significant environmental services, including stormwater management, flood attenuation, groundwater protection, drought moderation, air quality improvements, and habitat provision (2.F).
- Stream corridors encompass their surrounding wetlands, woodlands and steep slopes; intact stream corridors with dense vegetation improve water quality and moderate flooding; and headwaters, intermittent streams, and spring areas are essential for stream quality, and also very susceptible to disturbances (2.G).

As previously discussed, high density development of the Site is reasonably likely to impact several environmental resources that the Conservation Plan specifically targets for protection. high density development of the Site would result in the disturbance of steep slopes through excessive cut and fill; the covering of permeable land with impervious surfaces; the removal of mature woodland habitat; and the removal of dense, well-established vegetation in steep slope areas, stream corridors, wetland-adjacent areas, and in the vicinity of sensitive headwaters and spring areas. Such activities and disturbances are specifically identified by the Conservation Plan as detrimental to environmental resources.



8.0 REFERENCES

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APPENDICES



APPENDIX I

CONCEPT DEVELOPMENT PLAN



0 60 120 Feet

Spatial Reference: NAD 1983 2011 StatePlane New Jersey FIPS 2900 Ft M



APPENDIX II

ENVIRONMENTAL RESOURCE MAPS WITH CONCEPT DEVELOPMENT DESIGN OVERLAIN



Legend

- NJDEP Mapped Stream
- Site Boundary
- Wetland & State Open Water Delineation**
- State Open Water Limit
- Wetland Limit
- State Open Water
- Wetland
- Wetland Transition Area (50 ft)
- Concept Development Plan**
- Retaining Wall
- Building Footprint
- Paved Surface (Roadway, Driveway, Parking Lot, Walkway)
- Amenity Area
- Stormwater Basin

Notes:

The concept development plan features displayed here were obtained from a concept design-level, digital drawing file (AutoCAD drawing), published by MidAtlantic Engineering Partners, and distributed to Princeton Hydro in July 2024. Proposed features within the drawing were extracted, and spatially overlain with imagery and other mapping data for display and comparison purposes. All proposed features are conceptual only; they are not representative of any final proposed design or construction plan. This map is for reference purposes only and should not be used for design, engineering, permitting, or construction purposes.





Legend

NJDEP Mapped Stream

Site Boundary

Specimen Trees (DBH ≥ 30")

American Beech (2)

Black Cherry (1)

Northern Red Oak (5)

Norway Spruce (2)

Pin Oak (1)

Sassafras (2)

Tuliptree (89)

Species of Interest (DBH ≥ 6")

American Holly (6)

Flowering Dogwood (2)

Concept Development Plan

Retaining Wall

Building Footprint

Paved Surface (Roadway, Driveway, Parking Lot, Walkway)

Amenity Area

Stormwater Basin

Notes:

The concept development plan features displayed here were obtained from a concept design-level, digital drawing file (AutoCAD drawing), published by MidAtlantic Engineering Partners, and distributed to Princeton Hydro in July 2024. Proposed features within the drawing were extracted, and spatially overlain with imagery and other mapping data for display and comparison purposes. All proposed features are conceptual only; they are not representative of any final proposed design or construction plan. This map is for reference purposes only and should not be used for design, engineering, permitting, or construction purposes.

PH

PRINCETON HYDRO

SCIENCE DESIGN ENGINEERING

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NOTES:

1. NJDEP mapped streams obtained from the NJDEP GIS website: www.state.nj.us/dep/gis/

2. Tree inventory performed by Princeton Hydro in March of 2024.

3. 2020 orthoimagery obtained from the NJ Geographic Information Network (NJGIN) Open Data portal.

4. Site boundary and Concept Development Plan features obtained from digital drawing files published by MidAtlantic Engineering Partners, and distributed to Princeton Hydro in July 2024.

060120

Feet

Spatial Reference: NAD 1983 2011 StatePlane New Jersey FIPS 2900 Ft US

TREE INVENTORY MAP

ENVIRONMENTAL RESOURCE INVENTORY

BLOCK 1045, LOTS 2, 3, & 4

MIDDLETOWN TOWNSHIP

MONMOUTH COUNTY, NEW JERSEY



0 100 200 Feet

Spatial Reference: NAD 1983 2011 StatePlane New Jersey FIPS 2900 Ft US





APPENDIX III

LIST OF OBSERVED PLANTS



Trees

Common Name	Scientific Name	Native Status	Wetland Indicator Status ¹
American beech	<i>Fagus grandifolia</i>	Native	FACU
American holly	<i>Ilex opaca</i>	Native	FAC
Sweet Birch	<i>Betula lenta</i>	Native	FACU
Black cherry	<i>Prunus serotina</i>	Native	FACU
Blackgum	<i>Nyssa sylvatica</i>	Native	FAC
Black locust	<i>Robinia pseudoacacia</i>	Native	UPL
Black walnut	<i>Juglans nigra</i>	Native	UPL
Crabapple	<i>Malus sp.</i>	Introduced	Not Listed
Eastern red cedar	<i>Juniperus virginiana</i>	Native	FACU
Flowering dogwood	<i>Cornus florida</i>	Native	FACU
Northern red oak	<i>Quercus rubra</i>	Native	FACU
Norway spruce	<i>Picea abies</i>	Introduced	Not Listed
Pin oak	<i>Quercus palustris</i>	Native	FACW
Red maple	<i>Acer Rubrum</i>	Native	FAC
Sassafras	<i>Sassafras albidum</i>	Native	FACU
Tuliptree	<i>Liriodendron tulipifera</i>	Native	FACU

