

## Appendix II-E2

Habitat Suitability Assessment Report – Larrabee Study Area

May 2024

# Habitat Suitability Assessment Report

Atlantic Shores Offshore Wind – Larrabee Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall,  
and Township of Howell, Monmouth County, New Jersey

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## ACRONYM LIST

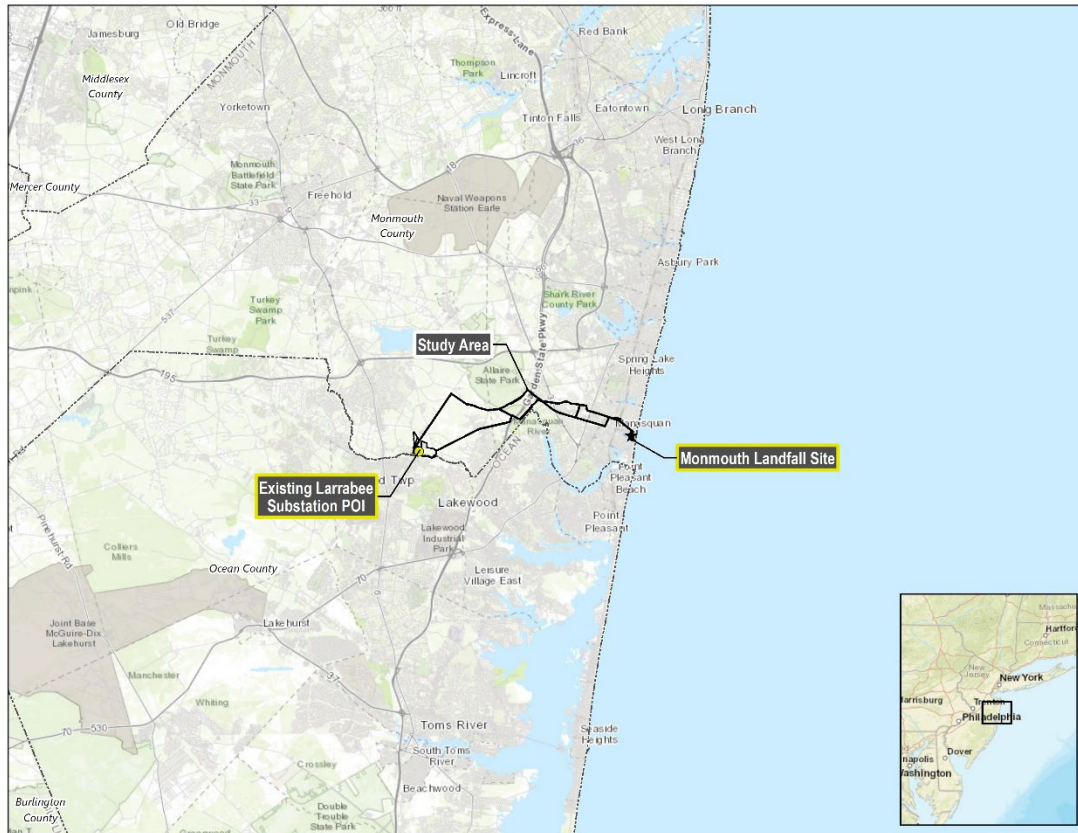
Atlantic Shores	Atlantic Shores Offshore Wind, LLC
BCC	Bird of Conservation Concern
BS	Breeding Sighting
DFW	Division of Fish & Wildlife
E	Endangered
EDR	Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C.
ESA	Endangered Species Act
F	Foraging
IPaC	Information for Planning and Consultation
JCP&L	Jersey Central Power & Light Company
N	Nesting
NBS	Non-Breeding Sighting
NC	Nesting Colony
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation
NOAA	National Oceanic & Atmospheric Administration
OH	Occupied Habitat
Point of Interconnection	POI
ROW	Right-of-Way
SP	Special Concern
T	Threatened
USFWS	United States Fish & Wildlife Service
VPB	Vernal Pool Breeding

## 1.0 INTRODUCTION

Atlantic Shores Offshore Wind, LLC (Atlantic Shores) is a 50/50 joint venture between EDF-RE Offshore Development, LLC (a wholly owned subsidiary of EDF Renewables, Inc. [EDF Renewables]) and Shell New Energies US LLC (Shell). Atlantic Shores is developing a Construction and Operations Plan (COP) for submittal to the Bureau of Ocean Energy Management for two offshore wind energy generation projects within the southern portion of Lease Area OCS-A 0499 (the Lease Area) off the coast of New Jersey with onshore interconnections in two areas of New Jersey.

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR), was contracted by Atlantic Shores to conduct a wildlife habitat suitability assessment (including habitat for federal- and state-threatened and endangered species) associated with the onshore infrastructure necessary to support the Projects' interconnection to the existing Larrabee Substation located in Howell Township, New Jersey. The wildlife habitat suitability assessment area (herein referred to as the Larrabee Study Area) includes the proposed onshore interconnection route rights-of-ways (ROWs) from the Monmouth Landfall in the Borough of Sea Girt, New Jersey to the Larrabee point of interconnection (POI) (Exhibit 1 and Figure 1). The POI parcel is largely developed, containing cleared/developed land, graveled parking lots, substation equipment, access roads, laydown areas, and transmission/distribution lines. General land use within the Larrabee Study Area consists of transportation (New Jersey Department of Transportation [NJDOT] and Monmouth County roadways), public utilities such as Jersey Central Power & Light Company (JCP&L) power line ROWs, a pedestrian bike path, and commercial/industrial/residential development.

Exhibit 1: Larrabee Study Area Location Map (not drawn to scale)



## 1.1 Regulatory Framework

The Endangered Species Act (ESA) was passed in 1973, with the purpose of protecting and recovering imperiled species and the ecosystems upon which they depend. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) administer the ESA. The USFWS has primary responsibility over terrestrial and freshwater organisms, and the NMFS oversees marine wildlife such as whales and anadromous fishes. The ESA allows a species to be listed as endangered or threatened and includes subspecies, varieties, and/or distinct population segments. An “endangered” species is in danger of extinction throughout a significant portion or all of its range. A “threatened” species is marked as likely to become endangered in the foreseeable future (USFWS 2020).

The Migratory Bird Treaty Act was passed in 1918 and prohibits the take, including killing, capturing, selling, trading, and transporting of protected migratory bird species without prior authorization by the USFWS. A migratory bird species is included on the list if it meets one or more of the following criteria (USFWS 2020c):

1. It occurs in the United States or U.S. territories as the result of natural biological or ecological processes and is currently, or was previously listed as, a species or part of a family, protected by one of the four international treaties or their amendments.



2. Revised taxonomy results in it being newly split from a species that was previously on the list, and the new species occurs in the United States or U.S. territories as the result of natural biological or ecological processes.
3. New evidence exists for its natural occurrence in the United States or U.S. territories resulting from natural distributional changes and the species occurs in a protected family.

New Jersey's assumption of the Clean Water Act's regulatory authority allows the USFWS to play a more formal role in the review of permit applications requested under the New Jersey Wetlands Protection Act (State of New Jersey 2019). The USFWS is authorized through the federal ESA of 1973 to regulate activities that may result in the "take" of federal-listed threatened or endangered species. Together, the New Jersey Department of Environmental Protection (NJDEP) Division of Fish and Wildlife (DFW) and USFWS develop guidance on how to minimize or mitigate impacts when a project is regulated under the Waterfront Development Act, the Coastal Area Facility Review Act, or the flood Hazard Protection Act and have the potential to adversely affect any federally listed species (State of New Jersey 2019). In addition, the New Jersey Endangered and Nongame Species Conservation Act of 1973 (N.J.S.A. 23:2A et. seq.) details a list of wildlife species determined by the state as threatened and endangered protecting designated species from impacts such as harassing, hunting, capturing, killing, or attempting to kill.

## 1.2 Purpose

The purpose of this report is to provide a summary of the type of habitat observed within the Larrabee Study Area including potential vernal pool habitat and provide an assessment of the suitability of the habitat to support wildlife species, particularly threatened and endangered species.

## 2.0 AGENCY CONSULTATION AND PUBLIC RECORDS REVIEW

EDR consulted the USFWS Information for Planning and Consultation (IPaC) online system to determine the documented presence of threatened and endangered species protected by Section 7 of the ESA under their jurisdiction. EDR also used NJDEP's Pinelands, Piedmont Plains and Atlantic Coastal Landscape Project to determine the documented occurrence of state (and federal) listed species and their approximate locations. In addition, EDR requested information regarding state threatened and endangered species and habitats through the NJDEP Natural Heritage Program (NHP) to confirm the results of the Landscape Project review. The results of the IPaC, NJDEP Landscape Project review, and NHP database searches are provided in Appendix B and are summarized in Subsections 2.1, and 2.2 respectively. Typical habitat descriptions mapped within the Larrabee Study Area are provide in Subsection 2.3.

### 2.1 USFWS Information for Planning and Consultation

The USFWS IPaC identified six species within the Larrabee Study Area that are classified as threatened. The species identified were: one mammal: the northern long-eared bat (*Myotis septentrionalis*); two birds: the Piping Plover (*Charadrius melodus*), and Red Knot (*Calidris canutus rufa*); one reptile: the bog turtle (*Clemmys muhlenbergii*); and two plants: , seabeach amaranth (*Amaranthus pumilus*), and swamp pink (*Helonias bullata*). The USFWS IPaC also identified one species (a plant) within the Larrabee Study Area that is classified as Endangered: American chaffseed (*Shcwalbea americana*); one species (a mammal) classified

as Proposed Endangered: the tricolor bat (*Perimyotis subflavus*), and one Candidate species (an insect): Monarch Butterfly (*Danaus plexippus*). No critical habitat for the above species was designated within the Larrabee Study Area. Typical habitat for each species is summarized in Table 1. The USFWS identified mapped habitat for the bog turtle and swamp pink within and adjacent to the Larrabee Study Area. Field investigations were conducted within these areas to evaluate the suitability of the habitat to support bog turtle swamp and pink habitat. Summary memorandums were prepared describing the species, typical habitat, onsite observations and a determination of habitat suitability and presented in Appendix D and Appendix E, respectively.

Table 1. Results of IPaC Review – ESA Species

Species	Common Name	Status <sup>1</sup>	Typical Habitat	Critical Habitat in Larrabee Study Area
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	T	<p><b>Summer Habitat:</b> roost underneath bark, in cavities or in crevices of both live and dead trees. May also roost in caves and mines</p> <p><b>Winter:</b> hibernate in caves and mines with large passages, large entrances, constant temperature and high humidity</p> <p><b>Feeding:</b> understory of forested hillsides and ridges (USFWS 2020a)</p>	No
<i>Perimyotis subflavus</i>	Tricolored Bat	PT	<p><b>Foraging:</b> most foraging occurs in mature stands of trees or buffer zones along perennial streams. Generally riparian areas are ideal for foraging.</p> <p><b>Maternity/Summer Roost:</b> mainly in dead or live tree foliage. Rock crevices, caves and mines are also used for resting places. Maternity roosts can also be found in man-made structures such as buildings and bridges.</p> <p>Hibernation: caves, mines or cave-like tunnels. (NatureServe 2023)</p>	No

Species	Common Name	Status <sup>1</sup>	Typical Habitat	Critical Habitat in Larrabee Study Area
<i>Charadrius melodus</i>	Piping Plover	T	<b>Breeding and Nesting Habitat:</b> beaches, nest sites are simple depressions or scrapes in the sand about 6 to 8 cm in diameter. Arrive from March-May and migrate as late as mid-August to southern wintering habitat. (NatureServe 2020b)	No
<i>Calidris canutus rufa</i>	Red Knot	T	<b>Migratory Habitat:</b> stopover areas, generally along the coast, that have an abundance of food; such as small crabs, mussels, snails, crustaceans, marine worms, and horseshoe crab eggs. Migration is timed to coincide with the spawning season of horseshoe crabs (USFWS 2022)	No
<i>Clemmys muhlenbergii</i>	Bog Turtle	T	<b>Habitat:</b> wet grassy areas, mossy bogs, and herbaceous meadows that have unpolluted, clear spring-fed streams that flow throughout the year. Open areas are required for basking and nesting (CWF 2020c)	No
<i>Donaus plexippus</i>	Monarch Butterfly	C	<b>Breeding Habitat:</b> eggs are laid on the obligate milkweed host plant, after larvae emerge, they feed on the milkweed plants before pupating into a chrysalis. Butterflies emerge and the process is repeated until adults migrate to warmer areas to overwinter (USFWS 2022a)	No

Species	Common Name	Status <sup>1</sup>	Typical Habitat	Critical Habitat in Larrabee Study Area
<i>Shcwalbea americana</i>	American Chaffseed	E	<b>Habitat:</b> sandy (sandy peat or sandy loam), acidic, seasonally moist to dry soils. It is generally found in habitats described as open, moist pine flatwoods, fire-maintained savannas, ecotonal areas between peaty wetlands and xeric sandy soils, and other open grass-sedge systems (Buchanan and Finnegan 2010)	No
<i>Amaranthus pumilus</i>	Seabeach Amaranth	T	<b>Habitat:</b> occurs on barrier islands, usually on coastal overwash flats at the accreting ends of the islands and lower foredunes and on ocean beaches above mean high tide. Prefers areas that are not well vegetated (NatureServe 2020)	No
<i>Helonias bullata</i>	Swamp Pink	T	<b>Habitat:</b> swampy forested wetlands bordering meandering streams; headwater wetlands; sphagnous hummocky, dense, Atlantic white cedar swamps; blue ridge swamps; meadows; bogs and spring seepage areas. In conjunction with these areas the species also requires a permanently saturated, but not inundated, by floodwaters. There must be a water table near the surface that fluctuates slightly during spring and summer months. Prefers areas with 20-100% canopy cover (USFWS 2020b)	No

<sup>1</sup>: Federal Conservation Status: C = Candidate, T = Threatened, E = Endangered, PE = Proposed Endangered

The IPaC review also provides a list of migratory bird species that are protected under one or more of the following:

1. The Migratory Bird Treaty Act of 1918
2. The Bald and Golden Eagle Protection Act of 1940
3. 50 Code of Federal Regulations Sec. 10.12 and 16 United States Code Sec 668(a).

