



# III.B

## Ecology and Natural Resources

### 1. Existing Conditions and Capacity

This section describes the following existing natural resources within the Study Area on the basis of existing information and the results of the reconnaissance field survey: vegetation and ecological communities, wildlife, and threatened, endangered, and special concern species.

The overall Study Area includes the Project Site and adjacent properties to the north, east, west, and south. Specifically, the Study Area was limited by residences to the north, commercial properties to the east, Union Hill Quarry to the west, and Lafayette Avenue and commercial properties to the south (**Figure III.B-1**). Capital Environmental Consultants, Inc. (Capital) conducted a natural resource inventory (NRI) that identified wildlife and vegetation at habitat-specific point stations within the Study Area.<sup>1,2</sup> A total of 18 point stations were situated along 2 transects mapped throughout the Study Area as depicted on **Figure III.B-2**. The transect method is based on the 1987 Corps of Engineers Wetland Delineation Manual. At each sample point, tree, shrub, and herbaceous vegetation and wildlife was identified and documented. In addition to the sample points, Capital conducted general surveys of each distinct vegetative community to ensure a thorough examination of all vegetative species present onsite. Evaluations for vegetation and wildlife commenced on a monthly basis in March 2022 through December 2022, thereby evaluating wildlife through four seasons. Capital conducted a wetland delineation in 2019 and additional site visits were conducted in 2021.<sup>3</sup>

<sup>1</sup> CEQR Technical Manual.

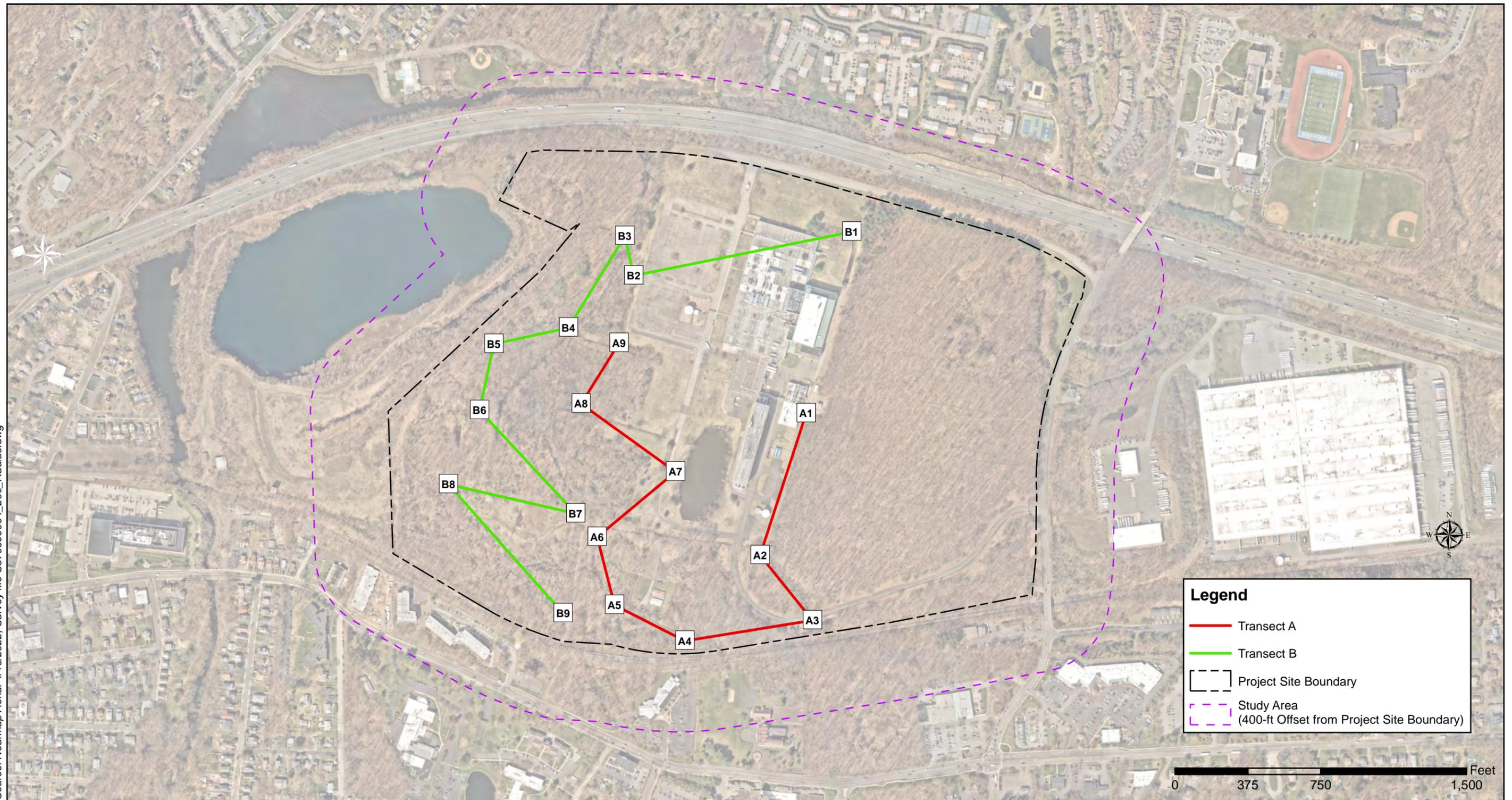
<sup>2</sup> NRI Field Surveys; March 2022 to December 2022.

<sup>3</sup> NRI Field Surveys March 2022 to December 2022; Other site visits March 26, October 9, 2019, and August 12, 2021.

Source: Nearmap Aerial 4/16/2022; Survey file S370999004\_200\_Radius.dwg



Source: Nearmap Aerial 4/16/2022; Survey file S370999004\_200\_Radius.dwg



A total of 15 ecological communities were identified on the Study Area based on the Ecological Communities of New York State (**Figure III.B-3**).<sup>4</sup> As portions of the Subject Property have been fairly undisturbed and others significantly disturbed and shaped by surrounding development activities, a number of ecological communities, of varying size and characteristics were identified based on the Natural Resource inventories (NRI) surveys; wetland delineations, classification system outlined in the *Ecological Communities of New York State* (Edinger *et al.* 2014);<sup>5</sup> and the investigating team's experience and familiarity with the site.<sup>6</sup> Terrestrial, palustrine, lacustrine, and riverine communities were determined to be present within the Project Site and the various vegetative cover types found throughout the Study Area were characterized. Utilizing NRI data collected at the 18 sample points, a detailed ecological communities map was generated (**Figure III.B-3**).

## Vegetation and Ecological Communities

These resources are characterized according to their vegetation, potential for wildlife habitat, current use, and, as appropriate, the environmental systems that support it. The terrestrial communities identified on-site include oak-tulip tree forest, successional old field, mowed lawn, unpaved road/path, paved road/path, and urban structure exterior. The palustrine communities identified on-site include red maple hardwood swamp, floodplain forest, shallow emergent marsh, and water recharge basin. The riverine communities identified on-site include marsh headwater stream, perennial stream, intermittent stream, and ditch.

The lacustrine communities identified on-site include artificial pond. The characterizations were based on the Ecological Communities of New York State (Edinger *et al.* 2014). Hydrology, hydric soil characteristics, vegetation and landscape position were the determinant factors in establishing upland and wetland community types. Provided below is a description of each of the ecological communities, their location, and an inventory of the vegetative species observed within each of these community types during site surveys. The areas to be disturbed for the Proposed Project do not represent rare habitat.

### Oak-Tulip Tree Forest

The oak-tulip tree forest community is found throughout the Study Area. This community is characterized as a mesophytic hardwood forest that occurs on moist, well-drained sites. The oak-tulip tree community is a mature forested community that contains predominately native vegetation. This community is fairly undisturbed, except for the periphery of developments within the southern portion of the Project Site and from the development of paved and unpaved roadways. As depicted in **Figure III.B-3**, Ecological Communities, approximately 96.53 acres (59.7 percent) of the Subject Property is classified as the oak-tulip tree forest community.

<sup>4</sup> Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. *Ecological Communities of New York State*. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, NYSDEC, Albany, NY.

<sup>5</sup> Edinger *et al.* 2014

<sup>6</sup> NRI Field Surveys March 2022 to December; Other site visits March 26, October 9, 2019, and August 12, 2021.

Description	Area (acres)
Artificial Pond	2.23
Ditch	0.27
Floodplain Forest	7.75
Intermittent Stream	0.33
Marsh Headwater Stream	0.30
Mowed Lawn	15.50
Oak Tulip Forest	96.53
Paved Roads	12.82
Perennial Stream	0.40
Red Maple Hardwood Swamp	3.34
Shallow Emergent Marsh	3.79
Successional Old Field	8.63
Unpaved Path	0.68
Urban Structure Exterior	8.91
Water Recharge Basin	0.14



**Legend**

[ ] Project Site Boundary

**Ecological Communities**

- Artificial Pond
- Ditch
- Floodplain Forest
- Intermittent Stream
- Marsh Headwater Stream
- Mowed Lawn
- Oak Tulip Forest
- Paved Roads
- Perennial Stream
- Red Maple Hardwood Swamp
- Shallow Emergent Marsh
- Successional Old Field
- Unpaved Path
- Urban Structure Exterior
- Water Recharge Basin



Source: Dynamic Engineering, Drainage Plan, Brookfield Properties Proposed Industrial park at 25 Old Mill Road, 6/20/22

Species noted included, but were not limited to, American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), black oak (*Quercus velutina*), white oak (*Quercus alba*) with an understory composed of gray dogwood (*Cornus racemosa*), Japanese barberry (*Berberis thunbergii*), common red raspberry (*Rubus idaeus*), garlic mustard (*Alliaria petiolata*), mugwort (*Artemisia vulgaris*), poison ivy (*Toxicodendron radicans*), and Japanese stilt grass (*Microstegium vimineum*).

### Successional Old Field

The successional old field community is found throughout the Study Area. This community is characterized as a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned. The successional old field community is an immature community that is dominated by invasive vegetation resulting from disturbance. This community is highly disturbed as these areas were cleared for the development of the existing manufacturing facility and associated manicured lawns. As depicted in **Figure III.B-3, Ecological Communities**, approximately 8.63 acres (5.3 percent) of the Subject Property is classified as the successional old field.

Species noted included, but were not limited to, eastern white pine (*Pinus strobus*), multiflora rose (*Rosa multiflora*), raspberry (*Rubus idaeus*), wineberry (*Rubus phoenicolasius*), common milkweed (*Asclepias syriaca*), common reed (*Phragmites australis*), common vetch (*Vicia sativa*), garlic mustard (*Alliaria petiolata*), mugwort (*Artemisia vulgaris*), orchard grass (*Dactylis glomerata*), poison ivy (*Toxicodendron radicans*), and other upland grasses (*Poa* spp.).