Shrubs

Common Name	Scientific Name	Native Status	Wetland Indicator Status ¹
Japanese knotweed	<i>Polygonum cuspidatum</i>	Introduced	UPL
Japanese wineberry	<i>Rubus phoenicolasius</i>	Introduced	FACU
Morrow's honeysuckle	<i>Lonicera morrowii</i>	Introduced	FACU
Multiflora rose	<i>Rosa multiflora</i>	Introduced	FACU
Northern spicebush	<i>Lindera benzoin</i>	Native	FACW

¹ Wetland indicator status for the "Atlantic and Gulf Coastal Plain" region as reported in the National Wetland plant list, published by the U.S. Army Corps of Engineers.

OBL	Obligate Wetland	Occurs almost always (> 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (67 - 99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (34 - 66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (67 - 99%), but occasionally found in wetlands.
UPL	Obligate Upland	Occurs almost always (> 99%) under natural conditions in non-wetlands.



Vines

Common Name	Scientific Name	Native Status	Wetland Indicator Status ¹
Eastern poison Ivy	<i>Toxicodendron radicans</i>	Native	FAC
English ivy	<i>Hedera helix</i>	Introduced	FACU
Japanese honeysuckle	<i>Lonicera japonica</i>	Introduced	FACU
Unidentified Grape Species	<i>Vitis</i> sp.	Unknown	Not Listed

Herbs

Common Name	Scientific Name	Native Status	Wetland Indicator Status ¹
Cinnamon fern	<i>Osmunda cinnamomea</i>	Native	FACW
Common reed	<i>Phragmites australis</i>	Introduced	FACW
Common rush	<i>Juncus effusus</i>	Native	OBL
Daffodil	<i>Narcissus pseudonarcissus</i>	Introduced	Not Listed
Fowl mannagrass	<i>Glyceria striata</i>	Native	OBL
Fringed sedge	<i>Carex crinita</i>	Native	FACW
Garlic mustard	<i>Alliaria petiolata</i>	Introduced	FACU
Greater bladder sedge	<i>Carex intumescens</i>	Native	FACW
Jack in the pulpit	<i>Arisaema triphyllum</i>	Native	FACW
Japanese bristlegrass	<i>Setaria faberi</i>	Introduced	UPL
Nepalese browntop	<i>Microstegium vimineum</i>	Introduced	FAC
Little bluestem	<i>Schizachyrium scoparium</i>	Native	FACU
Onion grass	<i>Allium vineale</i>	Introduced	FACU
Purple dead-nettle	<i>Lamium purpureum</i>	Introduced	Not Listed
Royal fern	<i>Osmunda regalis</i>	Native	OBL
Shallow Sedge	<i>Carex lurida</i>	Native	OBL
Skunk cabbage	<i>Symplocarpus foetidus</i>	Native	OBL
Smallspike false nettle	<i>Boehmeria cylindrica</i>	Native	FACW
Sweet woodreed	<i>Cinna arundinacea</i>	Native	FACW
Virginia springbeauty	<i>Claytonia virginica</i>	Native	FACU
White clover	<i>Trifolium repens</i>	Introduced	FACU

¹ Wetland indicator status for the "Atlantic and Gulf Coastal Plain" region as reported in the National Wetland plant list, published by the U.S. Army Corps of Engineers.

OBL	Obligate Wetland	Occurs almost always (> 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (67 - 99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (34 - 66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (67 - 99%), but occasionally found in wetlands.
UPL	Obligate Upland	Occurs almost always (> 99%) under natural conditions in non-wetlands.