Activities that will impact migratory birds, eagles, or their critical habitats should follow the applicable regulations and consider applying conservation measures according to the USFWS guidance. Table 2 summarizes migratory bird and eagle species that have mapped habitat within the Larrabee Study Area.

**Table 2. Results of IPaC Review – Migratory Bird Species**

<b>Species</b>	<b>Common Name</b>	<b>Status</b>	<b>Breeding Season</b>
<i>Haematopus palliatus</i>	American Oystercatcher	Bird of Conservation Concern (BCC)	Apr 15 to Aug 31
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not a BCC	Oct 15 to Aug 31
<i>Melanitta nigra</i>	Black Scoter	Not a BCC	Breeds elsewhere
<i>Rynchops niger</i>	Black Skimmer	BCC	May 20 to Sep 15
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo	BCC	May 15 to Oct 10
<i>Rissa tridactyla</i>	Black-legged Kittiwake	Not a BCC	Breeds elsewhere
<i>Vermivora pinus</i>	Blue-winged Warbler	BCC	May 1 to June 30
<i>Dolichonyx oryzivorus</i>	Bobolink	BCC	May 20 to Jul 31
<i>Pelecanus occidentalis</i>	Brown Pelican	Not a BCC	Jan 15 to Sep 30
<i>Cardellina canadensis</i>	Canada Warbler	BCC	May 20 to Aug 10
<i>Dendroica cerulea</i>	Cerulean Warbler	BCC	Apr 29 to Jul 20
<i>Chaetura pelagica</i>	Chimney Swift	BCC	Mar 15 to Aug 25
<i>Somateria mollissima</i>	Common Eider	Not a BCC	Jun 1 to Sep 30
<i>Gavia immer</i>	Common Loon	Not a BCC	Apr 15 to Oct 31
<i>Uria aalge</i>	Common Murre	Not a BCC	Apr 15 to Aug 15
<i>Calonectris diomedea</i>	Cory's Shearwater	Not a BCC	Breeds elsewhere
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	Not a BCC	Apr 20 to Aug 31
<i>Alle alle</i>	Dovekie	Not a BCC	Breeds elsewhere
<i>Antrostomus vociferus</i>	Eastern Whip-poor-will	BCC	May 1 to Aug 20
<i>Puffinus gravis</i>	Great Shearwater	Not a BCC	Breeds Elsewhere
<i>Gelochelidon nilotica</i>	Gull-billed Tern	BCC	May 1 to Jul 31
<i>Limosa haemastica</i>	Hudsonian Godwit	BCC	Breeds elsewhere
<i>Oporornis formosus</i>	Kentucky Warbler	BCC	Apr 20 to Aug 20
<i>Tringa flavipes</i>	Lesser Yellowlegs	BCC	Breeds elsewhere
<i>Asio otus</i>	Long-eared Owl	BCC	Breeds elsewhere
<i>Clangula hyemalis</i>	Long-tailed Duck	Not a BCC	Breeds elsewhere
<i>Dendroica discolor</i>	Prairie Warbler	BCC	May 1 to Jul 31
<i>Protonotaria citrea</i>	Prothonotary Warbler	BCC	Apr 1 to Jul 31
<i>Calidris maritima</i>	Purple Sandpiper	BCC	Breeds elsewhere
<i>Alca torda</i>	Razorbill	Not a BCC	Jun 15 to Sep 10
<i>Mergus serrator</i>	Red-breasted Merganser	Not a BCC	Breeds elsewhere
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	BCC	May 10 to Sep 10
<i>Phalaropus lobatus</i>	Red-necked Phalarope	Not a BCC	Breeds elsewhere
<i>Gavia stellata</i>	Red-throated Loon	BCC	Breeds elsewhere
<i>Larus delawarensis</i>	Ring-billed Gull	Not a BCC	Breeds elsewhere
<i>Sterna dougallii</i>	Roseate Tern	Not a BCC	May 10 to Aug 31



<b>Species</b>	<b>Common Name</b>	<b>Status</b>	<b>Breeding Season</b>
<i>Thalasseus maximus</i>	Royal Tern	Not a BCC	Apr 15 to Aug 31
<i>Arenaria interpres morinella</i>	Ruddy Turnstone	BCC	Breeds elsewhere
<i>Euphagus carolinus</i>	Rusty Blackbird	BCC	Breeds elsewhere
<i>Limnodromus griseus</i>	Short-billed Dowitcher	BCC	Breeds elsewhere
<i>Melanitta perspicillata</i>	Surf Scoter	Not a BCC	Breeds elsewhere
<i>Uria lomvia</i>	Thick-billed Murre	Not a BCC	Apr 15 to Aug 15
<i>Melanitta fusca</i>	White-winged Scoter	Not a BCC	Breeds elsewhere
<i>Tringa semipalmata</i>	Willet	BCC	Apr 20 to Aug 5
<i>Oceanites oceanicus</i>	Wilson's Storm-petrel	Not a BCC	Breeds elsewhere
<i>Hylocichla mustelina</i>	Wood Thrush	BCC	May 10 to Aug 31

## 2.2 NJDEP Landscape Project and NJDEP Natural Heritage Program

The New Jersey Landscape Project was developed to guide strategic wildlife habitat conservation. It is an ecosystem-level approach with the goal of long-term protection for imperiled species and their important habitats within New Jersey (NJDFW 2018). Habitat is ranked 1 through 5 based on the Landscape Project criteria:

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

Records of federally listed species occur within some Rank 4 and Rank 5 sections. For specific ESA species documented within the Larrabee Study Area, a request for information from USFWS would initially be required through the IPaC online tool (Section 2.1); however, many federal-listed species are also state-listed species. The review of the NJ Landscape Project is a publicly available database that provides specific species of NJ Conservation focus that have been documented within specific, mapped habitats. The Natural Heritage Database is a continuously updated inventory of rare plants and animal species and representative ecological communities in New Jersey. It is the state's most comprehensive, centralized source of information on rare plants, animals, and natural communities. (NJDEP 2020). A consultation request was submitted to NJDEP NHP to provide information on the presence of threatened and endangered species within the Larrabee Study Area.

The review of the NJ Landscape Project and the NHP response provided a species list of NJ Conservation focus that have been documented within mapped habitats. Species that are documented within the Larrabee Study Area are listed in Table 3 and the NHP response is presented in Appendix B.

Table 3. Results of NJDEP Landscape Project (Atlantic Coastal, Piedmont Plains and Pinelands) and NHP

Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Falco sparverius</i>	American Kestrel	T	<b>General:</b> open, grassy habitats. Preferably areas that also offer cavities for nesting and perches for hunting (CWF 2011).	BS, NBS
<i>Haematopus palliatus</i>	American Oystercatcher	SC	<b>Nesting:</b> mainly back-bay areas, especially near inlets; with smaller populations nesting on barrier beach strands (CWF 2021).	NA
<i>Dermochelys coriacea</i>	Atlantic Leatherback	E	<b>Overall Habitat:</b> U.S. waters in the Northwest Atlantic, West Pacific, and East Pacific. In the U.S., the majority of nesting occurs in Florida, Puerto Rico, and the U.S. Virgin Islands (NOAA 2024a).	OH
<i>Haliaeetus leucocephalus</i>	Bald Eagle	E	<b>General:</b> usually found in areas close to open water. <b>Nesting:</b> area that is safe from human disturbance, usually in a tree (CFW 2020a).	F
<i>Strix varia</i>	Barred Owl	T	<b>General:</b> dense woodland and forests, swamps, wooded river valleys, frequently in areas bordering streams, marshes and meadows. Also commonly found in upland areas. Preference is given to areas large mature forests with trees that provide suitable nesting cavities and that contain an open understory (NatureServe 2020j).	BS
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron	T	<b>Feeding:</b> along the edges of ponds or creeks and in marshes. <b>Nesting and Roosting:</b> forests, scrub/shrub, marshes and ponds that provide cover. Open areas are avoided. Tend to nest in similar areas along with other species in areas with low vegetation (CWF 2020b).	F

Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Glyptemys muhlenbergii</i>	Bog Turtle	E	<b>General:</b> wet grassy areas, mossy bogs, and herbaceous meadows that have unpolluted, clear spring-fed streams that flow throughout the year. Open areas are required for basking and nesting (CWF 2020c).	OH
<i>Toxostoma rufum</i>	Brown Thrasher	SC	<b>General:</b> dense thickets and shrub areas in deciduous forest clearings as well as along forest edges and thorn-scrub habitat (CWF 2011a).	BS
<i>Hydroprogne caspia</i>	Caspian Tern	SC	<b>Foraging:</b> Fresh and salt water, favoring protected waters such as bays, lagoons, rivers, lakes; not usually foraging over open sea. Inland, more likely on large lakes than on small ponds (Audobon 2024a).	F
<i>Metarranthis pilosaria</i>	Coastal Bog Metarranthis	SC	<b>General:</b> conifer swamps, dwarf shrublands, and wet grasslands dominated by pitch pine (TNC 2021).	N/A
<i>Sterna hirundo</i>	Common Tern	SC	<b>Foraging:</b> Wide range of aquatic habitats in summer, both coastal and inland waters in low-lying, open country, where shallow waters for fishing are close to undisturbed flat islands or beaches for nesting (Audobon 2024b).	F

Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Accipiter cooperii</i>	Coopers Hawk	SC	<b>Nesting:</b> nest in coniferous, deciduous, mixed riparian, and wetland forests. Nests are usually within a forest that provides a closed canopy and a moderate to thick shrub understory. Preference is given to areas adjacent to habitat with some open space (roadways or rivers) for hunting opportunities. Winter: winter habitat is similar to nesting but can also include residential areas where songbirds and other prey are readily available (CWF 2012).	BS
<i>Terrapene carolina carolina</i>	Eastern Box Turtle	SC	<b>General:</b> open woodlands and meadows, residential backyards in suburban or rural areas. Generally located within close proximity to freshwater (CWF 2020d).	OH
<i>Balaenoptera physalus</i>	Fin Whale	E	<b>General:</b> Typically found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes. They are less common in the tropics (NOAA 2024b).	NBS
<i>Anaxyrus fowleri</i>	Fowler's Toad	SC	<b>General:</b> open woodlands, sandy prairies, meadows, and beaches. During the cold months or extreme hot and dry periods they burrow underground (CWF 2021a).	OH, NBS
<i>Plegadis falcinellus</i>	Glossy Ibis	SC	<b>General:</b> marsh, swamps, edges of ponds or lakes, estuaries, bays, and forest bordering water bodies. Foraging: in and alongside water bodies (CWF 2021b).	F
<i>Ardea herodias</i>	Great Blue Heron	SC	<b>General:</b> freshwater and brackish marshes, lake edges, rivers, bays, lagoons, ocean beaches, fields and meadows. <b>Nesting:</b> high in trees in swamps and forested areas. Occasionally on bushes or the ground. Generally located close to foraging habitats (NatureServe 2020a).	F

Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Eremophila alpestris</i>	Horned Lark	T	<b>General:</b> prefers open spaces, with bare ground, occasional shrubs and short, sparse grasses and flowers (CWF 2012a).	NBS
<i>Megaptera novaeangliae</i>	Humpback Whale	E	<b>General:</b> Live in all oceans around the world. They can travel great distances during their seasonal migration with some animals migrating 5,000 miles between high-latitude summer feeding grounds and winter mating and calving areas in tropical waters (NOAA 2024c).	NBS
<i>Sternula antillarum</i>	Least Tern	E	<b>Breeding:</b> seacoasts, beaches, bays, estuaries, lakes and rivers. Nests in shallow depression on level ground in sparsely vegetated areas on sandy/gravelly beaches and banks of rivers or lakes. Will inhabit artificial areas similar to the natural ones like dredge spoil areas and flat rooftops covered with gravel. Nests are generally found in areas above the high tide mark on beaches (NatureServe 2020i).	F, NC
<i>Eubalaena glacialis</i>	North Atlantic Right Whale	E	<b>General:</b> Primarily occur in Atlantic coastal waters on the outer continental shelf, although they are also known to travel far offshore, over deep water (NOAA 2024d).	NBS
<i>Circus cyaneus</i>	Northern Harrier	E	<b>General:</b> open areas such as tidal marshes, emergent wetlands, fallow fields, grasslands, meadows, airports, and agricultural areas. <b>Breeding/Nesting:</b> high marsh areas that are usually drier than low marsh areas. These areas are generally dominated by salt hay, marsh elder, or reed grass. They may also nest in freshwater tidal marshes, managed fallow or low intensity agricultural fields that contain tall herbaceous vegetation.	BS



Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Pandion haliaetus</i>	Osprey	T	<b>General:</b> primarily located along rivers, lakes, reservoirs and seacoasts. Typically build nests consisting of sticks on living or dead trees and will also utilize man-made structures such as utility poles. Nests are usually located near or above water (NatureServe 2020k).	F, N
<i>Uvularia puberula</i> var. <i>nitida</i>	Pine Barren Bellwort	E	<b>General:</b> edges of the swamps in the pine barrens (POSNJ 2021).	S
<i>Hyla andersonii</i>	Pine Barrens Treefrog	T	<b>General:</b> requires specialized acidic habitats such as Atlantic white cedar swamps and pitch pine lowlands that are carpeted with dense sphagnum moss. Breeding: acidic, temporary ponds no greater than 2 feet deep. In white cedar bogs, seepage areas along tributaries to major watercourses, and temporary woodland ponds serve as breeding ponds (CWF 2020e).	VPB, OH
<i>Gramma placentia</i>	Placentia Tiger Moth	E	<b>General:</b> coastal plain and sandy hills; may also occupy inland areas (NatureServe 2021).	N/A
<i>Charadrius melodus</i>	Piping Plover	E	<b>Atlantic Coast:</b> mainly breeds on gently sloping foredunes and blow-out areas behind primary dunes of sandy coastal beaches. Breeding: sandy upper beaches where scattered grass tufts are present as well as sparsely vegetated shores and inlands of shallow lakes, ponds, impoundments and rivers (NatureServe 2022).	NA