### Mowed Lawn

The mowed lawn community is found adjacent to the existing manufacturing facility and within the southern portion of the Study Area. This community is characterized as residential land in which the groundcover is dominated by clipped grasses and a lack of tree cover. These areas may be maintained by mowing and/or broadleaf herbicide application. The mowed lawn community is a mature grassed community that is dominated by invasive vegetation resulting from disturbance. This community is highly disturbed as these areas were regularly maintained for the development of the existing manufacturing facility. As depicted on **Figure III.B-3, Ecological Communities**, approximately 15.5 acres (9.6 percent) of the Subject Property is classified as the mowed lawn community.

The mowed lawn is dominated by Kentucky blue grass (*Poa pratensis*) and other upland grasses (*Poa* spp.).

### Unpaved path

The unpaved road/path is found along the western property boundary and within the southern portion of the Study Area. This community is characterized by sparsely vegetated pathway of gravel, bare soil, or bedrock outcrop. These pathways are maintained by regular trampling or scraping of the land surface. The substrate consists of the soil or parent material at the site, which may be modified by the addition of local organic material (woodchips, logs, etc.) or sand and gravel. The unpaved path community contained limited vegetation due to previous disturbance but was dominated by invasive vegetation. As depicted on **Figure III.B-3, Ecological Communities**, approximately 0.68 acres (0.4 percent) of the Subject Property is classified as an unpaved road/path.

Species noted included, but were not limited to, mugwort (*Artemisia vulgaris*) and upland grasses (*Poa* spp.).

### **Paved road**

The paved road/path was found adjacent to the existing manufacturing facility and within the southeastern portion of the Study Area. This community is characterized as a road or pathway that is paved with asphalt, concrete, brick, stone, etc. There may be sparse vegetation rooted in cracks in the paved surface. As depicted on **Figure III.B-3**, Ecological Communities, approximately 12.82 acres (7.9 percent) of the Subject Property is classified as the paved road/path.

Vegetation was not observed within the paved road community.

### **Urban structure exterior**

The urban structure exterior was found within the central portion of the Study Area. This community is characterized as exterior surfaces of metal, wood, or concrete structures (such as commercial buildings, apartment buildings, houses, bridges) or any structural surface composed of inorganic materials (glass, plastics, etc.) in an urban or densely populated suburban area. These sites may be sparsely vegetated with lichens, mosses, and terrestrial algae; occasionally vascular plants may grow in cracks. Nooks and crannies may provide nesting habitat for birds and insects, and roosting sites for bats. No active nests or roosts were observed on the urban structure exteriors during NRI field visits. As depicted on **Figure III.B-3**, Ecological Communities, approximately 8.91 acres (5.5 percent) of the Subject Property is classified as urban structure exterior.

Vegetation was not observed within the urban structure exterior community.

### **Red Maple-Hardwood Swamp**

The red maple-hardwood swamp community is found in the wetland areas located in the southern portion of the Study Area. This community is characterized as a hardwood swamp that occurs in poorly drained depressions or basins, usually on inorganic soil, but occasionally on muck or shallow peat, that is typically acidic to circumneutral. The red maple-hardwood swamp is a minimally disturbed, mature, forested community containing both native and invasive vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 3.34 acres (2.1 percent) of the Subject Property is classified as the red maple-hardwood swamp.

Species noted included, but were not limited to, American elm (*Ulmus americana*), American sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), American beech (*Fagus grandifolia*), autumn olive (*Elaeagnus umbellata*), Japanese barberry (*Berberis thunbergii*), common reed (*Phragmites australis*), deer-tongue grass (*Dichanthelium clandestinum*), Japanese stiltgrass (*Microstegium vimineum*), mugwort (*Artemisia vulgaris*), mulitflora rose (*Rosa multiflora*), and skunk cabbage (*Symplocarpus foetidus*).

### **Floodplain Forest**

The floodplain forest community is found within Wetland A in the western portion of the Study Area. This community is characterized as a hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. The floodplain forest community is broadly defined, quite variable, and may be very diverse. The floodplain forest community is an undisturbed, mature, forested

community containing predominantly native vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 7.75 acres (4.8 percent) of the Subject Property is classified as the floodplain forest.

Species noted included, but were not limited to, black cherry (*Prunus serotina*), black oak (*Quercus velutina*), gray birch (*Betula populifolia*), green ash (*Fraxinus pennsylvanica*), Norway maple (*Acer platanoides*), red oak (*Quercus rubra*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), tulip poplar (*Liriodendron tulipifera*), ironwood (*Carpinus caroliniana*), Japanese barberry (*Berberis thunbergii*), northern spicebush (*Lindera benzoin*), multiflora rose (*Rosa multiflora*), sensitive fern (*Onoclea sensibilis*), skunk cabbage (*Symplocarpus foetidus*), Japanese honeysuckle (*Lonicera japonica*), and tartarian honeysuckle (*Lonicera tatarica*).

### Shallow Emergent Marsh

The shallow emergent marsh community is found within the central portion of Wetland A in the western portion of the Study Area. This community is characterized as a marsh meadow community that occurs on mineral soil or deep muck soils (rather than true peat), that are permanently saturated and seasonally flooded. The shallow emergent marsh community is an undisturbed, mature community containing predominantly native vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 3.79 acres (2.3 percent) of the Subject Property is classified as the shallow emergent marsh.

Species noted included, but were not limited to, American sycamore (*Platanus occidentalis*), red maple (*Acer rubrum*), broadleaf cattail (*Typha latifolia*), gray dogwood (*Cornus racemosa*), northern spicebush (*Lindera benzoin*), blackhaw (*Viburnum prunifolium*), cinnamon fern (*Osmundastrum cinnamomeum*), great white trillium (*Trillium grandiflorum*), sensitive fern (*Onoclea sensibilis*), skunk cabbage (*Symplocarpus foetidus*), and tussock sedge (*Carex stricta*).

### Water Recharge Basin

The water recharge basin is found within the north central portion of the Study Area. This community is characterized as an aquatic community of a constructed depression near a road or development that receives runoff from paved surfaces and allows the water to percolate through to the groundwater, thereby recharging the groundwater. The water recharge basin community is a disturbed, immature community dominated by invasive vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 0.14 acres (0.1 percent) of the Subject Property is classified as the water recharge basin.

Species noted included, but were not limited to, common dandelion (*Taraxacum officinale*), mugwort (*Artemisia vulgaris*), orchard grass (*Dactylis glomerata*), ragged robin (*Silene flos-cuculi*), raspberry (*Rubus idaeus*), ryegrass (*Lolium* spp.), and tussock sedge (*Carex stricta*).

### Marsh Headwater Stream

The marsh headwater stream community is found within Wetland A in the western portion of the Study Area. This community is characterized as an aquatic community of a small, marshy perennial brook with a very low gradient, slow flow rate, and cool to warm water that flows through a marsh, fen, or swamp where a stream system originates. The marsh headwater stream community is an undisturbed, mature community dominated by native vegetation. As depicted in **Figure III.B-3**,

Ecological Communities, approximately 0.30 acres (0.2 percent) of the Subject Property is classified as the marsh headwater stream.

Vegetation within the streambed was limited, and included hardstem bulrush (*Schoenoplectus acutus*), shallow sedge (*Carex lurida*), skunk cabbage (*Symplocarpus foetidus*), and water purslane (*Lythrum portula*). Species noted along the banks included, but were not limited to, cinnamon fern (*Osmundastrum cinnamomeum*), sensitive fern (*Onoclea sensibilis*), skunk cabbage (*Symplocarpus foetidus*), tussock sedge (*Carex stricta*), and Japanese stiltgrass (*Microstegium vimineum*).

### Perennial Stream

The perennial stream community is found within the northeastern and northwestern portions of the Study Area. This community is characterized as a community of a well-defined small, perennial streambed that has a continuous flow of surface water throughout the year. Groundwater and water from smaller upstream waterbodies are the sources of perennial flow and is supplemented by surface water runoff. The perennial stream community is an undisturbed, mature community dominated by native vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 0.40 acres (0.2 percent) of the Subject Property is classified as the intermittent stream.

Species noted along the streambed included, but were not limited to, Japanese stiltgrass (*Microstegium vimineum*), skunk cabbage (*Symplocarpus foetidus*), sensitive fern (*Onoclea sensibilis*), spotted touch-me-not (*Impatiens capensis*), and tussock sedge (*Carex stricta*).

### Intermittent Stream

The intermittent stream community is found within the eastern and southern portions of the Study Area. This community is characterized as a community of a small, intermittent, or ephemeral streambed in the uppermost segments of stream systems where water flows only during the spring or after a heavy rain and often remains longer, ponded in isolated pools. The intermittent stream community is a minimally disturbed, mature community dominated by native vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 0.33 acres (0.2 percent) of the Subject Property is classified as the intermittent stream.

Species noted along the banks included, but were not limited to, common reed (*Phragmites australis*), Japanese stiltgrass (*Microstegium vimineum*), mugwort (*Artemisia vulgaris*), bay forget-me-not (*Myosotis laxa*), mulitflora rose (*Rosa multiflora*), and skunk cabbage (*Symplocarpus foetidus*).

### Ditch

The ditch community is found within the central portion of the Study Area. This community is characterized as an aquatic community of an artificial waterway constructed for drainage or irrigation of adjacent lands. Water levels either fluctuate in response to variations in precipitation and groundwater levels, or water levels are artificially controlled. The ditch community is a mature, highly disturbed community dominated by invasive vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 0.27 acres (0.2 percent) of the Subject Property is classified as the ditch community.

Species noted included, but were not limited to, black cherry (*Prunus serotina*), gray birch (*Betula populifolia*), Norway maple (*Acer platanoides*), mulitflora rose (*Rosa multiflora*), common reed

(*Phragmites australis*), mugwort (*Artemisia vulgaris*), orchard grass (*Dactylis glomerata*), bird's-foot trefoil (*Lotus corniculatus*), and ryegrass (*Lolium spp.*).

### Artificial Pond

The artificial pond community is found within the central portion of the Study Area. This community is characterized as an aquatic community of a small pond constructed on agricultural or residential property. The artificial pond community is a mature, disturbed community consisting of both native and invasive vegetation. As depicted in **Figure III.B-3**, Ecological Communities, approximately 2.23 acres (1.4 percent) of the Subject Property is classified as the artificial pond.

Species noted around the edge of the pond included, but were not limited to, black willow (*Salix nigra*), Norway maple (*Acer platanoides*), tulip poplar (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), Japanese barberry (*Berberis thunbergii*), bird's-foot trefoil (*Lotus corniculatus*), common milkweed (*Asclepias syriaca*), germaner speedwell (*Veronica chamaedrys*), ground ivy (*Glechoma hederacea*), and mugwort (*Artemisia vulgaris*).