APPENDIX IV

WETLAND DETERMINATION DATA FORM FOR OFF-SITE WETLAND

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: Bor-1

Tree Stratum (Plot size: <u>30-ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																			
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																		
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
0 = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>60</u></td> <td>x 1 = <u>60</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>4</u></td> <td>x 4 = <u>16</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>69</u> (A)</td> <td><u>86</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.2</u></td> <td colspan="2"></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>60</u>	x 1 = <u>60</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>4</u>	x 4 = <u>16</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>69</u> (A)	<u>86</u> (B)	Prevalence Index = B/A = <u>1.2</u>			
Total % Cover of:	Multiply by:																					
OBL species <u>60</u>	x 1 = <u>60</u>																					
FACW species <u>5</u>	x 2 = <u>10</u>																					
FAC species <u>0</u>	x 3 = <u>0</u>																					
FACU species <u>4</u>	x 4 = <u>16</u>																					
UPL species <u>0</u>	x 5 = <u>0</u>																					
Column Totals: <u>69</u> (A)	<u>86</u> (B)																					
Prevalence Index = B/A = <u>1.2</u>																						
50% of total cover: <u>0</u> 20% of total cover: <u>0</u>																						
Sapling/Shrub Stratum (Plot size: <u>15-ft</u>)																						
1. <u>Lindera benzoin</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
5 = Total Cover																						
50% of total cover: <u>2.5</u> 20% of total cover: <u>1</u>																						
Herb Stratum (Plot size: <u>5-ft</u>)																						
1. <u>Symplocarpus foetidus</u>	<u>60</u>	<u>Yes</u>	<u>OBL</u>																			
2. <u>Rubus phoenicolasius</u>	<u>2</u>	<u>No</u>	<u>FACU</u>																			
3. <u>Alliaria petiolata</u>	<u>2</u>	<u>No</u>	<u>FACU</u>																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
9. _____	_____	_____	_____																			
10. _____	_____	_____	_____																			
11. _____	_____	_____	_____																			
12. _____	_____	_____	_____																			
64 = Total Cover																						
50% of total cover: <u>32</u> 20% of total cover: <u>12.8</u>																						
Woody Vine Stratum (Plot size: <u>30-ft</u>)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
0 = Total Cover																						
50% of total cover: <u>0</u> 20% of total cover: <u>0</u>																						
Remarks: (If observed, list morphological adaptations below.) The plant community within the PEM wetland also passed the FAC-neutral test.																						

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: Bor-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	10YR 4/2	80	5YR 4/6	20	C	PL	loam	oxidized rhizospheres along living roots
8-20	10YR 4/1	40	10YR 6/8	20	C	PL	loam	oxidized rhizospheres along living roots
	10YR 3/1	40	-	-	-	-	-	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)
<input type="checkbox"/> Black Histic (A3)	(MLRA 153B, 153D)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
<input type="checkbox"/> Polyvalue Below Surface (S8)	(MLRA 149A, 153C, 153D)
(LRR S, T, U)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
	(MLRA 138, 152A in FL, 154)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Coast Prairie Redox (A16)
(outside MLRA 150A)
<input type="checkbox"/> Reduced Vertic (F18)
(outside MLRA 150A, 150B)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, T)
<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
(MLRA 153B)
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Very Shallow Dark Surface (F22)
(outside MLRA 138, 152A in FL, 154)
<input type="checkbox"/> Barrier Islands Low Chroma Matrix (TS7)
(MLRA 153B, 153D)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: noneDepth (inches): N/A**Hydric Soil Present?** Yes ☒ No ☐

Remarks:



APPENDIX V

2023 FRESHWATER WETLANDS LETTER OF INTERPRETATION



State of New Jersey

PHILIP D. MURPHY
Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SHAWN M. LATOURETTE
Commissioner

SHEILA Y. OLIVER
Lt. Governor

Watershed and Land Management Program
Mail Code 501-02A

P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/landuse

August 23, 2023

Adoni Property Group
c/o Peter Mercatili
123 South Ave
Westfield, NJ 07090

RE: **Freshwater Wetlands Letter of Interpretation: Line Verification**
File No.: 1331-06-0004.1
Activity Number: FWW230001
Applicant: Adoni Property Group
Block(s) and Lot(s): [1045, 2] [1045, 3] [1045, 4]
Middletown Township, Monmouth County

Dear Mr. Mercatili:

This letter is in response to your request for a Letter of Interpretation to have Division of Land Resource Protection (Division) staff verify the boundary of the freshwater wetlands and/or State open waters on the referenced property.

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

Based upon the information submitted, and upon a site inspection conducted by Division staff on July 13, 2023, the Division has determined that the wetlands and waters boundary line(s) as shown on the plan map entitled: **“WETLANDS MAP LOTS 2, 3, & 4 BLOCK 1045 WEST NUT SWAMP ROAD TOWNSHIP OF MIDDLETOWN MONMOUTH COUNTY NEW JERSEY”**, consisting of one sheet, dated January 3, 2023, last revised August 3, 2023, and prepared by Richard G. Ruchalski of CPL Partnership, is accurate as shown.

The freshwater wetlands and waters boundary line(s), as determined in this letter, must be shown on any future site development plans. The line(s) should be labeled with the above file number and the following note:

“Freshwater Wetlands/Waters Boundary Line as verified by NJDEP”

Wetlands Resource Value Classification ("RVC")

In addition, the Division has determined that the resource value and the standard transition area or buffer required adjacent to the delineated wetlands are as follows:

Intermediate: All wetland flag points. [50-foot wetland buffer]

State open waters: Within the wetland boundary. [No wetland buffer]

The Division has also determined there are freshwater wetlands offsite, west of the subject property, with an Intermediate Resource Value, resulting in transition area on the subject property, as shown on the approved plan.

RVC may affect requirements for wetland and/or transition area permitting. This classification may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-9 and 10), the types of Statewide General Permits available for the property (see N.J.A.C. 7:7A-5 and 7) and any modification available through a transition area waiver (see N.J.A.C. 7:7A-8). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) and implementing rules for additional information.