Species	Common Name	NJ State Conservation Status <sup>1</sup>	Typical Habitat	Habitat Type Mapped in Larrabee Study Area <sup>2</sup>
<i>Egretta thula</i>	Snowy Egret	SC	<b>General:</b> marshes, lakes, ponds, and shallow coastal habitats. <b>Nesting:</b> trees or shrubs over water or ground. Will occasionally nest on the ground or in marsh vegetation (NatureServe 2020c).	F
<i>Egretta tricolor</i>	Tricolored Heron	SC	<b>General:</b> wetland and forest bordering saltwater bodies, foraging alongside waterbodies (CWF 2021c).	F
<i>Catharus fuscescens</i>	Veery	SC	<b>Breeding:</b> wetland forests with shrubby understory areas. Preference is given to large wooded areas. <b>Winter:</b> woodlands, lowland forests, and scrub (CWF 2011c).	BS
<i>Glyptemys insculpta</i>	Wood Turtle	T	<b>General:</b> aquatic and terrestrial, the species prefers freshwater streams, creeks, brooks and rivers that are relatively remote. The watercourses are usually clean, free of litter or other pollutants, and occur within undisturbed wet fields, meadows and forests. Terrestrial habitat tends to consist of open fields of thickets suitable for basking. Habitats are generally over half a mile from developed or populated areas and contain few roads (CWF 2010).	OH
<i>Hylocichla mustelina</i>	Wood Thrush	SC	<b>Breeding:</b> deciduous or mixed forests with a dense canopy and well-developed understory. Preference is given to areas near or within wetlands. <b>Winter:</b> various types of woodlands (CWF 2011d).	BS
<i>Nyctanassa violacea</i>	Yellow-Crowned Night-Heron	T	<b>General:</b> marshes, swamps, lakes, mainly coastal habitats. <b>Nesting:</b> trees in wooded areas near water, occasionally in shrubs or on the ground (NatureServe 2020f).	F

1: NJ State Conservation Status: SP = Special Concern, T = Threatened, E = Endangered

2: Habitat Type Mapped in Larrabee Study Area: BS = Breeding Sighting, F = Foraging, NBS = Non-Breeding Sighting, OH = Occupied Habitat, NC = Nesting Colony, NA = Nesting Area VPB = Vernal Pool Breeding

### 2.3 State Parks and Natural Areas

There is one State Park within and adjacent the Larrabee Study Area that provides significant habitat for wildlife species: Allaire State Park. Additionally, the Manasquan River Wildlife Management Area also occurs within and adjacent to the Study Area.

Allaire State Park is located in Farmingdale, Monmouth County, New Jersey and is home to over 200 species of wild flowers, trees, shrubs, and other plants. It is located along the Atlantic flyway, and with large tracts of the park remaining in their natural state the park provides an ideal feeding and resting place for migratory birds. The Manasquan River bisects the park, creating habitat for plant species that are not typically found in the Jersey Shore region (State of New Jersey 2020).

The Manasquan River Wildlife Management Area is an approximately 744-acre area that encompasses the lower Manasquan River, associated wetlands and upland areas where the Manasquan River meets the tidal bays. This area is an extension of Allaire State Park that provides habitat for plant and wildlife species not typically found in other portions of the state.

### 2.4 Description of Habitat Types Mapped within the Larrabee Study Area

The Larrabee Study Area ranges from shallow, flat shorelines to dunes to the east, to deciduous and mixed forests along the onshore interconnection cable corridors, landfall site, and POI substation. This section describes the common characteristics of coastal terrestrial habitats that occur within, and adjacent to, the Larrabee Study Area:

- *Deciduous and Mixed Forest/Scrub Shrub/Herbaceous Field*: Deciduous and mixed forests are the dominant habitat type in this region of New Jersey. Forested land is relatively young (two-thirds is less than 60 years old) and encompasses approximately 45% of the State of New Jersey (2.1 million acres); however, these areas are not distributed evenly across all counties. The average forest patch size in Monmouth County is about 30 acres (USDA 2004). The most common cover type of forest in the state is an Oak/Hickory forest which consists of common species such as white oak (*Quercus alba*), northern red oak (*Quercus rubra*), hickory (*Carya* sp.), white ash (*Fraxinus americana*), yellow poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). The shrub understory is also characteristic for the region and includes species such as: huckleberry (*Gaylussacia* sp.), blueberry (*Vaccinium* sp.), sweet pepperbush (*Clethra alnifolia*), and sheep laurel (*Kalmia angustifolia*). Some wildlife species that prefer younger deciduous forests include: American goldfinch (*Carduelis tristis*), cedar waxwing (*Bombycilla cedrorum*), and eastern cottontail (USDA 2004). More mature forests are more likely to house black bears (*Ursus americanus*), porcupines (*Erethizon dorsatum*), and pileated woodpeckers (*Dryocopus pileatus*).
  - Freshwater rivers and other waterbodies are also part of the deciduous forest patches that provide habitat for fish and freshwater wetlands. Some common species of fish that are

found throughout freshwater, perennial streams include: large/smallmouth bass (*Micropterus salmoides*/*Micropterus dolomieu*), northern pike (*Esoc lucius*), yellow perch (*Perca flavescens*), and carp (*Cyprinus carpio*) among many others.

- Typical scrub-shrub/herbaceous fields in New Jersey occur along and are generally associated with active, fallow or abandoned agricultural practices. This habitat provides suitable habitat to grassland bird species and a diversity of herbaceous and woody shrub vegetation; however, these habitats are not suitable for many wildlife species along the edges, particularly where active human influence is persistent such as highways, railroads and other forms of residential, commercial, and industrial development.
- Pinelands Mixed Forest: The Pinelands is a designated and protected ecoregion in southern New Jersey. These mixed forest communities contain low to high density stands of pine trees (mostly pitch pine [*Pinus rigida*]) with ribbons of Atlantic cedar (*Chamaecyparis thyoides*) and other hardwood trees found in deciduous forests and wetlands (State of New Jersey 2021a). A unique characteristic of the Pinelands ecoregion is the natural conditions that allow for regular and cyclical forest fires to occur. These fires are a necessary component to maintain the characteristic of the Pinelands vegetation. This community is comprised of over 850 species of plants including many rare plants only found within the Pinelands. Rare and unique flora depend on the frequency of fires to maintain the required soil nutrients. The Pinelands also supports 39 species of mammals, 299 birds, 59 reptile and amphibians, and 91 fish species.
  - Within the overall Pinelands ecosystem, forty-three animal species are known to occur within the Pinelands are listed as threatened or endangered by the New Jersey DFW. Because the location of the onshore facilities is in developed/disturbed areas, very few of these species, or their critical habitat, are documented within the Larrabee Study Area.

Although not within the Larrabee Study Area, beach habitat occurs immediately east of the eastern extent of the Larrabee Study Area in the Borough of Sea Girt, New Jersey.

- **Shoreline:** The sandy, coastal shoreline consists of dunes made up of the foredune and secondary dunes leading seaward to the beach berm or backshore (the flat, dry section of the beach normally used for recreation above the high tide line), to the foreshore (area that is exposed to constant wave action, intertidal areas between mean low water to the high tide zone) continuing under water to the nearshore area, submerged area below mean water to 29.5 feet (Wootton et al. 2016). These coastal, terrestrial habitats are subject to constant change due to wave and wind action, currents, and storm activities. The constant change, open environment, lack of freshwater, and sparse vegetation makes this habitat inhospitable to most species except those specifically adapted to these conditions or for species who utilize the area as transients for foraging purposes such as gulls (*Larus* spp.), sand crabs (*Emerita* spp.) and plovers/lapwings (*Charadrius* spp.).
- **Dune:** Westward of the shoreline is the dune habitat. Dunes, much like a typical beach profile, are also constantly changing in response to short- and long-term processes associated with wind and

wave action, storms, and seasonal variations. Throughout New Jersey, dune heights reach 8 to 15 feet high and lie above the backshore of the beach (Wootton et al. 2016).

- Common wildlife species that inhabit dunes are whitetail deer (*Odocoileus virginianus*), rabbits (*Sylvilagus floridanus*), common terns (*Sterna* spp.), and other ground-nesting shorebirds among many others. These species typically graze, nest or rest amongst the American beachgrass (*Ammophila breviligulata*), seaside goldenrod (*Solidago sempervirens*), and Asiatic sand sedge (*Carex kobomugi*). Although dunes along the coast make up a very narrow stretch of land in New Jersey, a small number of highly specialized species with adaptations to thrive in such harsh conditions inhabit these areas. Due to their specialized adaptations and the limited available habitat, many are either state or federally listed threatened or endangered species.



### **3.0 FIELD INVESTIGATIONS**

Field investigations of vernal pools were conducted within the Study Area by EDR on April 2, 2020, and December 2020, and habitat assessment studies were conducted between June 24 and June 26, 2020, December 7, 8, and 10, 2020, September 15, 2021, July 13 to 15, 2022 and February 2023. Although a vernal pool survey was conducted during the December 2020 and September 2021 field study for the additional portions of the Larrabee Study Area, a vernal pool survey should be conducted during the spring months. As such, an additional vernal pool survey will be conducted during the spring months, and supplemental findings will be provided as appropriate. During field studies, wildlife species observed (including threatened and endangered species) within the Larrabee Study Area were noted.

#### **3.1 Vernal Pool Methodology**

Vernal pool surveys consisted of systematically investigating the entire Study Area. For each potential vernal pool area, data was collected that included photographs, existing conditions within and adjacent to potential vernal pool areas, and geographic location data for vernal pool features (as applicable) using a Global Positioning System [GPS] with reported sub-meter accuracy. Vernal pools were identified based on a variety of biological, hydrological, and physical characteristics including the following:

1. Evidence suggesting inundation for at least two consecutive months between March and September
2. Hydrological isolation (no permanent inlets or outlets of flowing surface water)
3. Observed absence of fish species within the pool
4. Presence of standing water
5. Sparse or no vegetation growing within the pool
6. Water-stained leaves within/adjacent to the pool
7. Evidence of moss trim lines/buttrressing/watermarks on nearby trees
8. Connectivity to adjacent upland forest habitat
9. The presence of obligate and/or facultative indicator species within and/or near the pools.

#### **3.2 Habitat Suitability Assessment Methodology**

Habitat surveys took place within the Larrabee Study Area and immediately adjacent areas. Visual assessments were conducted to determine the type of habitats observed based on vegetation community types, as well as immediately adjacent areas wherever possible. Wildlife species observed during field investigations, including threatened and endangered species, were GPS located and habitat usage noted.

## 4.0 RESULTS

This section presents the habitats observed within the Larrabee Study Area and summarizes the results of the vernal pool survey and an assessment of the observed habitats to support regulated wildlife species.

### 4.1 Habitat Types within Study Area

Generally, the Study Area occurs within established linear development ROW's such as roadways, and recreational trails. As a result, many of the habitats observed have experienced some level of past and ongoing disturbance, particularly established populations of non-native invasive species. The following habitat types were observed within the Study Area:

- **Beach with Vegetation.** This type of habitat generally occurs along the beach adjacent to the National Guard Training Center near the proposed Monmouth Landfall. It includes the beach and dune system. Species typical of this habitat are American beachgrass (*Ammophila breviligulata*), rugosa rose (*Rugosa rosea*), bayberry (*Morella pensylvanica*), and goldenrod (*Solidago* sp.).
- **Developed/Disturbed Areas.** This type of habitat included areas such as roads, sidewalks, recreational trails, buildings (residential, commercial, and industrial), maintained landscapes and other areas associated with the built environment including agricultural lands.
- **Forest – Wetlands.** This habitat type generally occurred farther inland within the Allaire State Park boundaries and along Hospital Road and County Road 547 corridors, and was dominated by sweet gum (*Liquidambar styraciflua*) and red maple (*Acer rubrum*) in the canopy. The shrub layer was dominated by pepperbush (*Clethra alnifolia*) and arrowwood viburnum (*Viburnum dentatum*). In the herbaceous layer, Japanese stilt grass (*Microstegium vimineum*) was the dominant species.
- **Forest – Mixed.** This habitat type generally occurred farther inland along the county road ROW and within Allaire State Park boundary. The canopy was dominated by pitch pine (*Pinus rigida*), black gum (*Nyssa sylvatica*), red oak (*Quercus rubra*), white oak (*Quercus alba*), and red maple (*Acer rubrum*), and the understory was dominated by roundleaf greenbrier (*Smilax rotundifolia*) and lowbush blueberry (*Vaccinium angustifolium*). The herbaceous layer was sparsely vegetated.
- **Forest – Deciduous.** This habitat type generally occurred farther inland along county road ROW, within the Allaire State Park boundary, and at the edges of transmission line ROWs. The canopy was dominated by black gum, sweet gum (*Liquidambar styraciflua*), red oak, white oak, black locust (*Robinia pseudoacacia*), Norway maple (*Acer platanoides*), wild cherry (*Prunus avium*), and sassafras (*Sassafras albidum*). The understory was dominated by roundleaf greenbrier, multiflora rose (*Rosa multiflora*), pitch pine, and black raspberry (*Rubus occidentalis*). The herbaceous layer was dominated by garlic mustard (*Alliaria petiolate*), goldenrod (*Solidago canadensis*), poison ivy (*Toxicodendron radicans*) and numerous grass species.
- **Forest – Evergreen.** This habitat type generally occurred along county road ROW and within the Allaire State Park boundary. The canopy was dominated by pitch pine (*Pinus rigida*). The understory

was dominated by pitch pine saplings, eastern red cedar (*Juniperus virginiana*) saplings, round greenbrier (*Smilax rotundifolia*), and multiflora rose (*Rosa multiflora*).