### Tree Survey

The property was field-surveyed to identify all trees with a minimum 12-inch diameter at breast height measured four feet from the ground. The location and size of these trees are represented on the property survey as well as the Existing Conditions Plan within the Preliminary and Final Major Site Plan drawings. Refer to **Figure III.B-4** for locations. The survey was non-invasive as it was strictly field observation and did not result in the disturbance to any existing habitats in the area. **Table III.B-1** lists the observed species of vegetation identified within the wetland and terrestrial ecological communities during the natural resource inventory field visits.

Source: Dynamic Engineering, Drainage Plan, Brookfield Properties Proposed Industrial park at 25 Old Mill Road, 6/20/22



**25 Old Mill Road, Suffern, NY**

**Legend**

- 534 Trees with a dbh of 12" or greater within the Limit of Disturbance
- - - Limit of Disturbance
- - - Site Boundary

**Tree Study**  
**Figure III.B-4**

Table III.B-1 Observed Vegetation Species

<b>Trees</b>	
American beech ( <i>Fagus grandifolia</i> )	Northern catalpa ( <i>Catalpa speciosa</i> )
American elm ( <i>Ulmus americana</i> )	Norway maple ( <i>Acer platanoides</i> )
American pussy willow ( <i>Salix discolor</i> )	Norway spruce ( <i>Picea abies</i> )
American sycamore ( <i>Platanus occidentalis</i> )	Pin oak ( <i>Quercus palustris</i> )
Basswood ( <i>Tilia americana</i> )	Red maple ( <i>Acer rubrum</i> )
Black cherry ( <i>Prunus serotina</i> )	Red oak ( <i>Quercus rubra</i> )
Black locust ( <i>Robinia pseudoacacia</i> )	Sassafras ( <i>Sassafras albidum</i> )
Black oak ( <i>Quercus velutina</i> )	Scarlet oak ( <i>Quercus coccinea</i> )
Black willow ( <i>Salix nigra</i> )	Shagbark hickory ( <i>Carya ovata</i> )
Boxelder maple ( <i>Acer negundo</i> )	Silver maple ( <i>Acer saccharinum</i> )
Common buckthorn ( <i>Rhamnus cathartica</i> )	Spruce ( <i>Picea</i> spp.)
Common mulberry ( <i>Morus alba</i> )	Sugar maple ( <i>Acer saccharum</i> )
Eastern cottonwood ( <i>Populus deltoides</i> )	Sweet birch ( <i>Betula lenta</i> )
Eastern white pine ( <i>Pinus strobus</i> )	Tree of heaven ( <i>Ailanthus altissima</i> )
Gray birch ( <i>Betula populifolia</i> )	Tulip poplar ( <i>Liriodendron tulipifera</i> )
Green ash ( <i>Fraxinus pennsylvanica</i> )	Walnut ( <i>Juglans</i> spp.)
Honey locust ( <i>Gleditsia triacanthos</i> )	White ash ( <i>Fraxinus americana</i> )
Ironwood ( <i>Carpinus caroliniana</i> )	White oak ( <i>Quercus alba</i> )
<b>Shrubs/Saplings</b>	
Alder ( <i>Alnus</i> spp.)	Common hawthorn ( <i>Crataegus monogyna</i> )
American beech ( <i>Fagus grandifolia</i> )	Flowering dogwood ( <i>Cornus florida</i> )
American elm ( <i>Ulmus americana</i> )	Gray dogwood ( <i>Cornus racemosa</i> )
American hophornbeam ( <i>Ostrya virginiana</i> )	Green ash ( <i>Fraxinus pennsylvanica</i> )
American witch-hazel ( <i>Hamamelis virginiana</i> )	Highbush blueberry ( <i>Vaccinium corymbosum</i> )
Amur honeysuckle ( <i>Lonicera maackii</i> )	Ironwood ( <i>Carpinus caroliniana</i> )
Arborvitae ( <i>Thuja</i> spp.)	Japanese barberry ( <i>Berberis thunbergii</i> )
Arrowwood viburnum ( <i>Viburnum dentatum</i> )	Kousa dogwood ( <i>Cornus kousa</i> )
Autumn olive ( <i>Elaeagnus umbellata</i> )	Northern Spicebush ( <i>Lindera benzoin</i> )
Blackhaw ( <i>Viburnum prunifolium</i> )	Pin oak ( <i>Quercus palustris</i> )
Border privet ( <i>Ligustrum obtusifolium</i> )	Shagbark hickory ( <i>Carya ovata</i> )
Broadleaf cattail ( <i>Typha latifolia</i> )	Tulip poplar ( <i>Liriodendron tulipifera</i> )
Button bush ( <i>Cephalanthus occidentalis</i> )	Winged euonymys ( <i>Euonymus alatus</i> )
<b>Herbs</b>	
American aster ( <i>Symphyotrichumi</i> spp.)	Japanese pachysandra ( <i>Pachysandra terminalis</i> )
American wintergreen ( <i>Gaultheria procumbens</i> )	Japanese stiltgrass ( <i>Microstegium vimineum</i> )
Asiatic tearthumb ( <i>Persicaria pertoliata</i> )	Kentucky blue grass ( <i>Poa pratensis</i> )
Bay forget-me-not ( <i>Myosotis laxa</i> )	Lady's thumb ( <i>Persicaria maculosa</i> )
Beardtongue ( <i>Penstemon</i> spp.)	Late boneset ( <i>Eupatorium serotinum</i> )
Bird's-foot trefoil ( <i>Lotus corniculatus</i> )	Marsh fern ( <i>Thelypteris palustris</i> )
Bottlebrush grass ( <i>Elymus hystrix</i> )	Marsh marigold ( <i>Caltha palustris</i> )
Broadleaf cattail ( <i>Typha latifolia</i> )	Moth mullein ( <i>Verbascum blattaria</i> )
Bull thistle ( <i>Cirsium vulgare</i> )	Mugwort ( <i>Artemisia vulgaris</i> )

Calico aster ( <i>Symphotrichum lateriflorum</i> )	Multiflora rose ( <i>Rosa multiflora</i> )
Cinnamon fern ( <i>Osmundastrum cinnamomeum</i> )	Onion grass ( <i>Allium vineale</i> )
Cinquefoil ( <i>Potentilla</i> spp.)	Orchard grass ( <i>Dactylis glomerata</i> )
Common bedstraw ( <i>Galium aparine</i> )	Pennsylvania smartweed ( <i>Polygonum pennsylvanicum</i> )
Common dandelion ( <i>Taraxacum officinale</i> )	Poison Ivy ( <i>Toxicodendron radicans</i> )
Common greenbrier ( <i>Smilax rotundifolia</i> )	Queen Anne's lace ( <i>Daucus carota</i> )
Common milkweed ( <i>Asclepias syriaca</i> )	Ragged robin ( <i>Silene flos-cuculi</i> )
Common mullein ( <i>Verbascum thapsus</i> )	Red clover ( <i>Trifolium pratense</i> )
Common reed ( <i>Phragmites australis</i> )	Rice cutgrass ( <i>Leersia oryzoides</i> )
Common vetch ( <i>Vicia sativa</i> )	Royal fern ( <i>Osmunda regalis</i> )
Crabgrass ( <i>Digitaria</i> spp.)	Ryegrass ( <i>Lolium</i> spp.)
Daisy fleabane ( <i>Erigeron annuus</i> )	Sallow sedge ( <i>Carex lurida</i> )
Dark green bulrush ( <i>Scirpus atrovirens</i> )	Sensitive fern ( <i>Onoclea sensibilis</i> )
Deer-tongue grass ( <i>Dichanthelium clandestinum</i> )	Skunk cabbage ( <i>Symplocarpus foetidus</i> )
Dotted knotweed ( <i>Persicaria punctata</i> )	Smooth brome ( <i>Bromus inermis</i> )
Duckweed ( <i>Lemnoideae</i> spp.)	Soft rush ( <i>Juncus effusus</i> )
False nettle ( <i>Boehmeria cylindrica</i> )	Spotted touch-me-not ( <i>Impatiens capensis</i> )
Field godenrod ( <i>Solidago nemoralis</i> )	Summer cypruss ( <i>Bassia scoparia</i> )
Flat-top goldenrod ( <i>Euthamia graminifolia</i> )	Three square bulrush ( <i>Schoenoplectus pungens</i> )
Fox sedge ( <i>Carex vulpinoidea</i> )	Timothy ( <i>Phleum pratense</i> )
Foxglove ( <i>Digitalis</i> spp.)	Tussock sedge ( <i>Carex stricta</i> )
Garlic mustard ( <i>Alliaria petiolata</i> )	Upland grasses ( <i>Poa</i> spp.)
Germaner speedwell ( <i>Veronica chamaedrys</i> )	Violet ( <i>Viola</i> spp.)
Goldenrod ( <i>Solidago</i> spp.)	Water purslane ( <i>Lythrum portula</i> )
Great white trillium ( <i>Trillium grandiflorum</i> )	White snakeroot ( <i>Ageratina altissima</i> )
Ground ivy ( <i>Glechoma hederacea</i> )	Wild yam ( <i>Dioscorea villosa</i> )
Hardstem bulrush ( <i>Schoenoplectus acutus</i> )	Wood fern ( <i>Dryopteris</i> spp.)
Hemp dogbane ( <i>Apocynum cannabinum</i> )	Woolgrass ( <i>Scirpus cyperinus</i> )
Jack-in-the-pulpit ( <i>Arisaema triphyllum</i> )	Yarrow ( <i>Achillea millefolium</i> )

**Vines**

Climbing hempvine ( <i>Mikania scandens</i> )	Summer grape ( <i>Vitis aestivalis</i> )
Grape vine ( <i>Vitis</i> spp.)	Tatarian honeysuckle ( <i>Lonicera tatarica</i> )
Japanese honeysuckle ( <i>Lonicera japonica</i> )	Virginia creeper ( <i>Parthenocissus quinquefolia</i> )
Oriental bittersweet ( <i>Celastrus orbiculatus</i> )	Wineberry ( <i>Rubus phoenicolasius</i> )
Raspberry ( <i>Rubus idaeus</i> )	

Notes:

Common name (Scientific name)

## Wildlife

Prior to initiating field efforts, a literature search was performed to identify wildlife species common to the area that might be expected to utilize the Project Site.<sup>7,8</sup> NHP and the USFWS were also contacted for a listing of wildlife species of concern which have been reported within the area (**Appendix J**). A wildlife survey of the Study Area was performed focusing on the presence/absence of avian, mammalian, reptilian, and amphibian species.<sup>9</sup> The assessment was conducted in conjunction with vegetation identification using the same transects and sampling protocols. Survey methods included direct and indirect observations (i.e., tracks, droppings, hair, feathers, etc.). Visual observations using binoculars, spotting scopes and detailed inspections under logs, forest floor litter, and rocks were conducted. Audible indicators were also used to identify both avian and amphibian species. All observations were identified by staff scientists and recorded. Surveys were conducted on March 26 and October 9, 2019, March 18, April 12, May 13, June 16, July 25, August 19, September 20, October 27, 2022.