Wetlands resource value classification is based on the best information available to the Division. The classification is subject to reevaluation at any time if additional or updated information is made available, including, but not limited to, information supplied by the applicant.

General Information

Pursuant to the Freshwater Wetlands Protection Act Rules, you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter unless it is determined that the letter is based on inaccurate or incomplete information. Should additional information be disclosed or discovered, the Division reserves the right to void the original letter of interpretation and issue a revised letter of interpretation.

Regulated activities proposed within a wetland, wetland transition area or water area, as defined by N.J.A.C. 7:7A-2.2 and 2.3 of the Freshwater Wetlands Protection Act rules, require a permit from this office unless specifically exempted at N.J.A.C. 7:7A-2.4. The approved plan and supporting jurisdictional limit information are now part of the Division's public records.

Please be advised that any surface water features on the site or adjacent to the site may possess flood hazard areas and/or riparian zones and development within these areas may be subject to the Flood Hazard Area Control Act rules at N.J.A.C. 7:13. The Division can verify the extent of flood hazard areas and/or riparian zones through a flood hazard area verification under the application procedures set forth at N.J.A.C. 7:13-5.1.

This letter in no way legalizes any fill which may have been placed, or other regulated activities which may have occurred on-site. This determination of jurisdiction extent or presence does not make a finding that wetlands or water areas are "isolated" or part of a surface water tributary system unless specifically called out in this letter as such. Furthermore, obtaining this determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

Recording

Within 90 calendar days of the date of this letter, the applicant shall submit the following information to the clerk of each county in which the site is located, and shall send proof to the Division that this information is recorded on the deed of each lot referenced in the letter of interpretation:

1. The Department file number for the letter of interpretation;
2. The approval and expiration date of the letter of interpretation;
3. A metes and bounds description of the wetland boundary approved under the letter of interpretation;
4. The width and location of any transition area approved under the letter of interpretation; and
5. The following statement: "The State of New Jersey has determined that all or a portion of this lot lies in a freshwater wetland and/or transition area. Certain activities in wetlands and transition areas are regulated by the New Jersey Department of Environmental Protection and some activities may be prohibited on this site or may first require a freshwater wetland permit. Contact the Division of Land Resource Protection at (609) 777-0454 or <http://www.nj.gov/dep/landuse> for more information prior to any construction onsite."

Failure to have this information recorded in the deed of each lot and/or to submit proof of recording to the Division constitutes a violation of the Freshwater Wetlands Protection Act rules and may result in suspension or termination of the letter of interpretation and/or subject the applicant to enforcement action pursuant to N.J.A.C. 7:7A-22.

Appeal Process

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

Please contact Taryn Pittfield of our staff by e-mail at taryn.pittfield@dep.nj.gov or by phone at (609) 777-0454 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

Sincerely,



Digitally signed by Michael
Tropiano
Date: 2023.08.23 08:03:01-04'00'

Michael Tropiano, Environmental Specialist 3
Division of Land Resource Protection

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

MAP REFERENCES:

1. TOWNSHIP OF MIDDLETOWN TAX MAP SHEETS 214, 215 & 216.

2. PROPERTY BOUNDARY LINES ARE IN ACCORDANCE WITH A MAP ENTITLED "SURVEY OF LOTS 2, 3 & 4 BLOCK 1045, WEST NUT SWAMP ROAD, TWP. OF MIDDLETOWN, MONMOUTH COUNTY, NEW JERSEY. DATED NOVEMBER 17, 2022 AND PREPARED BY CPLPARTNERSHIP, LLC.