- **Herbaceous Field/Meadow.** This habitat type was mainly located in heavily disturbed areas such as residential neighborhoods, commercial properties, along county road ROW, areas adjacent to the pedestrian bike path and agricultural areas. Dominant herbaceous species included grasses, white clover (*Trifolium repens*), buttercup (*Ranunculus* sp.), Canada goldenrod, deer tongue (*Dichanthelium clandestinum*), milkweed (*Asclepias syriaca*), round leaf boneset (*Eupatorium rotundifolium*), creeping rubus (*Rubus hayata-koidzumii*), wrinkle leaf goldenrod (*Solidago rugosa*), yarrow (*Achillea millefolium*), mugwort (*Artemisia vulgaris*) and wild carrot (*Daucus carota*). Shrubs were sparse and included pitch pine, lowbush blueberry, and saplings of red, white or black oak, black gum and sassafras.
- **Herbaceous Wetlands.** This habitat type occurred throughout the Study Area and were dominated by Pennsylvania smartweed (*Polygonum pennsylvanicum*), soft rush (*Juncus effusus*), spikerush (*Eleocharis palustris*), Japanese stiltgrass (*Microstegium vimineum*), common reed (*Phragmites australis*), woolgrass (*Scirpus cyperinus*), fringed sedge (*Carex crinita*), reed canary grass (*Phalaris arundinacea*), lurid sedge (*Carex lurida*), and narrowleaf cattail (*Typha angustifolia*). Shrub species were sparse and included sweet pepperbush (*Clethra alnifolia*), red maple saplings, and arrowwood viburnum.
- **Scrub-Shrub.** This habitat generally occurred along road ROWs. The shrub layer was dominated by smooth sumac (*Rhus glabra*) and various oak (*Quercus* sp.) species.
- **Scrub – Evergreen.** This habitat generally occurred along areas adjacent to road ROWs and on a previously disturbed parcel. The shrub layer was dominated by eastern red cedar (*Juniperus virginiana*) and sassafras (*Sassafras albidum*). The herbaceous layer was dominated by multiflora rose (*Rosa multiflora*) and round greenbrier (*Smilax rotundifolia*).
- **Scrub-Shrub Wetlands.** This habitat type occurred along the county road ROW and in disturbed areas. The shrub layer was dominated by sugar maple (*Acer saccharum*), black willow (*Salix nigra*), black birch (*Betula nigra*) and winterberry holly (*Ilex verticillate*). Dominant vegetation in the herbaceous stratum included skunk cabbage, common reed, and Japanese stiltgrass.
- **Watercourses.** A total of 19 streams were identified throughout the Study Area including streams, rivers, brooks, and other surface drainage features. These features included intermittent, upper perennial, lower perennial, and ephemeral watercourses that were largely surface water fed features as detailed in the Wetland and Stream Delineation Report dated November 2021 and revised in December 2021, August 2022, and February 2023 in Appendix II-D2 of the COP.
- **Ponded Areas.** These are open water areas influenced by spring seeps, streams and man-made barriers, such as Mac’s Pond.

Developed/Disturbed areas were the most abundant within the Larrabee Study Area (57.2%). The remainder of habitat types occurred along roadways and pedestrian/bike lanes; therefore, few species were observed. Wildlife species that were observed include transient individuals flying overhead and included species such as the herring gull (*Larus argentatus*), laughing gull (*Leucophaeus atricilla*), house sparrow (*Passer domesticus*), mourning dove (*Zenaida macroura*), northern cardinal (*Cardinalis cardinalis*), eastern blue bird (*Sialia sialis*) and other common avian species adapted to developed/disturbed habitat types. No reptile, amphibian or mammal species were observed. No federal- or state-listed threatened and endangered species were observed within the Larrabee Study Area during field studies. Each of these habitats' location and extent within the Larrabee Study Area is shown on the mapping presented in Appendix D.

#### 4.2 Vernal Pool Survey Results

An evaluation based on the methodology presented in Section 3.1 was conducted during an on-site survey by EDR on April 2, 2020, and December 7, 8, and 10, 2020. Two areas were identified within the Study Area that exhibited characteristics of vernal pools along the onshore interconnection route. Both areas displayed characteristics of vernal pools (i.e., standing water with no in/outlets and potential habitat). However, these potential features were identified in December, outside of the growing season, and should be re-evaluated to determine status during the early spring months.

#### 4.3 Observed Habitat Suitability for Federal and State-Listed Species

As described in Section 4.1, the majority of the habitat observed within the Study Area is disturbed and influenced by human activity and/or degraded due to non-native invasive species and does not provide critical habitat for any of the federal- or state-listed threatened and endangered species documented to occur in this area. However, areas adjacent to the Study Area associated with large, forested wetlands, and Allaire State Park possess suitable habitat for a number of these species. The USFWS defines critical habitat as areas that are essential to the conservation of an endangered or threatened species and that may require special management and protection. The NJDEP defines critical habitat Table 4 summarizes the federal- and state-listed threatened and endangered species and provides an assessment if any critical habitat was observed within the Larrabee Study Area based on the requirements presented in Tables 1 and 3.

**Table 4. Federal- and State-Listed Species – Critical Habitat Assessment Summary**

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Federal - Threatened	No	Individuals could utilize the Study Area for foraging opportunities.
<i>Perimyotis subflavus</i>	Tricolored Bat	Federal – Proposed Threatened State - Endangered	No	Individuals could utilize the Study Area for foraging opportunities.

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
<i>Charadrius melodus</i>	Piping Plover	Federal – Threatened State - Endangered	No	Habitat does not occur within to the Study Area. Potential habitat could occur near the Monmouth Landfall site in the dune areas.
<i>Calidris canutus rufa</i>	Red Knot	Federal - Threatened	No	Individuals could utilize areas adjacent to the Study Area for foraging opportunities.
<i>Clemmys muhlenbergii</i>	Bog Turtle	Federal – Threatened State – Endangered	No	Mapped Habitat occurs adjacent to the Study Area; however, the wetland areas associated with Allaire State Park are dense forested wetlands that are fed by the numerous creeks (not groundwater). Substrate is mineral soil and lack hummocks or significant herbaceous vegetation.
<i>Danaus plexippus</i>	Monarch Butterfly	Federal – Candidate	No	Individuals could utilize the Larrabee Study Area for breeding and growing habitat where milkweed occurs.
<i>Shcwalbea americana</i>	American Chaffseed	Federal – Endangered State – Endangered	No	Habitat does not occur within to the Study Area. Species relies on consistent natural fire activities which do not occur in dense, residential communities.
<i>Rhynchospora knieskernii</i>	Knieskern's Beaked-rush	Federal - Threatened	No	Habitat does not occur within or adjacent to the Study Area.
<i>Amaranthus pumilus</i>	Seabeach Amaranth	Federal - Threatened	No	Habitat does not occur within the Study Area; however, the dune habitat adjacent to the Monmouth Landfall site could be suitable habitat.
<i>Helonias bullata</i>	Swamp Pink	Federal - Threatened	No	Habitat does not occur within or adjacent to the Study Area.
<i>Falco sparverius</i>	American Kestrel	State - Threatened	Potentially	Open meadows with a tree line associated with the JCP&L transmission line ROW and open field associated with agriculture along County Route 524/547 may provide opportunity for nesting (outside of the Study Area) and foraging. No nesting pairs were observed within or adjacent to the

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
				Study Area at the time of field investigations.
<i>Dermochelys coriacea</i>	Atlantic Leatherback	Federal – Endangered State – Endangered	Potentially	Individuals could utilize the Study Area for foraging opportunities and migration.
<i>Haematopus palliatus</i>	American Oystercatcher	State – Special Concern	No	Nesting habitat does not occur within the Study Area since the route does not occur near back-bay areas or on barrier beach strands.
<i>Haliaeetus leucocephalus</i>	Bald Eagle	State - Endangered	No	Foraging habitat occurs within proximity to the Study Area; however, there are no large open water areas within the Study Area. Additionally, large perch trees are near large open water areas are not located within the Study Area.
<i>Strix varia</i>	Barred Owl	State - Threatened	Potentially	Large tracts of woods within park boundaries directly adjacent to the Study Area have open understories that may provide opportunity for nesting and foraging. No nesting pairs were observed within the Study Area at the time of field investigations.
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron	State - Threatened	No	Foraging habitat occurs within and adjacent to Study Area.
<i>Glyptemys muhlenbergii</i>	Bog Turtle	State - Endangered	No	Habitat does not occur within or adjacent to the Study Area.
<i>Toxostoma rufum</i>	Brown Thrasher	State - Special Concern	No	Foraging habitat occurs within and adjacent to Study Area.
<i>Metarranthis pilosaria</i>	Coastal Bog Metarranthis	Federal - Vulnerable	No	Habitat does not occur within or adjacent to the Study Area.

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
<i>Hydroprogne caspia</i>	Caspian Tern	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Study Area.
<i>Sterna hirundo</i>	Common Tern	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Study Area.
<i>Accipiter cooperii</i>	Coopers Hawk	State - Special Concern	Potentially	Limited habitat potential within the Study Area because a closed canopy and thick shrub understory does not occur. Foraging habitat occurs throughout the Study Area; however, no individuals or breeding pairs were observed during field investigations.
<i>Terrapene carolina carolina</i>	Eastern Box Turtle	State - Special Concern	Potentially	Open woodlands and meadows, as well as residential backyards in suburban areas are present within and directly adjacent to the Study Area. No individuals or breeding pairs were observed during investigations.
<i>Balaenoptera physalus</i>	Fin Whale	Federal – Endangered State – Endangered	Potentially	Individuals could utilize the Study Area for foraging opportunities and migration.
<i>Anaxyrus fowleri</i>	Fowler's Toad	State – Special Concern	Potentially	Open woodlands and meadows are present directly adjacent to the Study Area. No individuals were observed during investigations.

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
<i>Plegadis falcinellus</i>	Glossy ibis	State – Special Concern	Potentially	Edges of ponds and forest bordering water bodies are directly adjacent to the Study Area. No individuals were observed during investigations.
<i>Ardea herodias</i>	Great Blue Heron	State - Special Concern	No	Foraging habitat occurs within and adjacent to the Study Area.
<i>Eremophila alpestris</i>	Horned Lark	State - Threatened	Potentially	Within open fields on the eastern side of Allaire State Park along County Route 547 provides open spaces, with bare ground, and occasional shrubs with short, sparse grasses and flowers; however, this habitat is outside of the Study Area. No individuals or breeding pairs were observed during investigations.
<i>Megaptera novaeangliae</i>	Humpback Whale	Federal – Endangered State – Endangered	Potentially	Individuals could utilize the Study Area for foraging opportunities and migration.
<i>Sternula antillarum</i>	Least Tern	State - Endangered	No	Foraging habitat occurs within and adjacent to Study Area.
<i>Eubalaena glacialis</i>	North Atlantic Right Whale	Federal – Endangered State – Endangered	Potentially	Individuals could utilize the Study Area for foraging opportunities and migration.
<i>Circus cyaneus</i>	Northern Harrier	State - Endangered	No	Breeding/Nesting habitat does not occur within or adjacent to the Study Area.
<i>Pandion haliaetus</i>	Osprey	State - Threatened	No	Foraging habitat occurs within proximity to the Study Area; however, there are no large open water areas within the Study Area. Additionally, large perch trees near large open water areas are not located within the Study Area.



Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
<i>Uvularia puberula</i> var. <i>nitida</i>	Pine Barren Bellwort	Federal - Endangered	No	Habitat does not occur within or adjacent to the Study Area.
<i>Hyla andersonii</i>	Pine Barrens Treefrog	State - Threatened	Potentially	Ponds and open water wetlands exist within or adjacent to the Study Area, including two potential vernal pools; however, the water pH was not measured, and therefore it is undetermined if these waters would be suitable. In areas with shallow open water, pitch pine was not the dominant tree. Given the extensive documented occurrence of this species in the deciduous forested areas adjacent to the Study Area, suitable habitat could occur within or directly adjacent to the Study Area. No individuals were observed during investigations.
<i>Grammia placentia</i>	Placentia Tiger Moth	Federal - Vulnerable	No	Habitat does not occur within or adjacent to the Study Area.
<i>Charadrius melodus</i>	Piping Plover	State - Endangered	No	Habitat does not occur within or adjacent to the Cardiff Study Area.
<i>Egretta thula</i>	Snowy Egret	State - Special Concern	No	Foraging habitat occurs within and adjacent to Study Area.
<i>Egretta tricolor</i>	Tricolored Heron	State - Special Concern	No	Habitat does not occur within or adjacent to the Study Area.
<i>Catharus fuscescens</i>	Veery	State - Special Concern	No	Allaire State Park provides large tracts of wooded forests with shrubby understory; however, the Study Area occurs at the fringe of these habitats. As a result, breeding habitat is not suitable within the Study Area. Foraging habitat is available. No individuals or breeding pairs were observed during investigations.
<i>Glyptemys insculpta</i>	Wood Turtle	State - Threatened	No	Mapped habitat occurs within and adjacent to the Study Area. Habitat was observed in areas adjacent to

Species	Common Name	Federal/State Status	Critical Habitat in Larrabee Study Area	Comments
				the Study Area, particularly associated with Allaire State Park and individuals would be expected within the Study Area for foraging opportunities or movement between forested habitat areas. No individuals were observed in the Study Area during investigations.
<i>Hylocichla mustelina</i>	Wood Thrush	State - Special Concern	Potentially	Allaire State Park and Bear Swamp Natural Area provides large tracts of wooded forests with thick understory outside of the Study Area. Breeding habitat is unlikely within the Study Area, but foraging habitat is available. No individuals or breeding pairs were observed during field investigations.
<i>Nyctanassa violacea</i>	Yellow-Crowned Night-Heron	State - Threatened	No	Foraging habitat occurs within and adjacent to the Study Area.

Although critical habitat was not identified directly within the Larrabee Study Area, critical habitat for many of these species (particularly avian and amphibian species) could occur directly adjacent to or within proximity to the Study Area. Additionally, these state-listed threatened and endangered species could utilize areas of the Larrabee Study Area for foraging or transit between critical habitat in the area and include the following:

- American kestrel
- Barred owl
- Horned lark
- Pine Barrens treefrog
- Yellow-crowned night-heron.

There were no federal-listed threatened and endangered species that would utilize the Larrabee Study Area for foraging or transit.

#### 4.4 Habitat Suitability for Migratory and Resident Wildlife Species

As previously described, the Larrabee Study Area is characterized by significant development and disturbed vegetation habitats. While these habitats do not provide critical habitat for any federal- or state-listed

threatened and endangered species, these habitats provide nesting, cover, foraging and other life cycle stages for species adapted to human development and disturbance.