The various ecological communities that exist within the Study Area provide habitat for a variety of wildlife. Based on the location, environmental characteristics, and site surveys, wildlife species that inhabit or are expected to inhabit the aforementioned ecological communities are listed below.

## Birds

Large bird species observed on, above, and adjacent to the Study Area include but were not limited to Canada goose (*Branta canadensis*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), hooded merganser (*Lophodytes cucullatus*), mallard (*Anas platyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and wood duck (*Aix sponsa*).

Smaller passerine and piciforme species of birds observed within the Study Area include the American crow (*Corvus brachyrhynchos*), American Robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), Baltimore oriole (*Icterus galbula*), black-capped chickadee (*Poecile atricapillus*), bluejay (*Cyanocitta cristata*), chipping sparrow (*Spizella passerina*), downy woodpecker (*Picoides pubescens*), European starling (*Sturnus vulgaris*), gray catbird (*Dumetella carolinensis*), hairy woodpecker (*Leuconotopicus villosus*), house finch (*Haemorhous mexicanus*), house Sparrow (*Passer domesticus*), mourning dove (*Zenaidura macroura*), northern cardinal (*Cardinalis cardinalis*), northern flicker (*Colaptes auratus*), northern mockingbird (*Mimus polyglottos*), palm warbler (*Setophaga palmarum*), pileated woodpecker (*Dryocopus pileatus*), red-bellied woodpecker (*Melanerpes carolinus*), red-winged blackbird (*Agelaius phoeniceus*), song sparrow (*Melospiza melodia*), swamp sparrow (*Melospiza georgiana*), and tufted titmouse (*Baeolophus bicolor*).

Other bird species common to the area that should be expected to be present on-site include flycatchers, various sparrows, thrushes, meadowlark, and various warblers. Other common species to New York State may also utilize the Project Site for various reasons, including foraging and breeding.

<sup>7</sup> NYSDEC New York Nature Explorer; County – Rockland.

<sup>8</sup> NYSDEC Breeding Bird Atlas 2000-2005; Block 5655D Summary; <https://www.dec.ny.gov/cfm/xtapps/bba/index.cfm?RequestTimeout=250>.

<sup>9</sup> NRI Field Surveys; March 2022 to December 2022.

## Mammals

White-tailed deer (*Odocoileus virginianus*) were observed during most site visits. Coyote (*Canis latrans*) was also observed on-site.

Smaller mammals regularly observed on-site include the following: eastern gray squirrels (*Sciurus carolinensis*) and chipmunks (*Tamias* spp.).

Other mammals which should be expected to be present based on the ecological characteristics of the Study Area include striped skunk (*Mephitis mephitis*), groundhog (*Marmota monax*), opossum (*Didelphidae* spp.), raccoons (*Procyon lotor*), meadow vole (*Microtus pennsylvanicus*), deer mouse (*Peromyscus* spp.) and various other species of mice, voles and shrews (*Sorex* spp.).

## Reptiles and Amphibians

Reptiles observed on-site during the 2022 natural resource inventory field visits include the common snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis sirtalis*), northern water snake (*Nerodia sipedon*), northern brown snake (*Storeyia dekayi*), and painted turtle (*Chrysemys picta*).<sup>10</sup>

Amphibians observed and heard on-site during the 2022 natural resource inventory field visits include the American bullfrog (*Lithobates catesbeianus*), gray tree frog (*Dryophytes versicolor*), green frog (*Rana clamitans*), and spring peeper (*Pseudacris crucifer*).<sup>11</sup>

The amphibians and reptiles onsite primarily utilize habitat within the onsite wetlands, tributaries, and immediately adjacent upland transition areas of the site. Box and snapping turtles will sometimes utilize these areas. The preserved wetlands and upland transition areas to the west and south of the site will continue to provide suitable upland habitat for these species.

In 2022, Jason Tesauro Consulting, LLC performed an on-site survey for bog turtles (*Glyptemys muhlenbergii*), a USFWS threatened reptile. No bog turtles were observed on site. Survey methods consisted of walking slowly through the wetland, probing any mucky pools and rivulets for submerged turtles with a wooden probe stick, over-turning thatch and cover for concealed turtles, and visually scanning potential basking areas, refugia, and travel corridors. Sites were surveyed at the rate of four person-hours per visit per acre of suitable bog turtle habitat. During the survey, reptiles such as the common snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terrapene carolina*), eastern garter snake (*Thamnophis sirtalis*), painted turtle (*Chrysemys picta*), northern water snake (*Nerodia sipedon*), and northern brown snake (*Storeyia dekayi*) were observed on-site. Amphibians such as the green frog (*Rana clamitans*) and spring peeper (*Pseudacris crucifer*) were also observed. The bog turtle report is included as **Appendix J1**.

All of the dominant species at the site are considered to be highly mobile and generally adaptable to the existing suburban setting of the region. As observed during NRI field visits, it is anticipated that wildlife will continue to use the preserved forested area in the eastern portion of the Project Site and the preserved wetland area in the western portion of the Project Site. The relocation of wildlife to these areas due to the Proposed Project is not anticipated to result in increased competition

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<sup>10</sup> NRI Field Surveys; March 2022 to December 2022.

<sup>11</sup> NRI Field Surveys; March 2022 to December 2022.

between wildlife species as these areas can provide for wildlife species on-site.<sup>12</sup> The observed wildlife population densities at the Study Area are considered to be in the average range.<sup>13</sup> The central portion of the Study Area within the mowed lawn, paved road, and urban structure exterior communities exhibited a low variety of wildlife species. This is attributable to historic disturbances and the predominantly low-quality vegetation within these areas of the site which limits the diversity and value of the on-site wildlife habitat. The western portion of the site exhibited the highest variety of wildlife species attributable to the presence of year-round sources of water located within the marsh headwater stream and the associated shallow emergent marsh within Wetland A. The remaining portions of the site exhibited a normal variety of wildlife species attributable to the diversity and value of vegetation.

**Table III.B-2** provides a complete listing of the wildlife species identified within the Study Area during the 2022 natural resource inventory field visits. No federal or state-listed rare plant or animal species, habitats or significant natural communities were identified on the Project Site by staff biologists.

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<sup>12</sup> Prior to site construction and to the extent practicable, reptiles and amphibians utilizing the existing stormwater pond will be relocated to the adjacent wetlands to the east.

<sup>13</sup> Based on Capital's best professional judgement from observations of wildlife in similar landscape settings, such as adjacent properties throughout Suffern.

**Table III.B-2 Observed Wildlife Species**

<b>Mammals</b>	
Chipmunk ( <i>Tamias</i> spp.)	Gray squirrel ( <i>Sciurus carolinensis</i> )
Coyote ( <i>Canis latrans</i> )	White Tail Deer ( <i>Odocoileus virginianus</i> )
<b>Birds</b>	
American bittern ( <i>Botaurus lentiginosus</i> )	House finch ( <i>Haemorhous mexicanus</i> )
American black duck ( <i>Anas rubripes</i> ) <sup>a</sup>	House sparrow ( <i>Passer domesticus</i> )
American crow ( <i>Corvus brachyrhynchos</i> )	House wren ( <i>Troglodytes aedon</i> ) <sup>c</sup>
American goldfinch ( <i>Spinus tristis</i> )	Indigo bunting ( <i>Passerina cyanea</i> ) <sup>a</sup>
American redstart ( <i>Setophaga ruticilla</i> ) <sup>a</sup>	Killdeer ( <i>Charadrius vociferus</i> )
American robin ( <i>Turdus migratorius</i> )	Least flycatcher ( <i>Empidonax minimus</i> ) <sup>c</sup>
Baltimore oriole ( <i>Icterus galbula</i> )	Magnolia warbler ( <i>Setophaga magnolia</i> )
Barn swallow ( <i>Hirundo rustica</i> ) <sup>a</sup>	Mallard ( <i>Anas platyrhynchos</i> )
Barn swallow ( <i>Hirundo rustica</i> )	Mockingbird ( <i>Mimus polyglottos</i> )
Belted kingfisher ( <i>Megaceryle alcyon</i> )	Mourning dove ( <i>Zenaida macroura</i> )
Black-billed cuckoo ( <i>Coccyzus erythrophthalmus</i> ) <sup>a</sup>	Northern cardinal ( <i>Cardinalis cardinalis</i> )
Black-and-white warbler ( <i>Mniotilta varia</i> )	Northern flicker ( <i>Colaptes auratus</i> )
Black-capped chickadee ( <i>Poecile atricapillus</i> )	Northern mockingbird ( <i>Mimus polyglottos</i> )
	Northern rough-winged swallow ( <i>Stelgidopteryx serripennis</i> ) <sup>a</sup>
Blue jay ( <i>Cyanocitta cristata</i> )	Ovenbird ( <i>Seiurus aurocapilla</i> ) <sup>a</sup>
Blue-gray gnatcatcher ( <i>Poliophtila caerulea</i> ) <sup>a</sup>	Palm warbler ( <i>Setophaga palmarum</i> )
Brown-headed cowbird ( <i>Molothrus ater</i> )	Pileated woodpecker ( <i>Dryocopus pileatus</i> )
Brown thrasher ( <i>Toxostoma rufum</i> ) <sup>a</sup>	Prairie warbler ( <i>Dendroica discolor</i> ) <sup>a</sup>
Blue-winged warbler ( <i>Vermivora pinus</i> ) <sup>a</sup>	Purple finch ( <i>Carpodacus purpureus</i> ) <sup>a</sup>
Canada goose ( <i>Branta canadensis</i> )	Red-bellied woodpecker ( <i>Melanerpes carolinus</i> )
Carolina wren ( <i>Thryothorus ludovicianus</i> ) <sup>c</sup>	Red-eyed vireo ( <i>Vireo olivaceus</i> ) <sup>a</sup>
Cedar waxwing ( <i>Bombycilla cedrorum</i> ) <sup>a</sup>	Red-shouldered hawk ( <i>Buteo lineatus</i> ) <sup>c</sup>
Chipping sparrow ( <i>Spizella passerina</i> )	Red-tailed hawk ( <i>Buteo jamaicensis</i> )
Chimney swift ( <i>Chaetura pelagica</i> ) <sup>a</sup>	Red-winged blackbird ( <i>Agelaius phoeniceus</i> )
Common grackle ( <i>Quiscalus quiscula</i> )	Rock pigeon ( <i>Columba livia</i> ) <sup>a</sup>
Common raven ( <i>Corvus corax</i> )	Ruby-crowned kinglet ( <i>Regulus calendula</i> )
Common yellowthroat ( <i>Geothlypis trichas</i> )	Ruby-throated hummingbird ( <i>Archilochus colubris</i> )
Dark-eyed junco ( <i>Junco hyemalis</i> )	Scarlet tanager ( <i>Piranga olivacea</i> ) <sup>a, b</sup>
Downy woodpecker ( <i>Picoides pubescens</i> )	Song sparrow ( <i>Melospiza melodia</i> )
Eastern bluebird ( <i>Sialia sialis</i> )	Swamp sparrow ( <i>Melospiza georgiana</i> )
Eastern kingbird ( <i>Tyrannus tyrannus</i> )	Tree swallow ( <i>Tachycineta bicolor</i> )
Eastern phoebe ( <i>Sayornis phoebe</i> )	Tufted titmouse ( <i>Baeolophus bicolor</i> )
Eastern towhee ( <i>Pipilo erythrophthalmus</i> ) <sup>a</sup>	Turkey vulture ( <i>Cathartes aura</i> )
Eastern wood-pewee ( <i>Contopus virens</i> )	Veery ( <i>Catharus fuscescens</i> ) <sup>a</sup>
European starling ( <i>Sturnus vulgaris</i> )	Warbling vireo ( <i>Vireo gilvus</i> ) <sup>a</sup>
Field Sparrow ( <i>Spizella pusilla</i> ) <sup>a</sup>	White-breasted nuthatch ( <i>Sitta carolinensis</i> ) <sup>a</sup>
Fish crow ( <i>Corvus ossifragus</i> ) <sup>a</sup>	