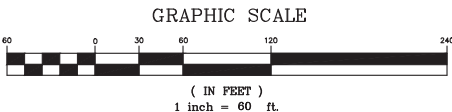
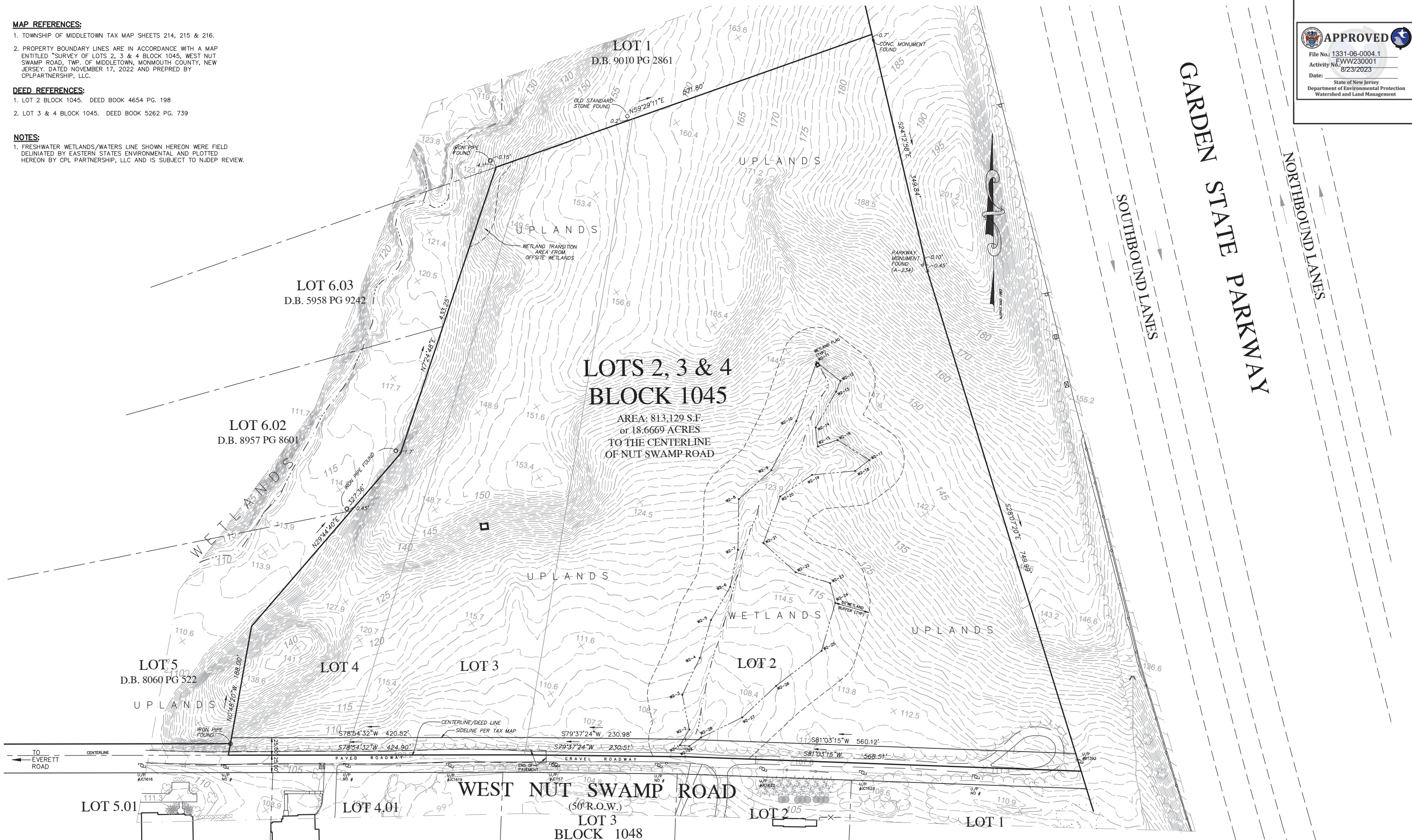
DEED REFERENCES:

1. LOT 2 BLOCK 1045. DEED BOOK 4654 PG. 198

2. LOT 3 & 4 BLOCK 1045. DEED BOOK 5262 PG. 739

NOTES:

1. FRESHWATER WETLANDS/WATERS LINE SHOWN HEREON WERE FIELD DELINIATED BY EASTERN STATES ENVIRONMENTAL AND PLOTTED HEREON BY CPL PARTNERSHIP, LLC AND IS SUBJECT TO NUDEP REVIEW.



LEGEND

WETLAND BOUNDARY LINE
WETLAND FLAG LOCATION

DATE	REVISIONS
7/31/2023	PER NUDEP REVIEW
8/3/2023	WETLAND BUFFER AT FLAGS W2-1 & W2-29

MICHAEL PUCCI
PROFESSIONAL ENGINEER
PROFESSIONAL PLANNER

RICHARD G. RUCHALSKI
PROFESSIONAL LAND SURVEYOR
PROFESSIONAL PLANNER

JOSEPH M. DELUCIA
REGISTERED ARCHITECT

RICHARD G. RUCHALSKI
PROFESSIONAL LAND SURVEYOR
PROFESSIONAL PLANNER

CPL partnership
planning
architecture
engineering
surveying

WETLANDS MAP
LOTS 2, 3, & 4 BLOCK 1045
WEST NUT SWAMP ROAD

TOWNSHIP OF MIDDLETOWN
MONMOUTH COUNTY, NEW JERSEY

CPL PARTNERSHIP LLC
95 MATAWAN ROAD | SECOND FLOOR
MATAWAN, NJ 07747
P. 732-566-0297 | www.cplpartnership.com