Migratory bird species identified in Section 2.1 could occur within the Larrabee Study Area during their spring and autumn migration and use the forested and emergent wetland areas within the Study Area. Migratory bird species using habitats within the Larrabee Study Area would be temporary and for short durations.

Resident wildlife species occur through the Larrabee Study Area in developed and natural areas. These species are well adapted to use of disturbed and natural habitats and transition between these areas as needed.

## 5.0 CONCLUSIONS

EDR conducted vernal pool surveys in April and December 2020, and September 2021, and a habitat suitability assessment in June 2020, December 2020, September 2021, July 2022, and February 2023. Based on the vernal pool survey, two areas potentially satisfied the criteria of being a vernal pool habitat; however, these areas were identified in December and will be revisited during the spring because determination of a vernal pool is based in part on the type of amphibian species observed using the habitat. The habitat suitability assessment identified 13 habitat types within the Larrabee Study Area. The most abundant habitat type was developed/disturbed (57.2%) due to the location of the Larrabee Study Area within highway and other ROWs and within the suburban landscape of the Borough of Sea Girt, the Borough of Manasquan, the Township of Wall, and the Township of Howell. The remaining habitat within the Larrabee Study Area consists of edges of agricultural fields, beach with vegetation, mixed forest, deciduous-dominant forest, evergreen-dominant forest, forested wetland, herbaceous field, herbaceous non-tidal wetland, upland scrub-shrub, scrub-shrub wetland, upland evergreen shrub, and water. With the exception of wetlands and stream crossings, all of these habitat types occur along the edge of the already developed Study Area and were determined to be marginal, edge habitat. These habitats are considered marginal because of the edge effect being within or adjacent to existing linear development (e.g., highways, roadways, and pedestrian/bike lanes) and other commercial, residential, and industrial development. These habitats have largely been disturbed from previous development and are subject to ongoing disturbance from high-traffic use highways/roads and pedestrian/bike lanes.

The habitats observed were not determined to be critical habitat for any of the federal- or state-listed threatened and endangered species. Wildlife species that were observed include transient individuals flying overhead and included species such as: herring gull (*Larus argentatus*), laughing gull (*Leucophaeus atricilla*), house sparrow (*Passer domesticus*), mourning dove (*Zenaidura macroura*), northern cardinal (*Cardinalis cardinalis*), eastern blue bird (*Sialia sialis*) and other common avian species adapted to developed/disturbed habitat types. No reptile, amphibian or mammal species were observed. No federal- or state-listed threatened and endangered species were observed within the Larrabee Study Area during field studies. However, potential habitat for multiple state-listed species is present directly adjacent to the Larrabee Study Area. Discussion with the USFWS and NJDEP DFW will continue to occur through the permitting process and construction to determine the need for any appropriate avoidance/mitigation measures.

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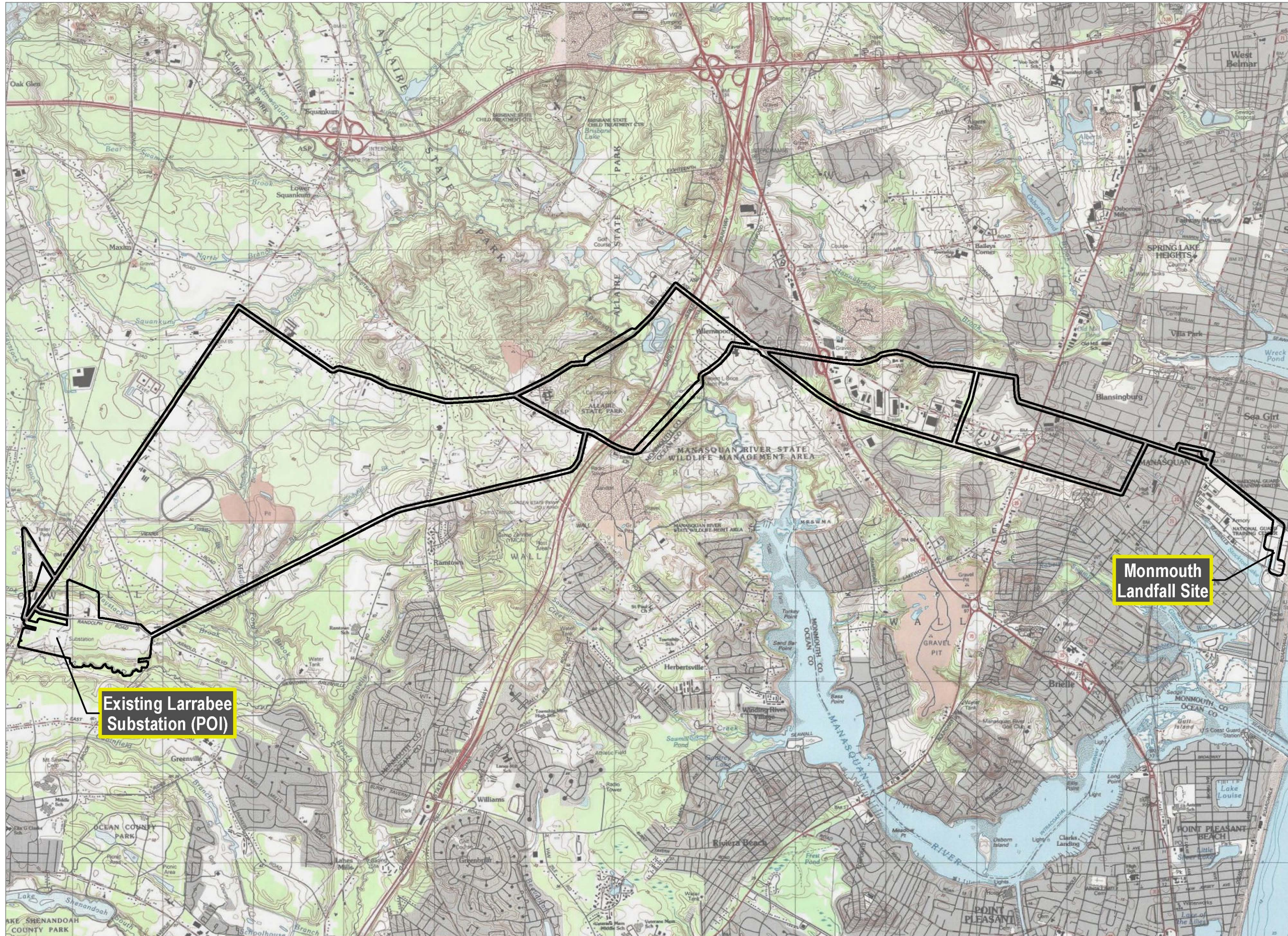
## **Appendix A**

Figures

**Figure 1: Project Location Map**



Figure 1. Project Location Map



## Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

**Habitat Suitability Assessment  
Report**

 Study Area



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Feet

Prepared February 27, 2023  
Basemap: ESRI ArcGIS Online "USA Topo Maps" map service.

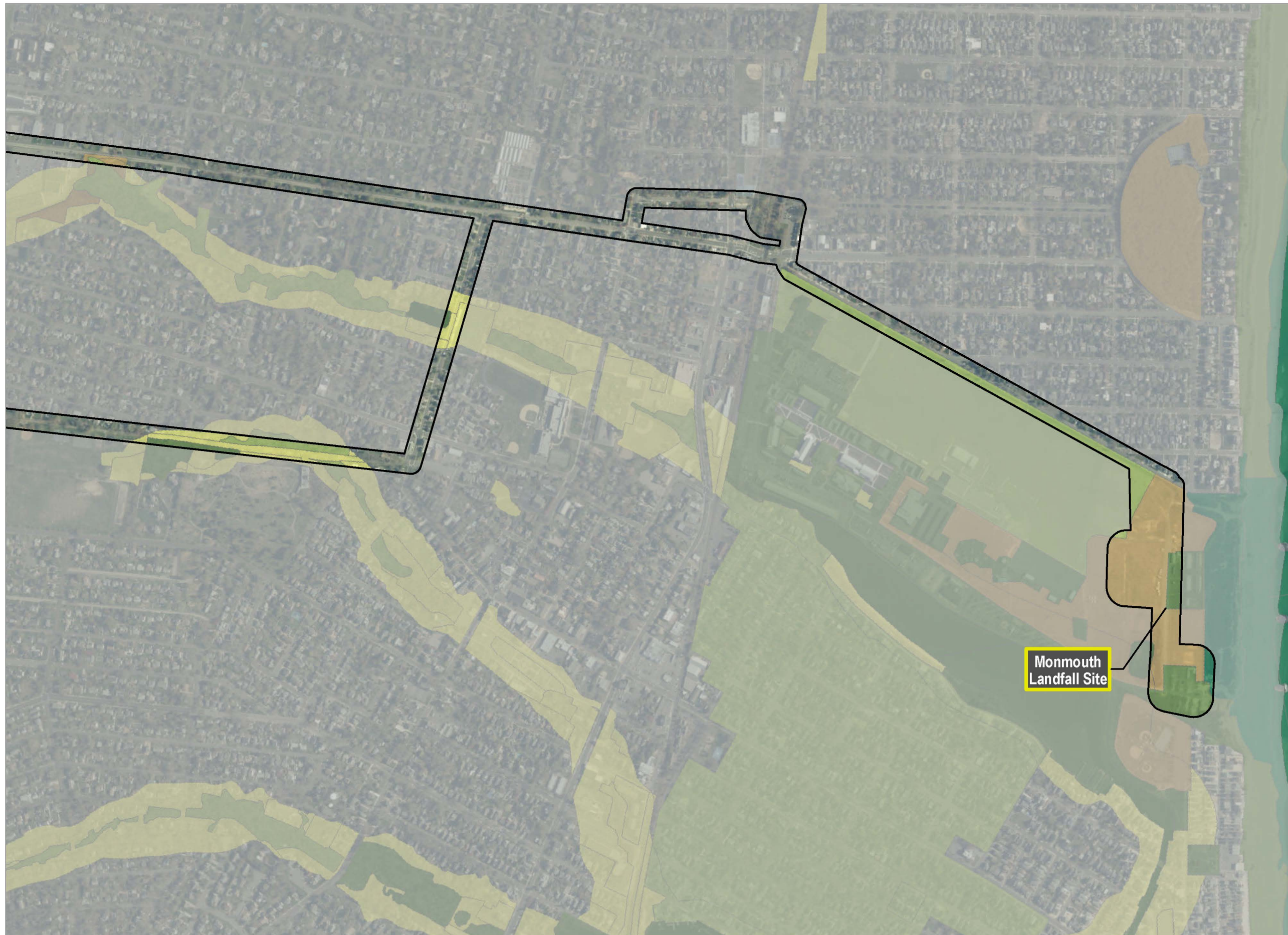
**ATLANTIC SHORES**  
offshore wind

EDR



**Figure 2: Landscape Project Mapping**



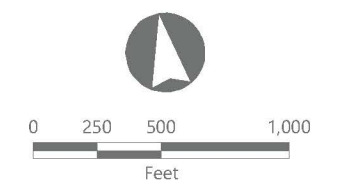


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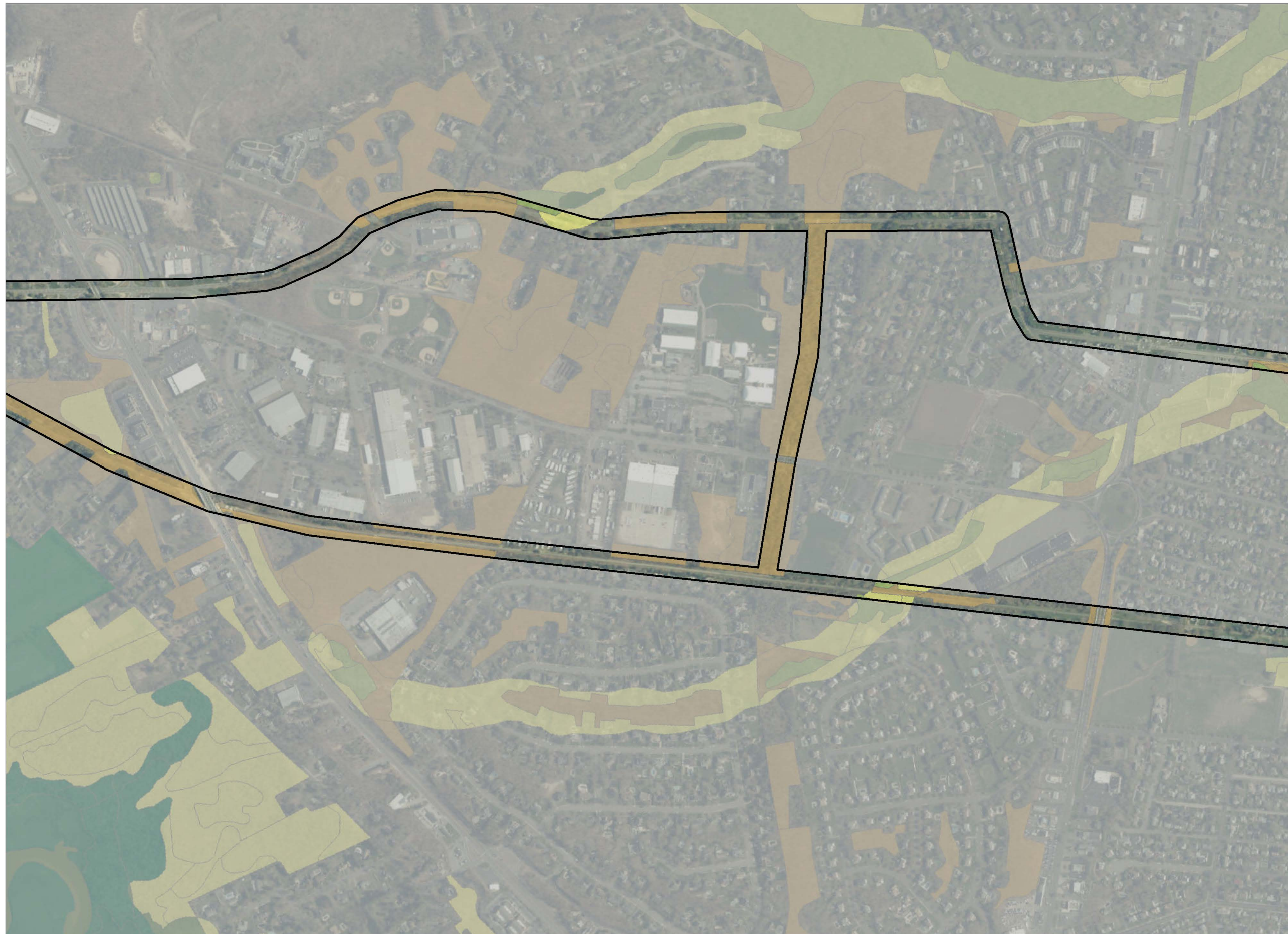
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  - Rank 5 - Federally Listed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