Gray catbird ( <i>Dumetella carolinensis</i> )	Wild turkey ( <i>Meleagris gallopavo</i> )
Great blue heron ( <i>Ardea herodias</i> )	Winter wren ( <i>Troglodytes troglodytes</i> ) <sup>a</sup>
Great crested flycatcher ( <i>Myiarchus crinitus</i> )	Wood duck ( <i>Aix sponsa</i> )
Great egret ( <i>Ardea alba</i> )	Wood thrush ( <i>Hylocichla mustelina</i> ) <sup>a</sup>
Green heron ( <i>Butorides virescens</i> )	Worm-eating warbler ( <i>Helmitheros vermivorum</i> ) <sup>a</sup>
Hairy woodpecker ( <i>Leuconotopicus villosus</i> )	Yellow-billed cuckoo ( <i>Coccyzus americanus</i> ) <sup>a</sup>
Hermit thrush ( <i>Catharus guttatus</i> ) <sup>a</sup>	Yellow-throated vireo ( <i>Vireo flavifrons</i> ) <sup>a</sup>
Hooded merganser ( <i>Lophodytes cucullatus</i> )	Yellow warbler ( <i>Dendroica petechia</i> ) <sup>a</sup>
<b>Insects</b>	
Cabbage white ( <i>Pieris rapae</i> )	Grasshopper ( <i>Caelifera</i> spp.)
Cicada ( <i>Cicadoidea</i> spp.)	Monarch butterfly ( <i>Danaus plexippus</i> )
Cricket ( <i>Grylloidea</i> spp.)	Mosquito ( <i>Culicidae</i> spp.)
Dragonfly ( <i>Anisoptera</i> spp.)	Water boatman ( <i>Corixidae</i> spp.)
Gnat ( <i>Diptera</i> spp.)	Wood bee ( <i>Xylocopa</i> spp.)
<b>Reptiles/Amphibians</b>	
American bullfrog ( <i>Lithobates catesbeianus</i> )	Green frog ( <i>Rana clamitans</i> )
Common snapping turtle ( <i>Chelydra serpentina</i> )	Northern water snake ( <i>Nerodia sipedon</i> ) <sup>b</sup>
Eastern box turtle ( <i>Terrapene carolina</i> )	Northern brown snake ( <i>Storeyia dekayi</i> ) <sup>b</sup>
Eastern garter snake ( <i>Thamnophis sirtalis</i> ) <sup>b</sup>	Painted turtle ( <i>Chrysemys picta</i> )
Gray tree frog ( <i>Dryophytes versicolor</i> )	Spring peeper ( <i>Pseudacris crucifer</i> )
<b>Aquatic Animals</b>	
Eastern mud-minnow ( <i>Umbra pygmaea</i> )	

Notes:

<sup>a</sup> Species listed in the NYSDEC Breeding Bird Atlas, but not observed

<sup>b</sup> Species observed by Jason Tesauro Consulting, LLC during 2022 bog turtle survey

<sup>c</sup> Species identified by sound, not observed during the 2022 natural resource inventory conducted by Capital Common name (*Scientific name*)

## Threatened, Endangered, and Special Concern Species

The USFWS Information for Planning and Conservation (IPaC) was consulted in August 2021 for federally listed threatened and endangered species within or adjacent to the Study Area (**Appendix J**). The USFWS IPaC identified one threatened mammal, northern long-eared bat (*Myotis septentrionalis*), and one threatened reptile, bog turtle (*Clemmys [Glyptemys] muhlenbergii*). Further correspondence with IPaC identified the now threatened monarch butterfly (*Danaus plexippus*).

Correspondence from the NYS Natural Heritage Program (NHP) was initiated in August 2021 and an evaluation of the Study Area was received in September 2021 for the presence of rare or state-listed species that may be present (**Appendix J**). NHP identified one threatened reptile species, timber rattlesnake (*Crotalus horridus*) within one mile of the Study Area and recommended contact with the NYSDEC Region 3 office.

The NYSDEC Environmental Resource Mapper (ERM) was consulted in August 2021 for the presence of rare, threatened and/or endangered species that may be present within or adjacent to the Study Area (**Appendix J**). The ERM did not identify any specific rare, threatened and/or endangered species

on or adjacent to the Study Area, however, noted that contact with the NYSDEC Regional Office should be initiated.

The NYSDEC EAF was consulted in August 2021 for the presence of threatened or endangered species within or adjacent to the Study Area. The NYSDEC EAF mapper identified one threatened reptile species, the timber rattlesnake.

Consultation with the NYSDEC Region 3 office was initiated in August 2021 and again in February 2022 for specific records of threatened or endangered species within or adjacent to the Study Area, specifically, timber rattlesnake, northern long-eared bat (NLEB), and bog turtle.

### **Northern Long-Eared Bat (*Myotis septentrionalis*)**

The northern long-eared bat was identified as a threatened mammal by USFWS. No northern long-eared bats were observed within the Study Area during NRI field visits.

The northern long-eared bat 4(d) rule prohibits incidental take that may occur from tree removal activities within 150 feet of a known occupied maternity roost tree during the pup season (June 1 to July 31) or within 0.25 miles of a hibernation site, year-round.

NY NHP and NYSDEC Region 3 staff were both consulted regarding occurrences of hibernacula or maternity roosts within or nearby the Study Area. Both the NYSDEC NHP and Region 3 correspondence specified that the Study Area is not within screening distance of any known (to NYSDEC) records of those NLEB.

Further, in accordance with the NYSDEC NLEB self-evaluation, tree removal is the primary action that might harm bats within the Study Area. As such, NYSDEC guidance recommends tree cutting for the project occur during the hibernation season when bats are living underground from November 1<sup>st</sup> - March 31<sup>st</sup>. Should this be feasible the proposed project is unlikely to harm NLEB. Since bats can turn up in almost any forested area, NYSDEC further recommends that any snags be left and cavity trees standing, but this is voluntary. If bats are observed flying from a tree that has been cut, NYSDEC recommends stopping activities immediately and contact the regional DEC office.

Consultation with USFWS was furthered in March 2022 utilizing the IPaC key to assist in determining whether the proposed project is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon the IPaC submission, the Proposed Project is consistent with activities analyzed in the PBO. The Proposed Project may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). The USFWS Determination Key is included in [Appendix J](#).

### **Bog Turtle (*Glyptemys muhlenbergii*)**

The bog turtle was identified as a threatened reptile by USFWS. Bog turtles occur in low-lying, open wetlands bordered by woodlands, particularly calcareous fens, herbaceous sedge meadows, and pastures. Within these wetlands, bog turtles need a variety of micro-habitats for basking, foraging, nesting, shelter, and hibernation including dry pockets, saturated areas, and areas that are subject to flooding.

A Phase I Bog Turtle Survey for potential bog turtle habitat within the Study Area was conducted by Capital and Jason Tesauro, a USFWS Qualified Bog Turtle Surveyor, in August 2021.<sup>14</sup> The site visits identified approximately three acres of potential bog turtle habitat—a mosaic of spring-fed marsh, shrub swamp, and sparse-canopy hardwood swamp—were identified in the western part of the property along Tributary 1, as depicted in **Appendix J1**. No suitable habitat was identified within the remainder of the site.

A Phase II bog turtle survey was conducted at the project site by Jason Tesauro during April and May 2022.<sup>15</sup> Survey methods consisted of walking slowly through the wetland, probing any mucky pools and rivulets for submerged turtles with a wooden probe stick, over-turning thatch and cover for concealed turtles, and visually scanning potential basking areas, refugia, and travel corridors. Over the course of the required four survey dates, no bog turtles or signs of their presence were documented at the Project Site.

### **Monarch Butterfly (*Danaus plexippus*)**

The monarch butterfly was identified as a threatened insect by USFWS. In New York, monarch butterflies are found in open meadows and fields that usually contain a variety of wildflowers including milkweed, coastal beaches with dunes, and man-made butterfly gardens.<sup>16</sup> Common milkweed is a wildflower most commonly utilized by monarch butterflies. Common milkweed contains a toxic compound that once ingested, makes the monarch caterpillar's flesh distasteful to most predators. Additional wildflower species utilized by monarch butterflies include butterfly weed (*Asclepia tuberosa*), smooth oxeye (*Heliopsis helianthoides*), hairy white oldfield aster (*Symphotrichum pilosum*). Wildflower species, inclusive of common milkweed, were observed within the successional old field ecological community,

Monarch butterflies were observed during NRI site visits within the successional old field ecological community.

### **Timber Rattlesnake (*Crotalus horridus*)**

The timber rattlesnake was identified as a threatened reptile by NYSDEC EAF. In New York, timber rattlesnakes are typically associated with steep-slopes and rocky terrain of deciduous or mixed deciduous/coniferous forest. They are, however, known to use and/or move through a wide variety of land types (e.g. wetlands and early successional habitats) during a typical seasonal activity cycle. In areas where movement is not impeded by artificial barriers (e.g. major roads and urban areas) timber rattlesnakes may migrate three miles or more from their den each summer in search of essential summer habitats (e.g. basking and gestating areas), food, and mating partners.<sup>17</sup>

Capital initiated contact with NYSDEC Region 3 staff to inquire as to their knowledge of any known occurrences of the timber rattlesnake within the Study Area. The NYSDEC Region 3 staff noted that while the Study Area is within screening distance of known occurrences of timber rattlesnakes, the site is separated from NYSDEC known records of the species' occurrence by barriers to snake

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<sup>14</sup> Phase I Bog Turtle Survey Data Sheets, prepared by Capital Environmental Consultants, Inc., dated August 12, 2021.

<sup>15</sup> Report on Phase II Bog Turtle Survey Conducted at 25 Mill Road, Borough of Suffern, Rockland County, New York, prepared by Jason Tesauro Consulting, LLC, dated June 26, 2022.