CERTIFICATES OF AUTHORIZATION: BOARD OF ENGINEERS & LAND SURVEYORS: 246A28159000 | BOARD OF ARCHITECTS: 21AC000699000

FILE NO: 22062
DATE: 1-03-23
SCALE: 1" = 60'
DRAWN BY: KRK
CHECKED BY: RGR
DRAWING NO: WL22062
SHEET NO: 1 OF 1

\\PLOT FILES\ENGINEERING\2020\202020\PRE-FINAL SITE\2020-01-01



APPENDIX VI

TREE INVENTORY TABLE

Tree ID	Species (Common Name)	Species (Scientific Name)	DBH (Inch)	Stem Count	Northing (Feet)	Easting (Feet)	Latitude (DD)	Longitude (DD)
1	Norway Spruce	<i>Picea abies</i>	30.0	1	558,594	591,460	40.36644	-74.14349
2	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	558,639	591,385	40.36656	-74.14376
3	Tuliptree	<i>Liriodendron tulipifera</i>	31.5	1	558,642	591,378	40.36657	-74.14379
4	Tuliptree	<i>Liriodendron tulipifera</i>	32.6	1	558,637	591,319	40.36656	-74.14400
5	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	558,633	591,318	40.36654	-74.14400
6	Tuliptree	<i>Liriodendron tulipifera</i>	35.2	1	558,556	591,215	40.36633	-74.14437
7	Black Cherry	<i>Prunus serotina</i>	46.0	1	558,523	591,177	40.36625	-74.14451
8	Tuliptree	<i>Liriodendron tulipifera</i>	34.0	1	558,880	591,300	40.36722	-74.14406
9	Tuliptree	<i>Liriodendron tulipifera</i>	30.5	1	558,857	591,352	40.36716	-74.14387
10	Tuliptree	<i>Liriodendron tulipifera</i>	35.3	1	558,862	591,342	40.36717	-74.14391
11	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	558,884	591,340	40.36723	-74.14392
12	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	558,922	591,334	40.36734	-74.14394
13	Tuliptree	<i>Liriodendron tulipifera</i>	38.0	1	558,927	591,312	40.36735	-74.14402
14	Tuliptree	<i>Liriodendron tulipifera</i>	31.0	1	558,922	591,286	40.36734	-74.14411
15	Tuliptree	<i>Liriodendron tulipifera</i>	40.0	1	558,939	591,268	40.36738	-74.14417
16	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	558,939	591,335	40.36739	-74.14393
17	Tuliptree	<i>Liriodendron tulipifera</i>	32.0	1	559,052	591,334	40.36770	-74.14393
18	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,080	591,322	40.36777	-74.14398
19	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	2	559,022	591,234	40.36761	-74.14429
20	Tuliptree	<i>Liriodendron tulipifera</i>	35.5	1	558,995	591,204	40.36754	-74.14440
21	Tuliptree	<i>Liriodendron tulipifera</i>	47.5	1	559,032	591,226	40.36764	-74.14432
22	Tuliptree	<i>Liriodendron tulipifera</i>	38.5	1	559,141	591,266	40.36794	-74.14418
23	Tuliptree	<i>Liriodendron tulipifera</i>	32.7	1	559,148	591,253	40.36796	-74.14422
24	Tuliptree	<i>Liriodendron tulipifera</i>	40.8	1	559,165	591,202	40.36801	-74.14441
25	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	559,205	591,176	40.36812	-74.14450
26	Flowering Dogwood	<i>Cornus florida</i>	1.8	1	559,204	591,182	40.36811	-74.14448
27	Tuliptree	<i>Liriodendron tulipifera</i>	38.0	1	559,311	591,170	40.36841	-74.14452
28	Tuliptree	<i>Liriodendron tulipifera</i>	31.0	1	559,324	591,138	40.36844	-74.14463
29	Tuliptree	<i>Liriodendron tulipifera</i>	31.0	1	559,408	591,018	40.36867	-74.14507
30	Tuliptree	<i>Liriodendron tulipifera</i>	34.0	1	559,429	591,032	40.36873	-74.14502
31	American Holly	<i>Ilex opaca</i>	5.7	1	559,437	591,002	40.36876	-74.14512
32	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,413	590,943	40.36869	-74.14533
33	Tuliptree	<i>Liriodendron tulipifera</i>	37.0	1	559,373	590,934	40.36858	-74.14537
34	Northern Red Oak	<i>Quercus rubra</i>	45.0	1	559,353	590,897	40.36853	-74.14550
35	Tuliptree	<i>Liriodendron tulipifera</i>	40.0	3	559,294	590,866	40.36836	-74.14561
36	Tuliptree	<i>Liriodendron tulipifera</i>	32.0	1	559,307	590,986	40.36840	-74.14518
37	Tuliptree	<i>Liriodendron tulipifera</i>	51.0	1	559,275	591,038	40.36831	-74.14499
38	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	559,246	591,045	40.36823	-74.14497
39	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,211	591,052	40.36814	-74.14495