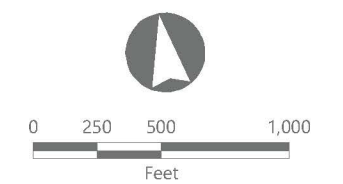


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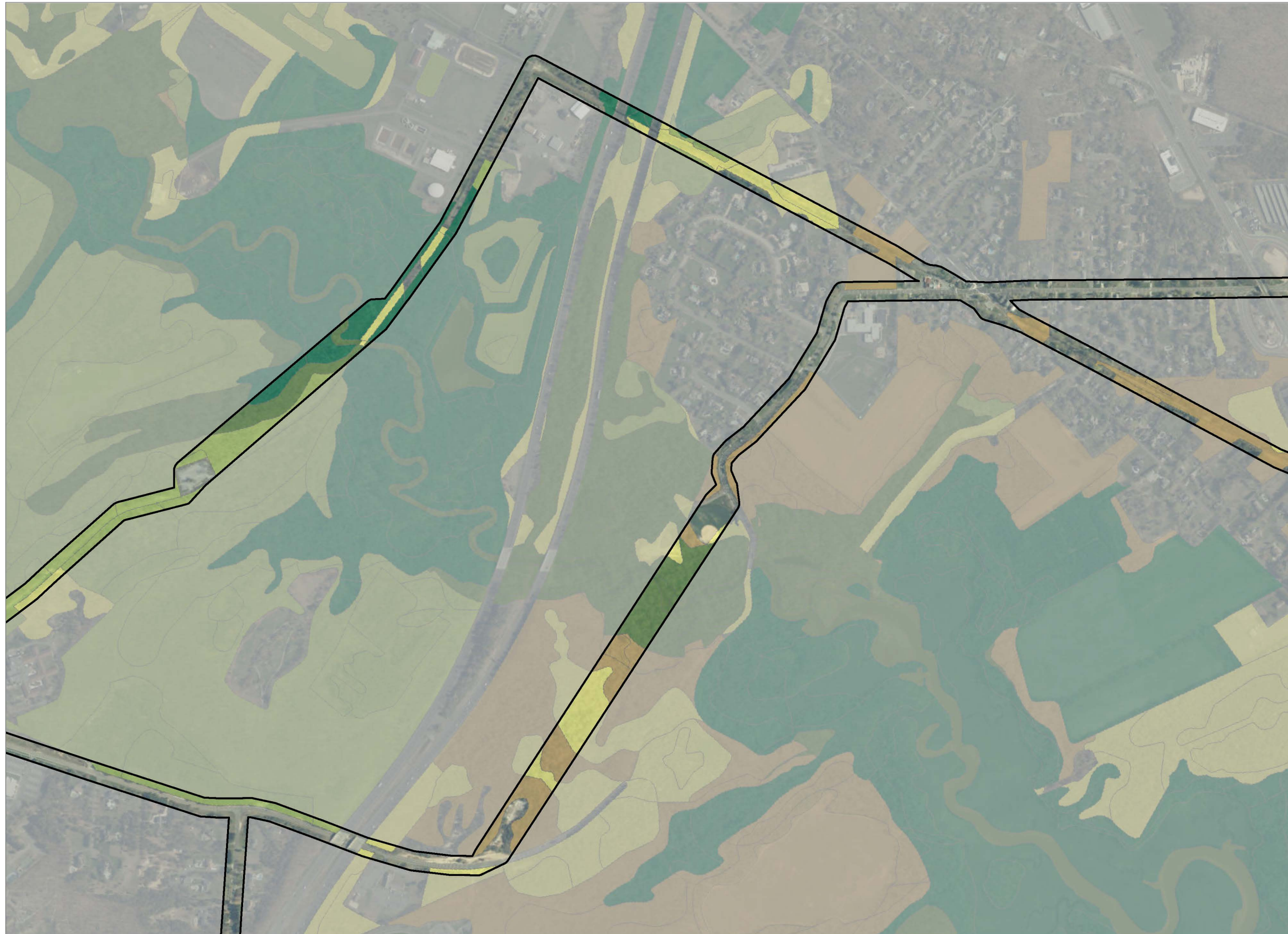
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Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

**ATLANTIC SHORES**  
offshore wind



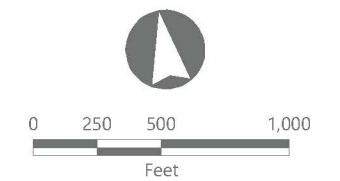


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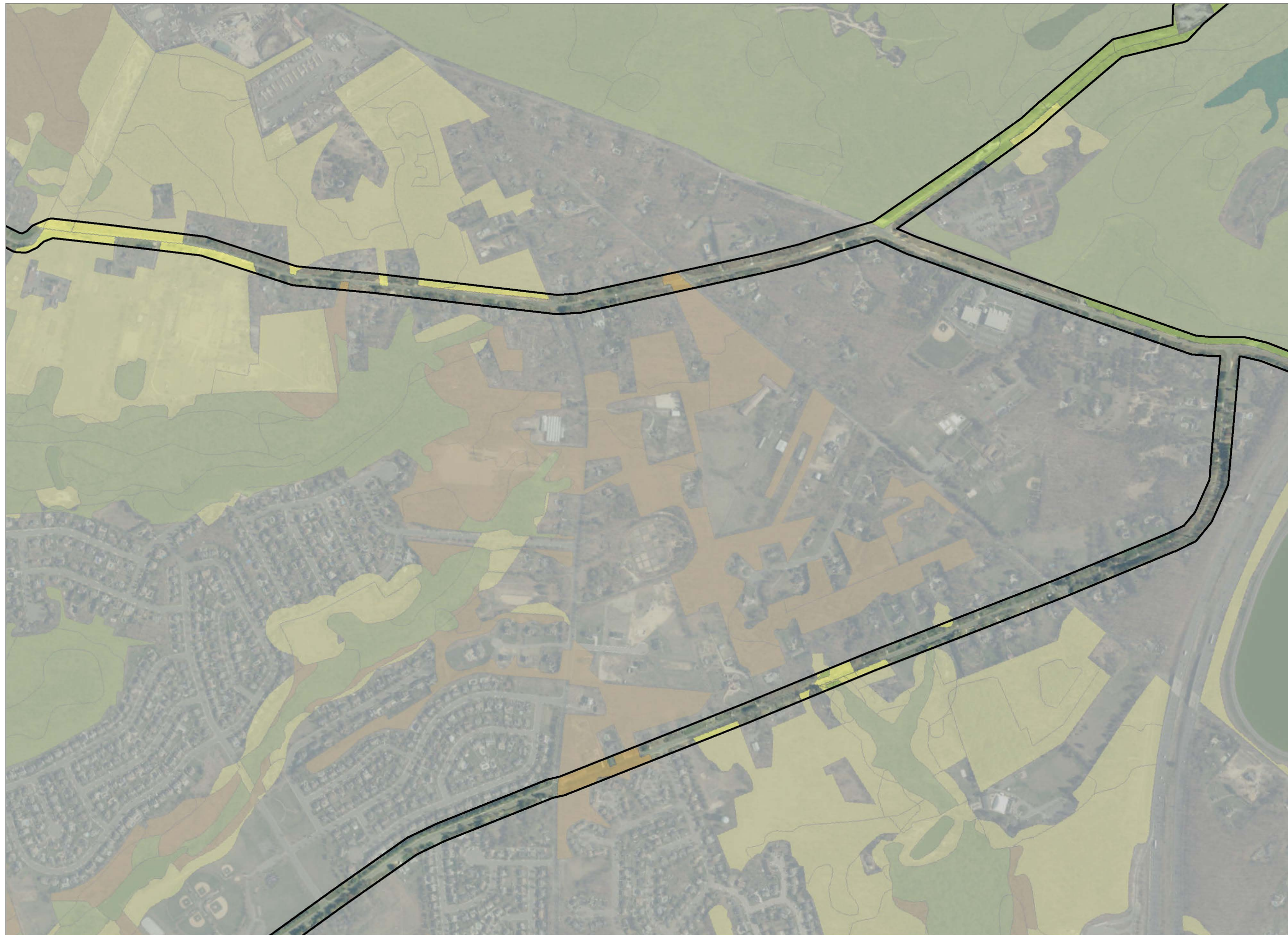
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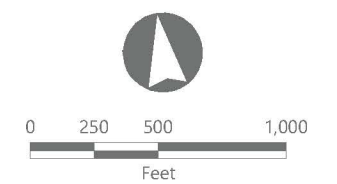


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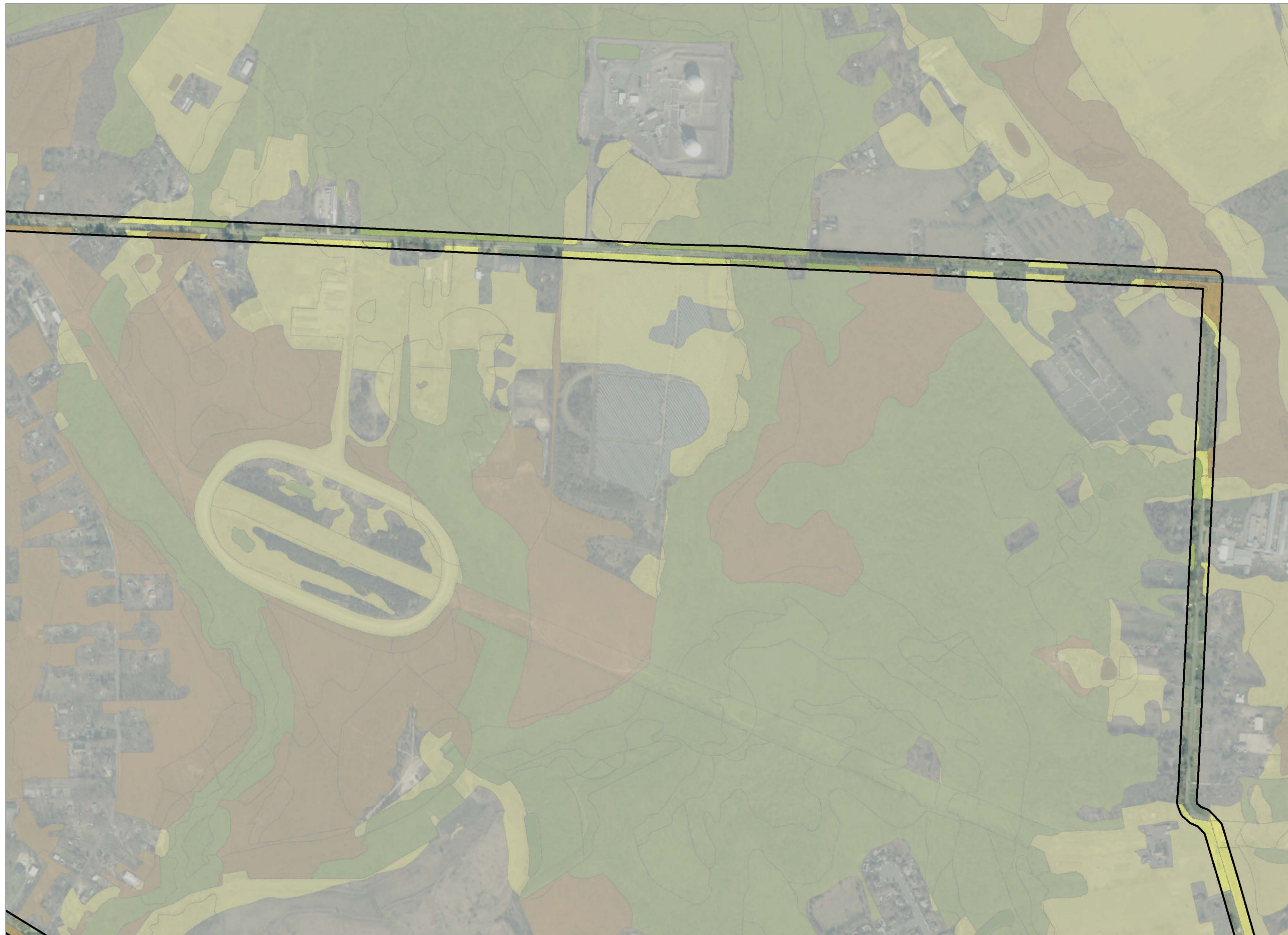
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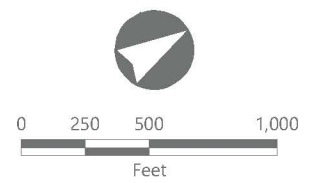


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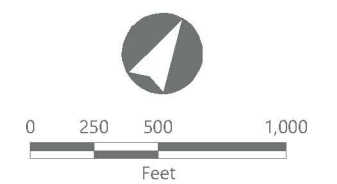


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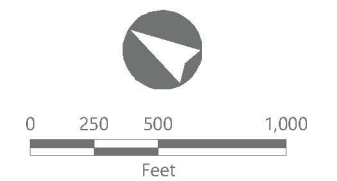