<sup>16</sup> NYSDEC Watchable Wildlife, 2022. Watchable Wildlife: Monarch Butterfly. Available from <https://www.dec.ny.gov/animals/60392.html>. Accessed December 7, 2022.

<sup>17</sup> NYSDEC. Guidelines for Review Projects for Potential Impacts to the Timber Rattlesnake. July 31, 2009.

dispersal, therefore impacts to this species are not likely and no further review from NYSDEC regarding timber rattlesnakes was necessary (**Appendix J2**). No timber rattlesnakes were observed within the Study Area during the NRI field visits.

### **Box Turtle (*Terrapene carolina*)- Species of Special Concern**

During the NRI site visits and Phase II bog turtle survey eastern box turtles, listed as a Species of Special Concern by the NYSDEC, were identified on-site within the western portion of the Project Site within Wetland A (see EIS Chapter III.C – Wetlands Waterbodies and Watercourses for the location of Wetland A). A Species of Special Concern is defined by NYSDEC as “any native species for which a welfare concern or risk of endangerment has been documented in New York State.” The major threats to box turtles appear to be pesticide poisoning and collection as pets. Special Concern species are not afforded any specific protection under State Law and are listed for informational purposes only.

Eastern box turtles are versatile animals and inhabit a wide variety of habitats from wooded swamps to dry, upland, grassy fields. Box turtles are generally terrestrial, using a variety of dry and moist woodlands, but also may use marshy areas; sandy soil is typical of occupied habitats. Box turtles spend most of their time wandering open upland fields and forests, only retreating to shallow pools or wetlands to soak during very hot and dry periods. Box turtles nest in a variety of open habitats including road sides, gardens, lawns, and woodlands. They lay eggs in their nest typically in June, and hatching occurs in September or October. Hatchlings may emerge or remain in the nest during the winter hibernation period. Adult box turtles hibernate for an extended period and are active from May through October. Populations are thought to be declining, although long-term trends in abundance are not widely available. In addition to facing threats of habitat loss, road mortality, and collection for the pet trade, this species is challenged by delayed sexual maturity and high mortality of eggs and young.<sup>18</sup>

## **2. Potential Impacts**

Potential impacts to the Project Site’s ecology and natural resources from the Proposed Project were evaluated. Impacts to the Project Site’s natural resources from the Proposed Project are summarized below.

<u>Natural Resource</u>	<u>Proposed Project</u>
Steep slopes (20%-50%)	3.52
Steep slopes (>50%)	0.37
100-Year floodplain	0.8
Wetlands	0.085
Watercourses/tributaries	0.013
Stormwater pond	2.23

### **Ecological Communities**

Ecological communities that would be directly impacted by the Proposed Project include oak-tulip tree forest, successional old field, mowed lawn, unpaved path, paved road, urban structure exterior,

<sup>18</sup> Species Status Assessment - [https://www.dec.ny.gov/docs/wildlife\\_pdf/sgcnwoodlandboxturtl.pdf](https://www.dec.ny.gov/docs/wildlife_pdf/sgcnwoodlandboxturtl.pdf)

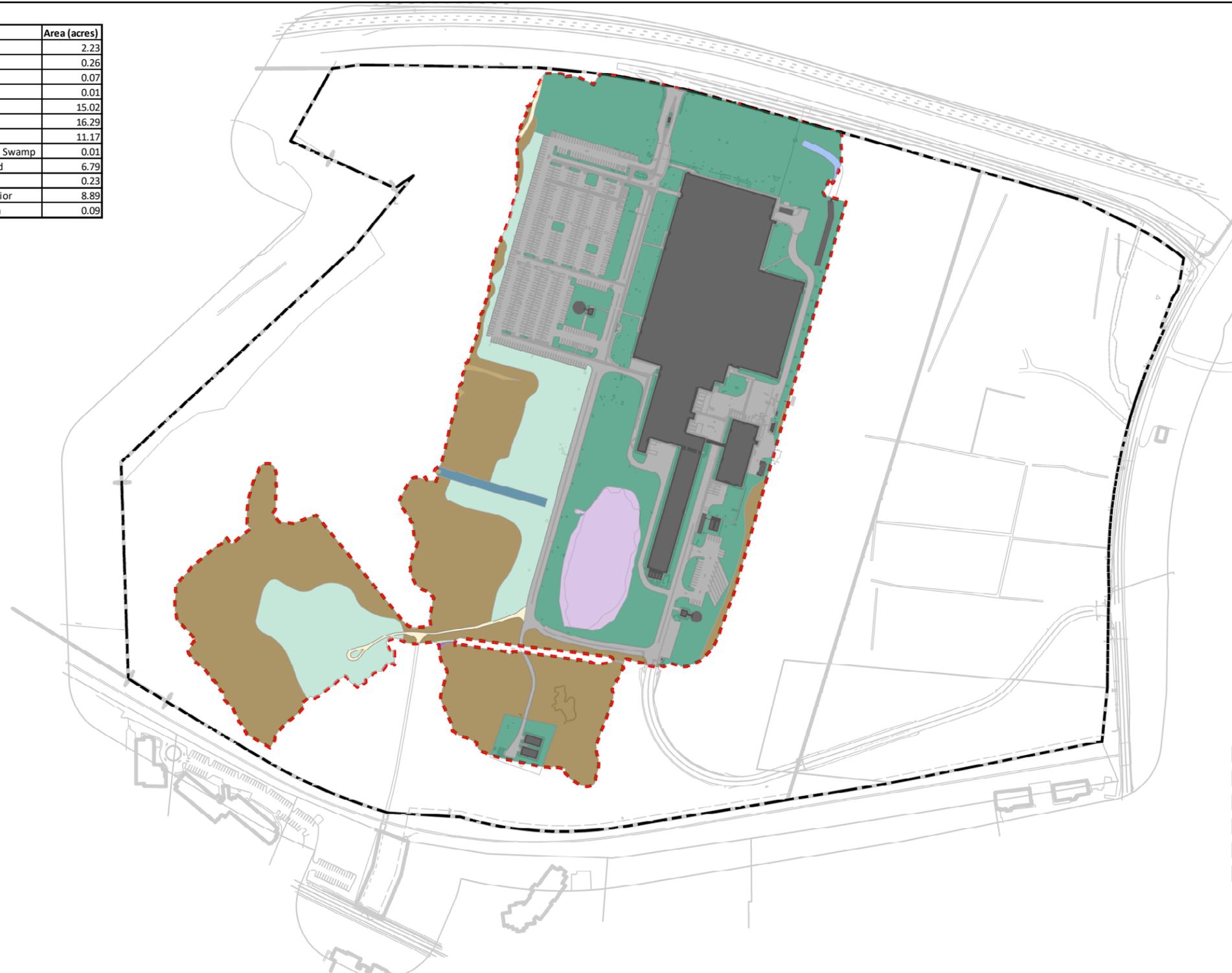
red maple-hardwood swamp, floodplain forest, water recharge basin, intermittent stream, ditch, and artificial pond (see **Figure III.B-3**).

### **With-Action Condition – Ecological Communities**

The Proposed Project includes development that would permanently disturb approximately 60.97 acres (37.8 percent) of the Project Site. Ecological communities that would be directly impacted include oak-tulip tree forest, successional old field, mowed lawn, unpaved path, paved road, urban structure exterior, red maple-hardwood swamp, floodplain forest, water recharge basin, intermittent stream, ditch, and artificial pond (**Figure III.B-5**). The construction of the Proposed Project would result in the following habitat reductions:

- › 16.29 acres of oak-tulip tree forest,
- › 6.79 acres of successional old field,
- › 15.02 acres of mowed lawn,
- › 0.23 acres of unpaved path,
- › 11.17 acres of paved road,
- › 8.89 acres of urban structure exterior,
- › 0.01 acres of red maple-hardwood swamp,
- › 0.07 acres of floodplain forest,
- › 0.09 acres of water recharge basin,
- › 0.01 acres of intermittent stream,
- › 0.26 acres of ditch, and
- › 2.23 acres of artificial pond.

Description	Area (acres)
Artificial Pond	2.23
Ditch	0.26
Floodplain Forest	0.07
Intermittent Stream	0.01
Mowed Lawn	15.02
Oak Tulip Forest	16.29
Paved Roads	11.17
Red Maple Hardwood Swamp	0.01
Successional Old Field	6.79
Unpaved Path	0.23
Urban Structure Exterior	8.89
Water Recharge Basin	0.09



**Legend**

- Project Site Boundary
- Proposed Project Limit of Disurbance

**Ecological Communities**

- Artificial Pond
- Ditch
- Floodplain Forest
- Intermittent Stream
- Mowed Lawn
- Oak Tulip Forest
- Paved Roads
- Red Maple Hardwood Swamp
- Successional Old Field
- Unpaved Path
- Urban Structure Exterior
- Water Recharge Basin



Source: Dynamic Engineering, Drainage Plan, Brookfield Properties Proposed Industrial park at 25 Old Mill Road, 6/20/22

## Vegetation

### Tree Removal

With the Proposed Project, removal of trees exceeding 12 inches in diameter at a height of four feet measured from the ground would be required and thus a Village of Suffern tree removal permit regulations (Chapter 251, Tree Removal, of the Suffern Village Code) would be required for the Proposed Project. The Village of Suffern may grant a permit for the removal, cutting or destruction of trees under any of the following circumstances:

1. If the presence of the tree would cause hardship or would endanger the public or the person or the property of the owner or of an adjoining owner.
2. If the tree is diseased or threatens the health of other trees.
3. If the trees substantially interfere with a permitted use of the property and there is no practical alternative other than removal and the removal of the trees shall be performed in a selective manner.

For any tree removal application involving property for which development is proposed shall be referred to the Village of Suffern Planning Board for its review and recommendation. The Planning Board shall render its recommendation to the Superintendent of the Department of Public Works within 60 days from receipt of such referral. If the Superintendent of the Department of Public Works recommends action contrary to the recommendation of the Planning Board, such permit shall not be issued until approved by the Board of Trustees, which may take whatever action on such application as it deems to be appropriate in furtherance of the public health, safety and welfare of the Village.

The property was field-surveyed to identify all trees with a minimum 12-inch diameter at breast height measured four feet from the ground. The location and size of these trees are represented on the property survey as well as the Existing Conditions Plan within the Preliminary and Final Major Site Plan drawings. Refer to **Figure III.B-4** for locations. The survey was non-invasive as it was strictly field observation and did not result in the disturbance to any existing habitats in the area.

As shown on **Figure III.B-4**, 534 trees, 12 inches in diameter at a height of four feet measured from the ground are located within the Project Site and will be removed as a result of the Proposed Project.

The loss of the on-site forested and unforested uplands would minimally alter the movement of wildlife that may use the Project Site to access the adjacent forested and wetland areas. It may also result in the loss of habitat for those individuals that currently inhabit the Project Site. With the exception of 2.3 acres of proposed freshwater wetland disturbance (man-made stormwater pond), the existing habitat within the freshwater wetlands would remain undisturbed. Significant screening vegetation would remain after construction, especially at critical buffering locations, such as the site's property lines along the western, southern, and eastern boundaries of the Subject Property. These areas would continue to provide resident and local wildlife populations the opportunity to move around the development to access other undisturbed wetland and forest lands in the vicinity of the Proposed Project.