Tree ID	Species (Common Name)	Species (Scientific Name)	DBH (Inch)	Stem Count	Northing (Feet)	Easting (Feet)	Latitude (DD)	Longitude (DD)
40	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,224	591,068	40.36817	-74.14489
41	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,244	591,079	40.36823	-74.14485
42	Tuliptree	<i>Liriodendron tulipifera</i>	36.0	1	559,303	591,087	40.36839	-74.14482
43	Northern Red Oak	<i>Quercus rubra</i>	31.0	1	559,330	591,100	40.36846	-74.14477
44	Tuliptree	<i>Liriodendron tulipifera</i>	30.5	1	559,198	591,051	40.36810	-74.14495
45	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,194	591,056	40.36809	-74.14493
46	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	559,178	591,046	40.36804	-74.14497
47	Tuliptree	<i>Liriodendron tulipifera</i>	31.5	1	559,174	591,090	40.36803	-74.14481
48	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	559,166	591,104	40.36801	-74.14476
49	Tuliptree	<i>Liriodendron tulipifera</i>	36.0	1	559,146	591,083	40.36795	-74.14483
50	Pin Oak	<i>Quercus palustris</i>	32.0	1	559,105	591,063	40.36784	-74.14491
51	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,092	591,066	40.36781	-74.14490
52	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	559,076	591,082	40.36776	-74.14484
53	Tuliptree	<i>Liriodendron tulipifera</i>	35.5	1	559,071	591,132	40.36775	-74.14466
54	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	559,062	591,126	40.36773	-74.14468
55	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	559,051	591,131	40.36770	-74.14467
56	Tuliptree	<i>Liriodendron tulipifera</i>	37.0	1	559,047	591,119	40.36768	-74.14471
57	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	559,012	591,114	40.36759	-74.14473
58	Tuliptree	<i>Liriodendron tulipifera</i>	47.0	3	559,006	591,129	40.36757	-74.14467
59	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	559,004	591,126	40.36757	-74.14468
60	Flowering Dogwood	<i>Cornus florida</i>	3.6	1	558,987	591,154	40.36752	-74.14458
61	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	558,958	591,116	40.36744	-74.14472
62	Tuliptree	<i>Liriodendron tulipifera</i>	35.5	1	558,897	591,112	40.36727	-74.14474
63	Tuliptree	<i>Liriodendron tulipifera</i>	33.0	1	558,741	591,070	40.36684	-74.14489
64	Tuliptree	<i>Liriodendron tulipifera</i>	30.0	1	558,635	591,095	40.36655	-74.14480
65	Tuliptree	<i>Liriodendron tulipifera</i>	36.0	1	558,572	591,086	40.36638	-74.14483
66	American Holly	<i>Ilex opaca</i>	3.0	6	558,528	591,094	40.36626	-74.14481
67	Tuliptree	<i>Liriodendron tulipifera</i>	76.0	1	558,580	591,541	40.36640	-74.14320
68	Tuliptree	<i>Liriodendron tulipifera</i>	52.5	1	558,587	591,573	40.36642	-74.14308
69	Tuliptree	<i>Liriodendron tulipifera</i>	31.4	1	558,555	591,018	40.36634	-74.14508
70	Tuliptree	<i>Liriodendron tulipifera</i>	35.6	1	558,673	591,014	40.36666	-74.14509
71	Tuliptree	<i>Liriodendron tulipifera</i>	31.4	1	558,974	591,068	40.36748	-74.14489
72	Tuliptree	<i>Liriodendron tulipifera</i>	33.7	1	558,992	591,029	40.36753	-74.14503
73	Tuliptree	<i>Liriodendron tulipifera</i>	35.3	1	559,038	590,985	40.36766	-74.14519
74	Tuliptree	<i>Liriodendron tulipifera</i>	36.0	1	559,064	590,994	40.36773	-74.14516
75	Tuliptree	<i>Liriodendron tulipifera</i>	31.5	1	559,235	590,714	40.36821	-74.14616
76	Tuliptree	<i>Liriodendron tulipifera</i>	38.7	1	559,161	590,798	40.36800	-74.14586
77	Tuliptree	<i>Liriodendron tulipifera</i>	35.6	2	559,118	590,774	40.36788	-74.14594
78	Tuliptree	<i>Liriodendron tulipifera</i>	31.3	1	559,056	590,797	40.36771	-74.14586