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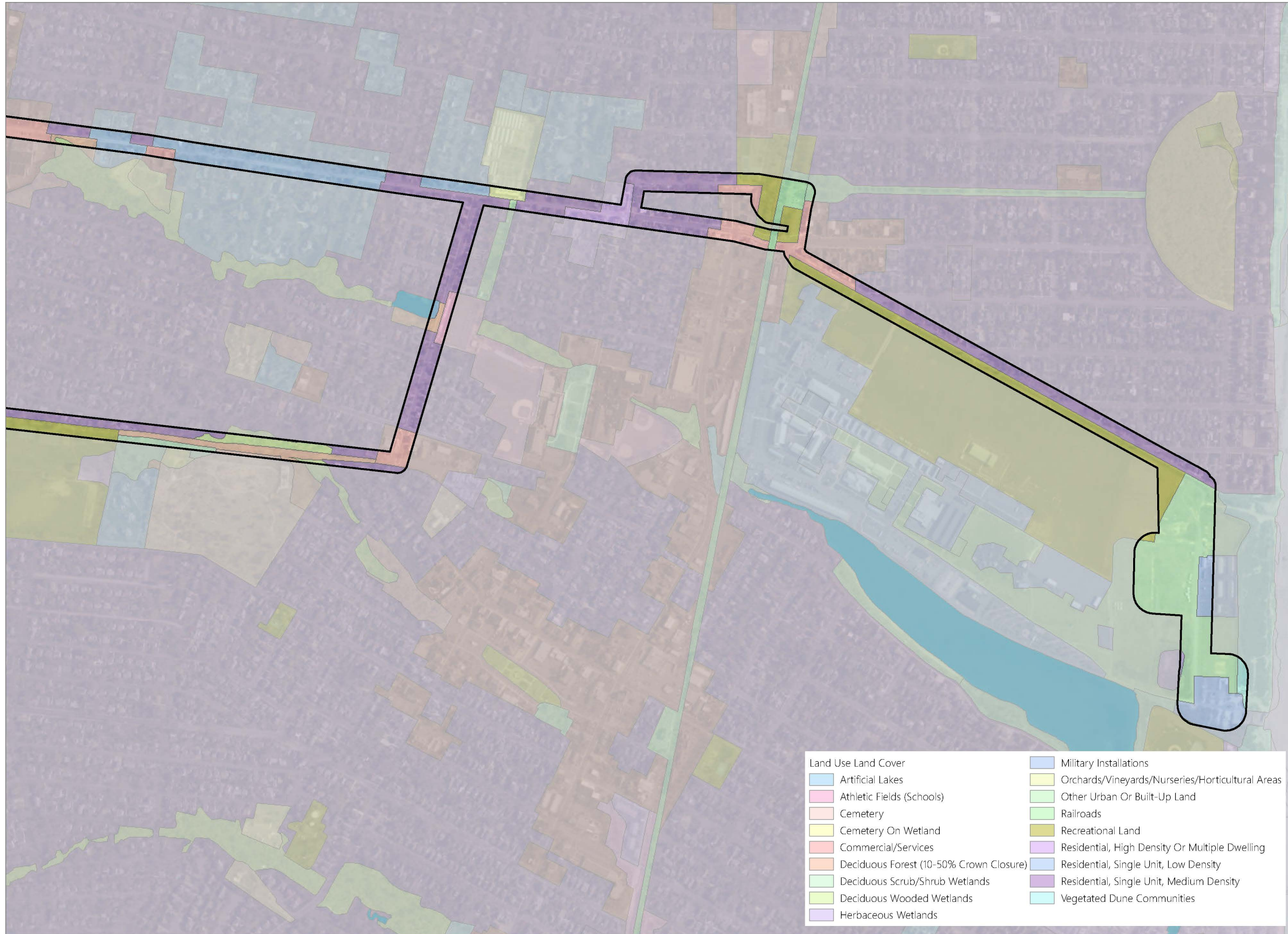


Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery






**Figure 3: Land Use/Land Cover**


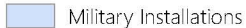


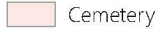

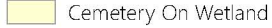



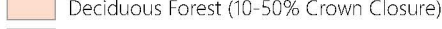



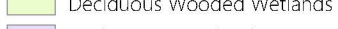

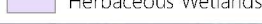
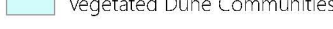


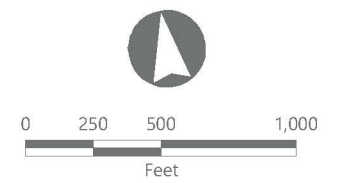
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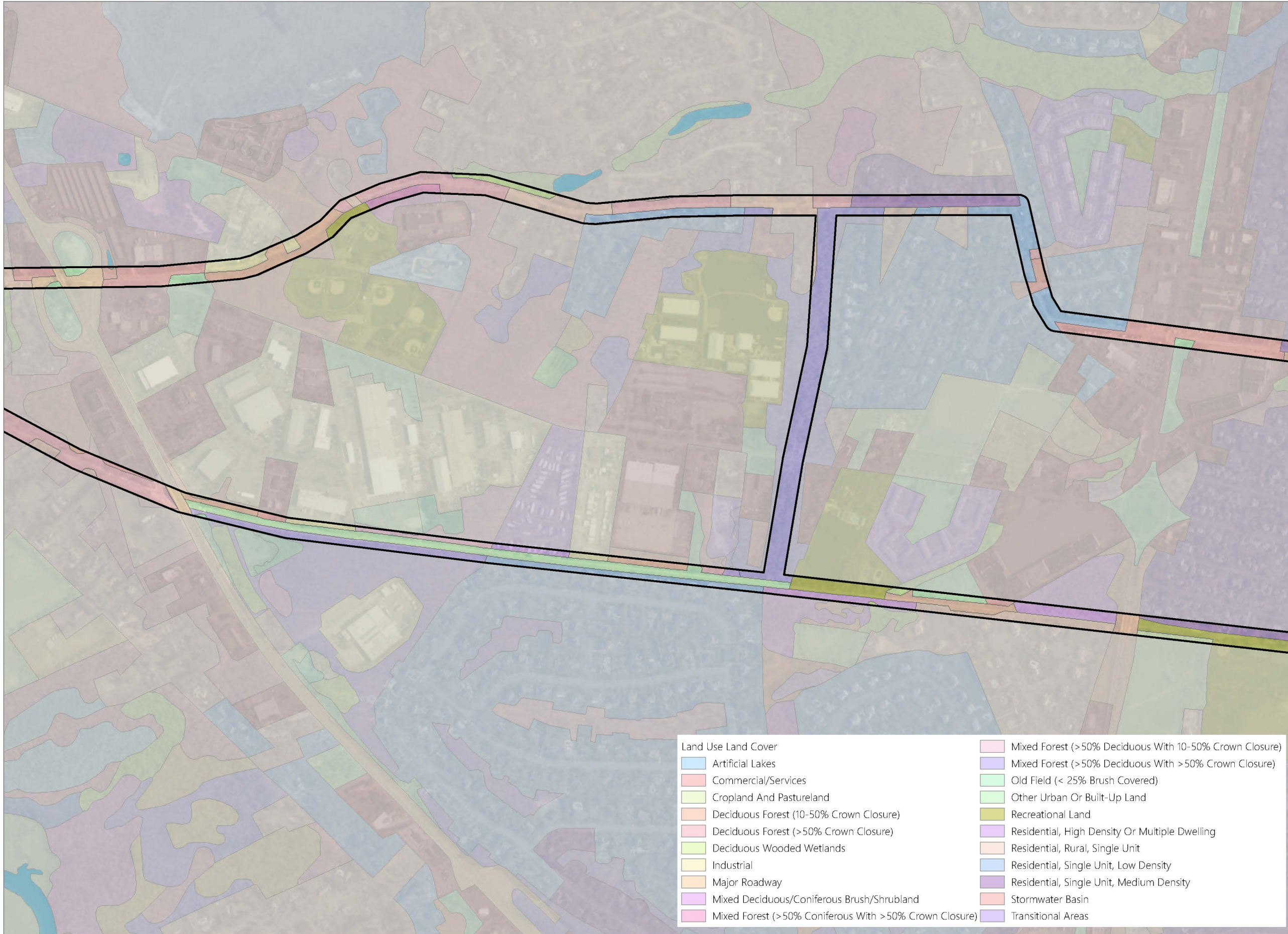
Land Use Land Cover	
 Artificial Lakes	 Military Installations
 Athletic Fields (Schools)	 Orchards/Vineyards/Nurseries/Horticultural Areas
 Cemetery	 Other Urban Or Built-Up Land
 Cemetery On Wetland	 Railroads
 Commercial/Services	 Recreational Land
 Deciduous Forest (10-50% Crown Closure)	 Residential, High Density Or Multiple Dwelling
 Deciduous Scrub/Shrub Wetlands	 Residential, Single Unit, Low Density
 Deciduous Wooded Wetlands	 Residential, Single Unit, Medium Density
 Herbaceous Wetlands	 Vegetated Dune Communities



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Basemap: NJ Office of GIS 2020 Natural Color Imagery





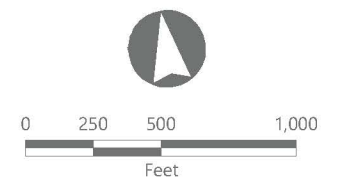


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

Study Area



Prepared February 27, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

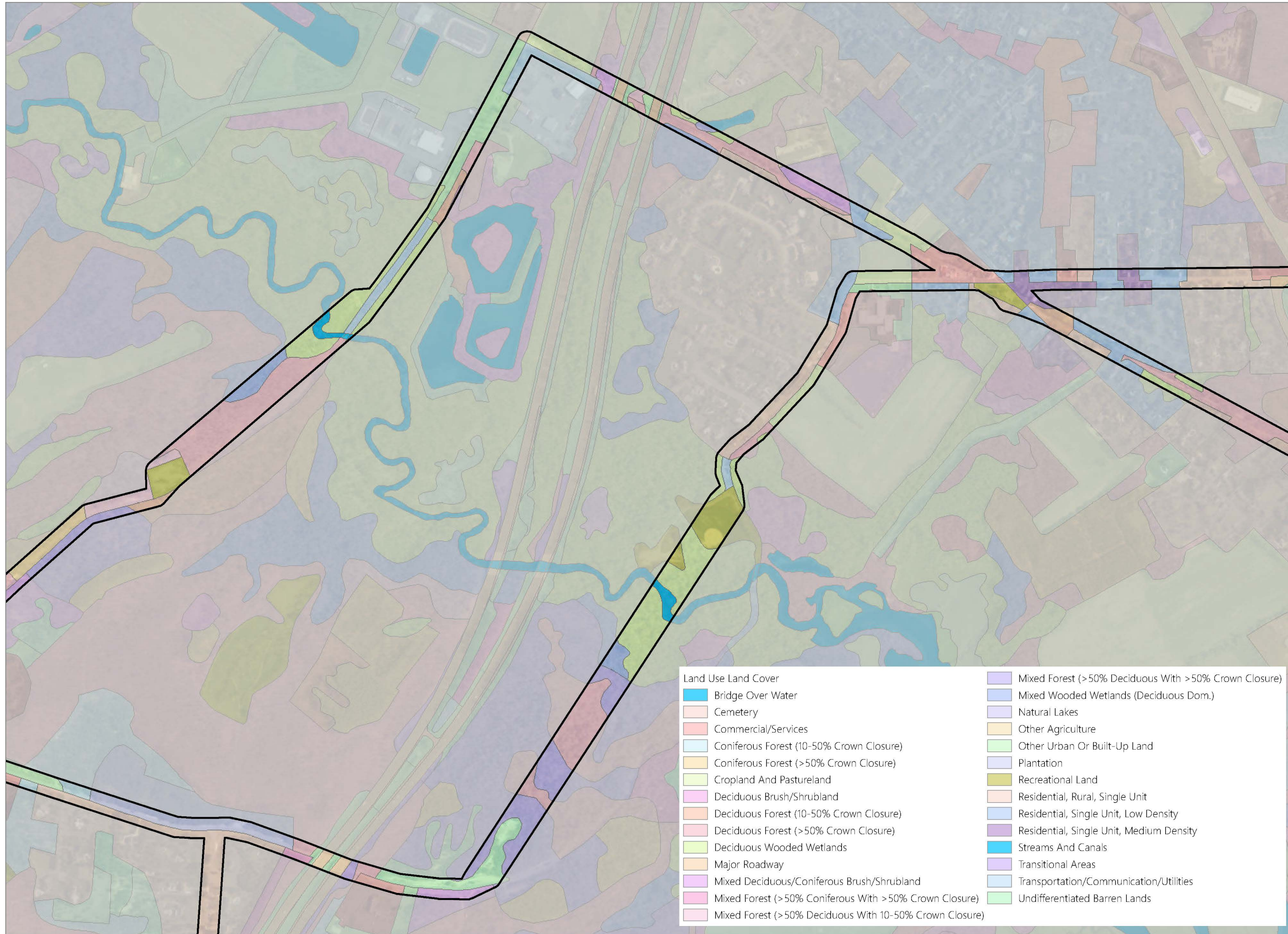




### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

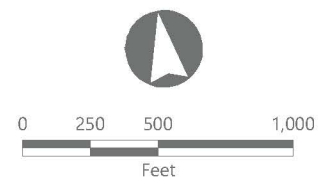
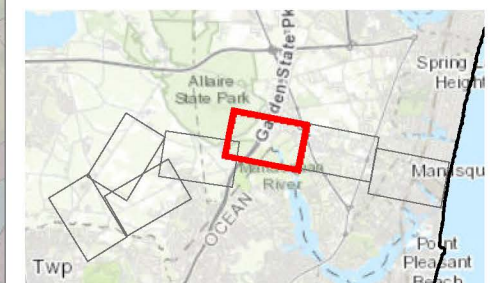
Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



Study Area

- | Land Use Land Cover |   |
|---------------------|---|
|                     | Bridge Over Water                                       |
|                     | Cemetery  |
|                     | Commercial/Services                                     |
|                     | Coniferous Forest (10-50% Crown Closure)                |
|                     | Coniferous Forest (>50% Crown Closure)                  |
|                     | Cropland And Pastureland                                |
|                     | Deciduous Brush/Shrubland                               |
|                     | Deciduous Forest (10-50% Crown Closure)                 |
|                     | Deciduous Forest (>50% Crown Closure)                   |
|                     | Deciduous Wooded Wetlands                               |
|                     | Major Roadway   |
|                     | Mixed Deciduous/Coniferous Brush/Shrubland              |
|                     | Mixed Forest (>50% Coniferous With >50% Crown Closure)  |
|                     | Mixed Forest (>50% Deciduous With 10-50% Crown Closure) |
|                     | Mixed Forest (>50% Deciduous With >50% Crown Closure)   |
|                     | Mixed Wooded Wetlands (Deciduous Dom.)                  |
|                     | Natural Lakes   |
|                     | Other Agriculture                                       |
|                     | Other Urban Or Built-Up Land                            |
|                     | Plantation  |
|                     | Recreational Land                                       |
|                     | Residential, Rural, Single Unit                         |
|                     | Residential, Single Unit, Low Density                   |
|                     | Residential, Single Unit, Medium Density                |
|                     | Streams And Canals                                      |
|                     | Transitional Areas                                      |
|                     | Transportation/Communication/Utilities                  |
|                     | Undifferentiated Barren Lands                           |