### **Fertilizer, Pesticide, Herbicide, and Fungicide Use**

Fertilizers, pesticides, herbicides, fungicides and other chemicals are not proposed to be used in the proposed naturalized areas of the Project Site, except for very limited and targeted potential use of herbicides to control very aggressive invasive vegetation in accordance with State and Federal laws and by licensed professionals. Before the use of fertilizers, pesticides, herbicides, and fungicides, any identified invasive species will first be targeted for physical removal. Should physical removal not suffice, and the use of fertilizers, pesticides, herbicides, or fungicides be required, the Applicant will consult the appropriate regulating authority. It is not anticipated that the Applicant will need to regularly control invasives, however, as part of adaptive management, the Applicant will consult with any regulatory agencies necessary before controlling invasives with fertilizers, pesticides, herbicides, or fungicides. Further, the potential usage of fertilizers, pesticides, herbicides, fungicides and other chemicals in the Proposed Action portions of the Project Site would also be conducted in accordance with State and Federal laws and by licensed professionals. Fertilizers, pesticides, herbicides, fungicides and other chemicals will target only invasive species and will not impact native vegetation on-site. As such, no significant impacts are expected from the potential use of fertilizer, pesticides, herbicides, fungicides and other chemicals on the Project Site.

### **Stormwater Pollution Prevention Plan—SWPPP**

The Proposed Project would require a NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-20-001) as more than one acre of land would be disturbed. In accordance with NYSDEC SPDES (GP-0-20-001), a Stormwater Pollution Prevention Plan (SWPPP) consisting of both temporary erosion and sediment controls and post-construction stormwater management practices would be prepared.

As such, erosion and sedimentation would be controlled during the construction period by temporary devices in accordance with a construction Erosion and Sediment Control (ESC) plan developed specifically for the Project Site. The erosion and sediment control devices will prevent sediment laden runoff from running off site and/or directly entering the wetlands throughout the duration of the construction activities. Erosion and sedimentation would be controlled during the construction period by temporary devices designed and installed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control.

### **Wildlife**

No significant adverse environmental impacts to wildlife are anticipated. Due to the mix of forest and suburban landscape that borders the site, the overall diversity of wildlife in the area is expected to be average and dominated by generalist species capable of tolerating human contact. Such species include small mammals like gray squirrel, raccoon, opossum, deer mouse, and woodchuck. With the Proposed Project, it is likely that deer would occur less frequently on the site due to the reduction in browsing and the increased human activity. Deer would continue to pass through the forested areas to the west, south, and east. Box turtle habitat is comprised of wetlands and uplands inclusive of both forests and open fields. Although some open field habitat will be lost due to development, box turtles will have ample wetland and upland habitat to utilize throughout the remaining western southern and eastern portions of the project site where woodlands and transitional upland areas consisting of shrubs, flowering perennial plants, and grasses are being preserved as well as planted.

The paved roadways and parking lots, existing building, mowed lawn, and successional old field habitats are of marginal value to wildlife as they are historically disturbed areas of low plant diversity. The oak-tulip tree forest, red maple hardwood swamp, floodplain forest, shallow emergent marsh, and marsh headwater stream habitats on the site are of high value to wildlife, as they are a more diverse plant community and as such, are not to be significantly impacted by the Proposed Project.

In general, as a site is developed and habitat is reduced, some species would relocate to similar habitats off-site. The composition of the wildlife population on the Project Site may be altered immediately adjacent to developed areas, as species able to adapt to a suburban environment (such as raccoons, opossum, woodchucks, mice, songbirds, etc.) would have a greater ecological advantage in comparison to species that are less tolerant of human activity.

An indirect and unavoidable impact of wildlife dispersal could be increased competitive interactions with other individuals of the same species on adjacent properties. It is not anticipated that there would be a loss of species from the area or significant impacts to existing populations.

Wildlife currently use the Project Site to access and travel between undeveloped forested areas to the east and west of the site, but it is not likely a significant wildlife corridor to off-site habitat areas due to the surrounding developed properties, roadways, and railroad.

Therefore, no significant adverse environmental impacts to wildlife are anticipated with the Proposed Project.

## Threatened, Endangered, and Special Concern Species

### Northern Long-Eared Bat (*Myotis septentrionalis*)

No northern long-eared bats were observed within the Study Area during NRI field visits.

NY NHP and NYSDEC Region 3 staff indicated that the Study Area is not within screening distance of any known (to NYSDEC) records of those NLEB.

The USFWS Determination Key was utilized to determine potential impacts to the NLEB and is included in **Appendix J**. As tree cutting is proposed to occur between November 1<sup>st</sup> and March 31<sup>st</sup>, no impacts to the NLEB are anticipated with the Proposed Project.

### Bog Turtle (*Glyptemys muhlenbergii*)

No bog turtles or signs of their presence were documented at the project site during NRI and Phase II surveys, therefore, no impacts to the bog turtle are anticipated with the Proposed Project.

### Monarch Butterfly (*Danaus plexippus*)

Monarch butterflies were observed during NRI site visits. Limited habitat for monarch butterflies exists on site and is limited to successional old field habitat located around the stormwater pond and southwestern portion of the site. Common milkweed, a host plant for the monarch butterfly, has been integrated into the Proposed Project, as described in "Mitigation Measures." Therefore, no impacts to the monarch butterfly are anticipated with the Proposed Project.

### Timber Rattlesnake (*Crotalus horridus*)

Capital initiated contact with NYSDEC Region 3 staff to inquire as to their knowledge of any known occurrences of the timber rattlesnake within the Study Area. The NYSDEC Region 3 staff noted that while the Study Area is within screening distance of known occurrences of timber rattlesnakes, the site is separated from NYSDEC known records of the species' occurrence by barriers to snake dispersal. Therefore, no impacts to the timber rattlesnake are anticipated with the Proposed Project. The relevant correspondence is included in **Appendix J2**.

### Box Turtle (*Terrapene carolina*)- Species of Special Concern

During the NRI site visits and Phase II bog turtle survey eastern box turtles, listed as a Species of Special Concern by the NYSDEC, were identified on-site within the western portion of Wetland A. A Species of Special Concern is defined by NYSDEC as "any native species for which a welfare concern or risk of endangerment has been documented in New York State."

Avoidance of existing mature landscape features, including freshwater wetlands, to the maximum extent possible, has been integrated into the Proposed Project, as described in "Mitigation Measures." Additionally, mitigation areas planted with native species between the proposed development and wetlands has been integrated into the Proposed Project, as described in "Mitigation Measures." These mitigation areas will maintain a natural cover and provide desirable edge habitat for box turtles. Although some open field habitat will be lost due to development, box turtles will have ample wetland and upland habitat to utilize throughout the remaining western southern and eastern portions of the project site where woodlands and transitional upland areas consisting of shrubs, flowering perennial plants, and grasses are being preserved as well as planted. Therefore, no impacts to the box turtle are anticipated with the Proposed Project.

## 3. Mitigation Measures

The Proposed Project has been designed to utilize previously cleared and developed areas and avoid existing mature landscape features, including mature trees and freshwater wetlands, to the maximum extent possible. The limit of disturbance, as depicted on **Figure III.B-5**, With-Action Conditions – Ecological Communities, represents the limit of all clearing and grading activities associated with the Proposed Project. The limit of disturbance will be clearly demarcated in the field prior to any site disturbance.

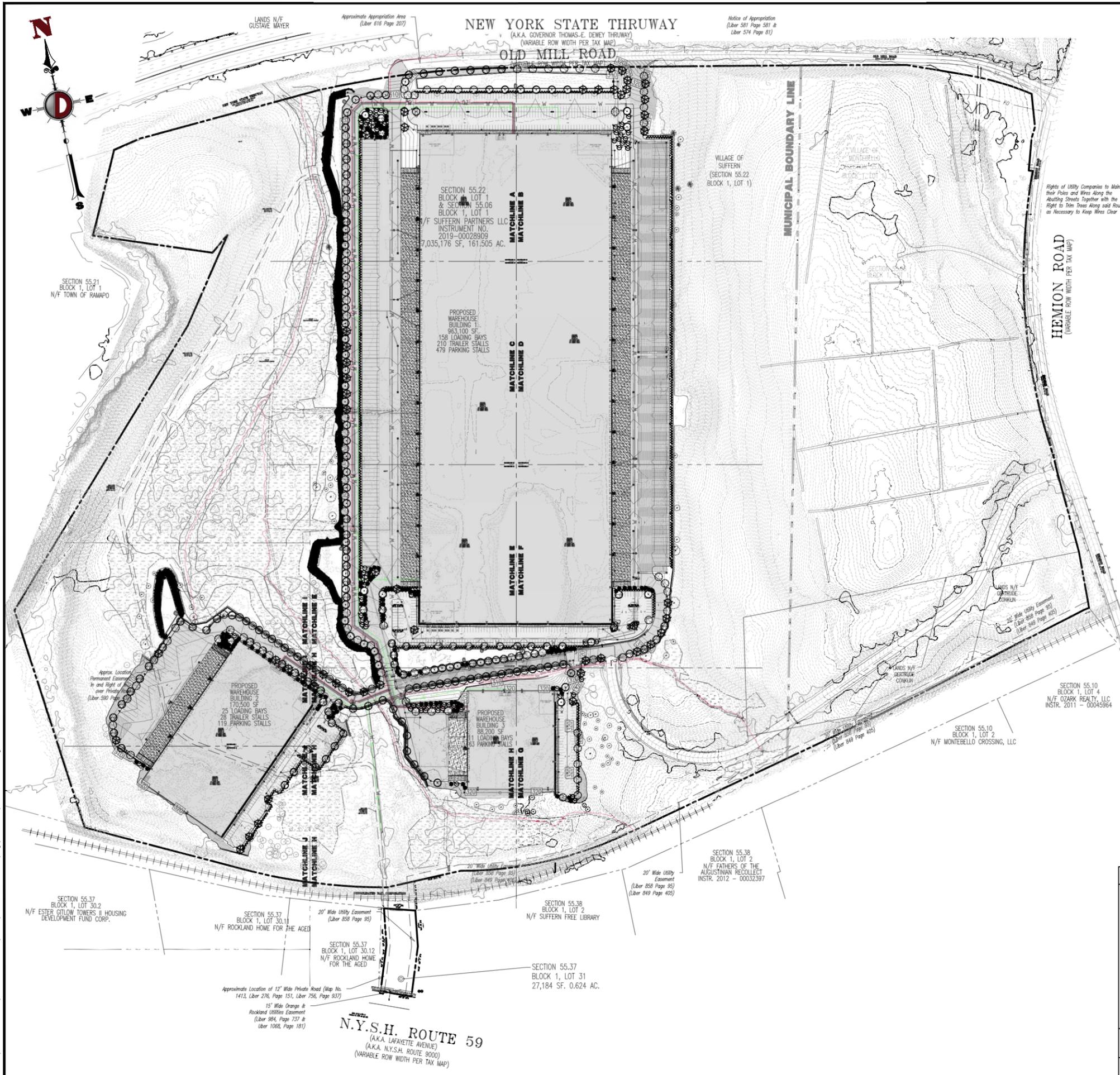
## Vegetation

### Landscaping Plan

**Figure III.B-6**, Landscaping Plan, depicts the landscape plan for the Project Site showing proposed tree and shrub planting areas, as well as their design intent and function. Landscaping Plans are also provided in **Appendix C, sheets 60 through 71**. These species and their intent are summarized in **Table III.B-3**. Tree and shrub species of plants native to New York have been selected to the extent practicable for landscaping, soil stabilization, and stormwater mitigation features. Additional factors for plant selection included plant adaptability to local climatic conditions, including temperature,

precipitation, and length of the growing season. Many native species selected for planting may also be beneficial to indigenous wildlife, especially birds, by providing wildlife benefits such as nesting, cover, and food. Typical plantings that may be chosen for their hardiness to the local climate and to the proposed settings on the site include native or regionally adaptable landscaping species.