Tree ID	Species (Common Name)	Species (Scientific Name)	DBH (Inch)	Stem Count	Northing (Feet)	Easting (Feet)	Latitude (DD)	Longitude (DD)
79	Tuliptree	<i>Liriodendron tulipifera</i>	54.0	2	558,967	590,857	40.36747	-74.14565
80	Tuliptree	<i>Liriodendron tulipifera</i>	53.3	1	559,034	590,888	40.36765	-74.14554
81	Tuliptree	<i>Liriodendron tulipifera</i>	32.5	1	559,104	590,902	40.36784	-74.14548
82	American Holly	<i>Ilex opaca</i>	2.0	1	558,972	590,914	40.36748	-74.14544
83	Tuliptree	<i>Liriodendron tulipifera</i>	32.7	1	559,005	590,928	40.36757	-74.14539
84	Tuliptree	<i>Liriodendron tulipifera</i>	32.2	2	558,892	590,872	40.36726	-74.14560
85	Tuliptree	<i>Liriodendron tulipifera</i>	30.3	1	558,880	590,873	40.36723	-74.14559
86	Tuliptree	<i>Liriodendron tulipifera</i>	40.0	1	558,841	590,859	40.36712	-74.14565
87	American Holly	<i>Ilex opaca</i>	5.7	1	558,817	590,826	40.36706	-74.14576
88	Tuliptree	<i>Liriodendron tulipifera</i>	38.8	1	558,859	590,657	40.36717	-74.14637
89	Sassafras	<i>Sassafras albidum</i>	35.0	1	558,775	590,632	40.36694	-74.14646
90	American Beech	<i>Fagus grandifolia</i>	35.9	1	558,766	590,701	40.36692	-74.14621
91	American Holly	<i>Ilex opaca</i>	10.5	1	558,755	590,731	40.36689	-74.14610
92	Tuliptree	<i>Liriodendron tulipifera</i>	48.0	2	558,769	590,805	40.36692	-74.14584
93	Tuliptree	<i>Liriodendron tulipifera</i>	35.0	1	558,789	590,864	40.36698	-74.14563
94	Tuliptree	<i>Liriodendron tulipifera</i>	33.6	1	558,775	590,870	40.36694	-74.14561
95	Tuliptree	<i>Liriodendron tulipifera</i>	47.3	1	558,765	590,869	40.36691	-74.14561
96	Tuliptree	<i>Liriodendron tulipifera</i>	30.7	1	558,706	590,953	40.36675	-74.14531
97	Tuliptree	<i>Liriodendron tulipifera</i>	38.3	1	558,809	590,752	40.36703	-74.14603
98	Tuliptree	<i>Liriodendron tulipifera</i>	35.6	1	558,723	590,709	40.36680	-74.14618
99	American Holly	<i>Ilex opaca</i>	10.9	1	558,692	590,762	40.36671	-74.14600
100	American Beech	<i>Ilex opaca</i>	49.9	1	558,679	590,690	40.36668	-74.14625
101	Sassafras	<i>Sassafras albidum</i>	36.2	1	558,661	590,625	40.36663	-74.14649
102	Tuliptree	<i>Liriodendron tulipifera</i>	39.7	2	558,539	590,560	40.36629	-74.14672
103	Northern Red Oak	<i>Quercus rubra</i>	34.0	1	558,521	590,498	40.36625	-74.14695
104	Tuliptree	<i>Liriodendron tulipifera</i>	35.8	1	558,525	590,478	40.36626	-74.14702
105	Northern Red Oak	<i>Quercus rubra</i>	36.0	1	558,471	590,527	40.36611	-74.14684
106	Tuliptree	<i>Liriodendron tulipifera</i>	33.2	1	558,429	590,567	40.36599	-74.14670
107	Northern Red Oak	<i>Quercus rubra</i>	32.0	1	558,541	590,880	40.36630	-74.14557
108	Norway Spruce	<i>Picea abies</i>	31.0	1	558,503	590,838	40.36619	-74.14573
109	Tuliptree	<i>Liriodendron tulipifera</i>	43.0	1	558,585	590,959	40.36642	-74.14529
110	Tuliptree	<i>Liriodendron tulipifera</i>	39.8	1	558,610	590,962	40.36649	-74.14528
Notes: 1. DBH = Diameter at breast height. 2. Stem count at breast height. 3. Northing and easting coordinates are referenced to the New Jersey State Plane Coordinate System (NAD 83). 4. Latitude and longitude coordinates are referenced to the World Geodetic System (WGS 84).								



APPENDIX VII

NATURAL HERITAGE PROGRAM DATABASE SEARCH RESULTS



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE PARKS, FORESTS & HISTORIC SITES
OFFICE OF NATURAL LANDS MANAGEMENT

501 East State Street

P.O. Box 420, Mail Code 501-04

Trenton, New Jersey 08625-0420

Tel. (609) 984-1339 * Fax (609) 984-1427

<https://www.nj.gov/dep/parksandforests/natural/index.html>

PHILIP D. MURPHY

Governor

TAHESHA L. WAY

Lt. Governor

SHAWN M. LATOURETTE

Commissioner

May 2, 2024

Thomas Hopper
Princeton Hydro, LLC
P.O. Box 3689
Trenton, NJ 08629

Re: Environmental Assessment - Block 1045, Lots 2, 3, & 4
Block(s) - 1045, Lot(s) - 2, 3, 4
Middletown Township, Monmouth County

Dear Thomas Hopper:

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

Searches of the Natural Heritage Database and the Landscape Project (Version 3.3) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the map(s) submitted with the Natural Heritage Data Request Form into our GIS. We do not typically verify that your project bounds are accurate, or check them against other sources.

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

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

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

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

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

NHP File No. 24-4007432-30320

Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, <https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7>, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

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

Information supplied by the Natural Heritage Program summarizes existing data known to the program at the time of the request regarding the biological elements (species and/or ecological communities) or their locations. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

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

Sincerely,



Robert J. Cartica
Administrator

c: NHP File No. 24-4007432-30320

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

Rare Wildlife Species or Wildlife Habitat on the
Project Site Based on Search of
Landscape Project 3.3 Species Based Patches

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
Aves	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

<p>Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<hr/>								
<i>Aves</i>	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N

**Vernal Pool Habitat
In the Immediate Vicinity of
Project Site Based on Search of
Landscape Project 3.3**

Vernal Pool Habitat Type

Vernal Pool Habitat ID

Potential vernal habitat area

1681

Total number of records: 1