Figure III.B-6: Overall Landscape Plan



# LANDSCAPE SCHEDULE

## SHADE TREES

- AR (ACER RUBRUM, RED MAPLE) - 51
- AS (ACER SACCHARUM, SUGAR MAPLE) - 70
- LT (LIRIODENDRON TULIPIFERA, TULIP POPLAR) - 88
- QA (QUERCUS ALBA, WHITE OAK) - 107

## ORNAMENTAL TREES

- CF (CORNUS FLORIDA, WHITE FLOWERING DOGWOOD) - 64

## EVERGREEN TREES

- CLY (CUPRESSOCYPARIS LEYLANDII, LEYLAND CYPRESS) - 154

## EVERGREEN SHRUBS

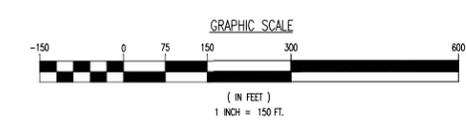
- IG (ILEX GLABRA, INKBERRY HOLLY) - 501

## DECIDUOUS SHRUBS

- LB (LINDERA BENZOIN, SPICEBUSH) - 815
- VD (VIBURNUM DENTATUM, ARROWWOOD VIBURNUM) - 630
- VP (VIBURNUM PRUNIFOLIUM, BLACKHAW) - 278

## ORNAMENTAL GRASSES

- PV (PANICUM VIRGATUM, SWITCHGRASS) - 1357
- SS (SCHIZACHYRIUM SCOPARIUM, LITTLE BLUE STEM) - 1401
- AS (ASCLEPIAS SYRIACA, COMMON MILKWEED) - 1377



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TITLE: **OVERALL LANDSCAPE PLAN**

PROJECT: **IV2 ROCKLAND LOGISTICS, LLC  
PROPOSED INDUSTRIAL PARK AT 25 OLD MILL ROAD**  
SECTION 55.22 BLOCK 1, LOT 1; SECTION 55.37, BLOCK 1, LOT 31  
OLD MILL ROAD AND HEMION ROAD (CR 93)  
VILLAGE OF SUFFERN, ROCKLAND COUNTY, NEW YORK

JOB No: 3709-99-004 DATE: 12/17/2021  
DRAWN BY: CAM SCALE: (H) 1"=150'  
DESIGNED BY: JMS SHEET No: **60**  
CHECKED BY: JMS OF 100  
CHECKED BY: -

**JOHN A. PALUS** PROFESSIONAL ENGINEER  
NEW YORK LICENSE No. 087502

**JOSHUA M. SEWALD** PROFESSIONAL ENGINEER  
NEW YORK LICENSE No. 097639

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 File: P:\NEPC PROJECTS\1709 Broadfield Properties\99-004 Suffern NY\Map\Site Plans\0370999004SL3.dwg. ---> 00 OVERALL LANDSCAPE PLAN

**Table III.B-3 Landscaping Schedule**

Type/Species		Quantity	Size
Common Name	Scientific Name		
<b>Shade Trees</b>			
Red maple	<i>Acer rubrum</i>	51	2.5-3" caliper
Japanese Katsura tree	<i>Cercidiphyllum japonicum</i>	70	2.5-3" caliper
Tulip poplar	<i>Liriodendron tulipifera</i>	88	2.5-3" caliper
Sawtooth oak	<i>Quercus acutissima</i>	107	2.5-3" caliper
<b>Total</b>		<b>316</b>	
<b>Ornamental trees</b>			
Stellar pink dogwood	<i>Cornus rutgan</i>	64	2-2.5" caliper
<b>Total</b>		<b>64</b>	
<b>Evergreen trees</b>			
Leyland cypress	<i>Cupressocyparis leylandii</i>	154	6-7' tall
<b>Total</b>		<b>154</b>	
<b>Total Trees to be planted</b>		<b>534</b>	

With the Proposed Project there would be substantial tree plantings that would provide a variety of foraging, nesting, and shelter benefits for the wildlife throughout the residential development. Trees that are planted would mature in the long-term and would provide roosting and nesting opportunities for birds that are adaptable to urban conditions.

In addition to their value as hardy plantings, some of the native plant species are berry and seed-bearing trees and shrubs that would offer songbirds and mammals seasonal food sources incidental to their use as landscape plantings. In addition to providing food sources, native plantings provide good nesting habitat for many birds and arboreal mammals.

The proper bedding and positioning of plantings is important, as each of the species used would not thrive in all of the soils or exposures presented by the developed site. Particular plant requirements regarding planting, soil, water, and sun/shade preferences would be used in determining final plant positioning.

Any invasive plant species identified within the landscape area will be targeted for removal using physical and if necessary, approved chemical management. Fertilizers, pesticides, herbicides, fungicides and other chemicals are not proposed to be used in the landscape area of the Project Site, except for very limited and targeted potential use of herbicides to control very aggressive invasive vegetation in accordance with State and Federal laws and by licensed professionals. Before the use of fertilizers, pesticides, herbicides, and fungicides, any identified invasive species will be first be targeted for physical removal. Should physical removal not suffice, and the use of fertilizers, pesticides, herbicides, or fungicides be required, the Applicant will consult the appropriate regulating authority. It is not anticipated that the Applicant will need to regularly control invasives, however, as part of adaptive management, the Applicant will consult with any regulatory agencies necessary before controlling invasives with fertilizers, pesticides, herbicides, or fungicides. Further, the potential usage of fertilizer, pesticides, herbicides, fungicides and other chemicals in the

Proposed Action portions of the Project Site would also be conducted in accordance with State and Federal laws and by licensed professionals.

Consultation and subsequent approval from NYSDEC and USACE personnel will take place prior to the initiation of any chemical controls that may be required to control the spread of any invasive species.

Significant screening vegetation would remain after construction, especially at critical buffering locations, such as the site's property lines along the western, southern, and eastern boundaries of the Subject Property. These areas would serve to reduce impacts on neighboring properties and area roadways. Additional buffer screening vegetation is proposed along the entirety of the limit of disturbance resulting from the Proposed Project, as depicted on **Figure III.B-6**. These plantings would serve to reduce impacts to the on-site wetlands and preserved areas within the eastern, western and southern portions of the Project Site. Additional buffer screening vegetation is proposed within the northern, southern, and western portions of the project site, as discussed in Chapter III.C Wetlands Waterbodies and Watercourses. These plantings will further reduce impacts to on-site wetlands and existing preserved areas. Therefore, the buffer screening vegetation to remain after construction and the proposed landscaping and mitigation plantings would serve to reduce impacts to neighboring properties and existing preserved areas, inclusive of on-site wetlands.

#### *Proposed Measures to Protect Trees to Remain*

No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. Tree protection measures would include tree protection fencing. Tree protection details are shown in **Appendix C, sheet 95**. This would include delineating limits of disturbance, limiting equipment operation and pruning, and irrigating, as necessary. Additionally, trees near working areas may be wrapped at the base by snow fencing to avoid accidental damage to trunks and roots. Snow fencing or other highly visible means of marking should be placed around the maximum area of the root system to prevent the destruction of roots by exposure or through the compaction of soils. Construction crews would be notified to exclude all equipment from these protected areas. If necessary, trees would be protected by tree wells in fill areas and retaining walls in cut areas.

Therefore, the loss of the oak-tulip tree forest, successional old field, mowed lawn, unpaved path, paved road, urban structure exterior, red maple-hardwood swamp, floodplain forest, water recharge basin, intermittent stream, ditch, and artificial pond ecological communities and associated trees anticipated with the Proposed Project would not result in a significant adverse impact to this community type.

### **Monarch Butterfly (*Danaus plexippus*)**

Grasses and herbaceous species will be planted along the slope of the Proposed Project adjacent to Wetland A as depicted on **Figure III.C-2** in Chapter III.C Wetlands Waterbodies and Watercourses. Species to be planted include switchgrass (*Panicum virgatum*), little blue stem (*Schizachyrium scoparium*), and common milkweed (*Asclepias syriaca*). This area will be seeded at a density of 0.5 lbs./1,000 sf. Switchgrass provides excellent nesting and cover as it holds up even in heavy snow.

Additionally, the seed provides food for many avian species.<sup>19</sup> Little bluestem is one of the best grasses for nesting and roosting habitat. The clump type of growth habit and many fine leaves at the base provide excellent nesting sites. The seeds are consumed by small mammals and birds, including upland game birds, rosy finches and juncos, as well as chipping, field, and tree sparrows. The seeds are of high value especially as a food source for birds that spend the winter on grasslands.<sup>20</sup> Chemicals from the milkweed plant make the monarch caterpillar's flesh distasteful to most predators. Monarch butterflies are specific to milkweed plants; this is the only type of plant on which the eggs are laid, and the larvae will feed and matures into a chrysalis. Eggs are laid on the underside of young, healthy leaves.<sup>21</sup> The potential loss of habitat for the monarch butterfly will be compensated by the proposed mitigation scheme.

Therefore, the limited loss of the successional old field habitat anticipated with the Proposed Project would not result in a significant adverse impact to the monarch butterfly.

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<sup>19</sup> [https://www.nrcs.usda.gov/Internet/FSE\\_PLANTMATERIALS/publications/gapmcf10202.pdf](https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/gapmcf10202.pdf)

<sup>20</sup> [https://www.nrcs.usda.gov/Internet/FSE\\_PLANTMATERIALS/publications/ndpmcpg11794.pdf](https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/ndpmcpg11794.pdf)

<sup>21</sup> [https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg\\_assy.pdf](https://plants.usda.gov/DocumentLibrary/plantguide/pdf/pg_assy.pdf)