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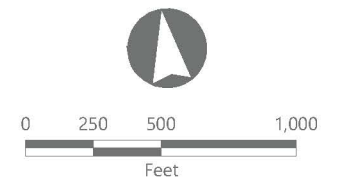
- Land Use Land Cover
- Commercial/Services
  - Coniferous Forest (10-50% Crown Closure)
  - Coniferous Forest (>50% Crown Closure)
  - Coniferous Wooded Wetlands
  - Cropland And Pastureland
  - Deciduous Forest (10-50% Crown Closure)
  - Deciduous Forest (>50% Crown Closure)
  - Deciduous Wooded Wetlands
  - Mixed Deciduous/Coniferous Brush/Shrubland
  - Mixed Forest (> 50% Coniferous With >50% Crown Closure)
  - Mixed Forest (> 50% Deciduous With 10-50% Crown Closure)
  - Mixed Forest (> 50% Deciduous With >50% Crown Closure)
  - Other Agriculture
  - Other Urban Or Built-Up Land
  - Plantation
  - Recreational Land
  - Residential, High Density Or Multiple Dwelling
  - Residential, Rural, Single Unit
  - Residential, Single Unit, Low Density
  - Residential, Single Unit, Medium Density
  - Transportation/Communication/Utilities
  - Upland Rights-Of-Way Undeveloped

### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

Study Area



Prepared February 27, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery







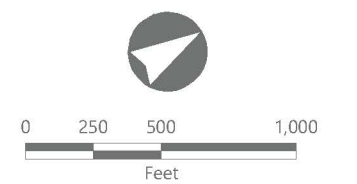
- Land Use Land Cover
- Agricultural Wetlands (Modified)
  - Artificial Lakes
  - Commercial/Services
  - Confined Feeding Operations
  - Coniferous Forest (10-50% Crown Closure)
  - Coniferous Wooded Wetlands
  - Cropland And Pastureland
  - Deciduous Brush/Shrubland
  - Deciduous Forest (>50% Crown Closure)
  - Deciduous Wooded Wetlands
  - Disturbed Wetlands (Modified)
  - Former Agricultural Wetland (Becoming Shrubby, Not Built-Up)
  - Industrial
  - Mixed Deciduous/Coniferous Brush/Shrubland
  - Mixed Wooded Wetlands (Deciduous Dom.)
  - Other Agriculture
  - Other Urban Or Built-Up Land
  - Residential, Rural, Single Unit
  - Residential, Single Unit, Low Density
  - Transportation/Communication/Utilities
  - Upland Rights-Of-Way Undeveloped

### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
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Study Area



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Basemap: NJ Office of GIS 2020 Natural Color Imagery






**Atlantic Shores South  
Offshore Wind –  
Larrabee Onshore  
Project Study Area**

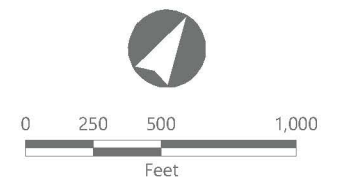
Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

**Habitat Suitability Assessment  
Report**

 Study Area



- Land Use Land Cover
-  Agricultural Wetlands (Modified)
  -  Altered Lands
  -  Commercial/Services
  -  Coniferous Forest (>50% Crown Closure)
  -  Cropland And Pastureland
  -  Deciduous Forest (>50% Crown Closure)
  -  Deciduous Wooded Wetlands
  -  Mixed Forest (>50% Coniferous With >50% Crown Closure)
  -  Mixed Forest (>50% Deciduous With >50% Crown Closure)
  -  Mixed Wooded Wetlands (Deciduous Dom.)
  -  Orchards/Vineyards/Nurseries/Horticultural Areas
  -  Other Agriculture
  -  Other Urban Or Built-Up Land
  -  Recreational Land
  -  Residential, Rural, Single Unit
  -  Residential, Single Unit, Low Density
  -  Residential, Single Unit, Medium Density



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Basemap: NJ Office of GIS 2020 Natural Color Imagery














































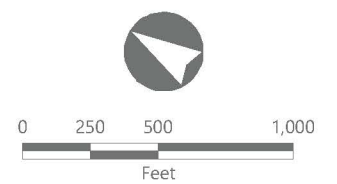
### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

 Study Area

Land Use Land Cover	
 Agricultural Wetlands (Modified)	 Cropland And Pastureland
 Altered Lands	 Deciduous Brush/Shrubland
 Artificial Lakes	 Deciduous Forest (10-50% Crown Closure)
 Commercial/Services	 Deciduous Forest (>50% Crown Closure)
 Coniferous Brush/Shrubland; Coniferous Brush/shrubland	 Deciduous Wooded Wetlands
 Coniferous Forest (10-50% Crown Closure)	 Disturbed Wetlands (Modified)
 Coniferous Forest (>50% Crown Closure)	 Industrial
 Coniferous Scrub/Shrub Wetlands	 Mixed Deciduous/Coniferous Brush/Shrubland
 Coniferous Wooded Wetlands	 Mixed Forest (>50% Coniferous With 10-50% Crown Closure)
 Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	 Mixed Forest (>50% Deciduous With >50% Crown Closure)
 Mixed Forest (>50% Deciduous With >50% Crown Closure)	 Mixed Scrub/Shrub Wetlands (Deciduous Dom.)
 Mixed Forest (>50% Coniferous With 10-50% Crown Closure)	 Mixed Wooded Wetlands (Coniferous Dom.)
 Mixed Forest (>50% Coniferous With >50% Crown Closure)	 Mixed Wooded Wetlands (Deciduous Dom.)
 Old Field (< 25% Brush Covered)	 Old Field (< 25% Brush Covered)
 Orchards/Vineyards/Nurseries/Horticultural Areas	 Other Agriculture
 Other Urban Or Built-Up Land	 Railroads
 Recreational Land	 Residential, High Density Or Multiple Dwelling
 Residential, High Density Or Multiple Dwelling	 Residential, Rural, Single Unit
 Residential, Rural, Single Unit	 Residential, Single Unit, Low Density
 Residential, Single Unit, Low Density	 Streams And Canals
 Streams And Canals	 Upland Rights-Of-Way Undeveloped
 Upland Rights-Of-Way Undeveloped	 Wetland Rights-Of-Way
Wetland Rights-Of-Way	



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## **Appendix B**

USFWS IPaC, NHP Consultation Results, and NJDEP Landscape Project Records



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New Jersey Ecological Services Field Office  
4 E. Jimmie Leeds Road, Suite 4  
Galloway, NJ 08205  
Phone: (609) 646-9310

In Reply Refer To:  
Project Code: 2023-0048767  
Project Name: COP South Larrabee Habitat Assessment Study Area

February 23, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

## To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

If the enclosed list indicates that any listed species may be present in your action area, please visit the New Jersey Field Office consultation web page as the next step in evaluating potential project impacts: <http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

On the New Jersey Field Office consultation web page you will find:

- habitat descriptions, survey protocols, and recommended best management practices for listed species;
- recommended procedures for submitting information to this office; and
- links to other Federal and State agencies, the Section 7 Consultation Handbook, the Service's wind energy guidelines, communication tower recommendations, the National Bald Eagle Management Guidelines, and other resources and recommendations for protecting wildlife resources.

The enclosed list may change as new information about listed species becomes available. As per Federal regulations at 50 CFR 402.12(e), the enclosed list is only valid for 90 days. Please return to the ECOS-IPaC website at regular intervals during project planning and implementation to obtain an updated species list. When using ECOS-IPaC, be careful about drawing the boundary of your Project Location. Remember that your action area under the ESA is not limited to just the footprint of the project. The action area also includes all areas that may be indirectly affected through impacts such as noise, visual disturbance, erosion, sedimentation, hydrologic

change, chemical exposure, reduced availability or access to food resources, barriers to movement, increased human intrusions or access, and all areas affected by reasonably foreseeable future that would not occur without ("but for") the project that is currently being proposed.

Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

We appreciate your concern for threatened and endangered species. The Service encourages Federal and non-Federal project proponents to consider listed, proposed, and candidate species early in the planning process. Feel free to contact this office if you would like more information or assistance evaluating potential project impacts to federally listed species or other wildlife resources. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-

## **OFFICIAL SPECIES LIST**

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**New Jersey Ecological Services Field Office**

4 E. Jimmie Leeds Road, Suite 4

Galloway, NJ 08205

(609) 646-9310

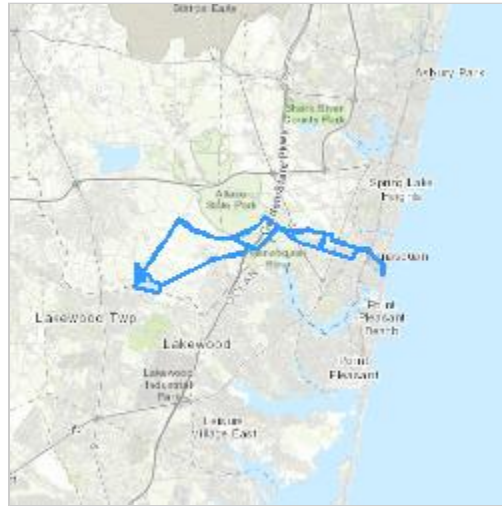
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## PROJECT SUMMARY

Project Code: 2023-0048767  
Project Name: COP South Larrabee Habitat Assessment Study Area  
Project Type: Power Gen - Wind - Offshore  
Project Description: Study Area Update 2023-02-23  
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@40.12934795,-74.12873693949805,14z>



Counties: Monmouth and Ocean counties, New Jersey

## ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

### MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

### BIRDS

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a>	Threatened
Red Knot <i>Calidris canutus rufa</i> There is <b>proposed</b> critical habitat for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a>	Threatened

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## REPTILES

NAME	STATUS
Bog Turtle <i>Glyptemys muhlenbergii</i> Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/6962">https://ecos.fws.gov/ecp/species/6962</a>	Threatened

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>▪ The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: <a href="https://www.fws.gov/savethemonarch/FAQ-Section7.html">https://www.fws.gov/savethemonarch/FAQ-Section7.html</a>).</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## FLOWERING PLANTS

NAME	STATUS
American Chaffseed <i>Schwalbea americana</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1286">https://ecos.fws.gov/ecp/species/1286</a>	Endangered
Seabeach Amaranth <i>Amaranthus pumilus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8549">https://ecos.fws.gov/ecp/species/8549</a>	Threatened
Swamp Pink <i>Helonias bullata</i> Population: No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/4333">https://ecos.fws.gov/ecp/species/4333</a>	Threatened

## CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

# **USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES**

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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## MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

**The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\) list](#) or warrant special attention in your project location.** To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/8935">https://ecos.fws.gov/ecp/species/8935</a>	Breeds Apr 15 to Aug 31
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

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NAME	BREEDING SEASON
<p><b>Black Scoter</b> <i>Melanitta nigra</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p><b>Black Skimmer</b> <i>Rynchops niger</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/5234">https://ecos.fws.gov/ecp/species/5234</a></p>	Breeds May 20 to Sep 15
<p><b>Black-billed Cuckoo</b> <i>Coccyzus erythrophthalmus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a></p>	Breeds May 15 to Oct 10
<p><b>Black-legged Kittiwake</b> <i>Rissa tridactyla</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p><b>Blue-winged Warbler</b> <i>Vermivora pinus</i>            This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds May 1 to Jun 30
<p><b>Bobolink</b> <i>Dolichonyx oryzivorus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 20 to Jul 31
<p><b>Brown Pelican</b> <i>Pelecanus occidentalis</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds Jan 15 to Sep 30
<p><b>Canada Warbler</b> <i>Cardellina canadensis</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 20 to Aug 10
<p><b>Cerulean Warbler</b> <i>Dendroica cerulea</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/2974">https://ecos.fws.gov/ecp/species/2974</a></p>	Breeds Apr 29 to Jul 20
<p><b>Chimney Swift</b> <i>Chaetura pelagica</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Mar 15 to Aug 25
<p><b>Common Eider</b> <i>Somateria mollissima</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds Jun 1 to Sep 30

NAME	BREEDING SEASON
<p><b>Common Loon <i>Gavia immer</i></b>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.  <a href="https://ecos.fws.gov/ecp/species/4464">https://ecos.fws.gov/ecp/species/4464</a></p>	Breeds Apr 15 to Oct 31
<p><b>Common Murre <i>Uria aalge</i></b>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds Apr 15 to Aug 15
<p><b>Cory's Shearwater <i>Calonectris diomedea</i></b>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p><b>Double-crested Cormorant <i>Phalacrocorax auritus</i></b>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.  <a href="https://ecos.fws.gov/ecp/species/3478">https://ecos.fws.gov/ecp/species/3478</a></p>	Breeds Apr 20 to Aug 31
<p><b>Dovekie <i>Alle alle</i></b>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.  <a href="https://ecos.fws.gov/ecp/species/6041">https://ecos.fws.gov/ecp/species/6041</a></p>	Breeds elsewhere
<p><b>Eastern Whip-poor-will <i>Antrostomus vociferus</i></b>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Aug 20
<p><b>Great Shearwater <i>Puffinus gravis</i></b>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p><b>Gull-billed Tern <i>Gelochelidon nilotica</i></b>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9501">https://ecos.fws.gov/ecp/species/9501</a></p>	Breeds May 1 to Jul 31
<p><b>Hudsonian Godwit <i>Limosa haemastica</i></b>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p><b>Kentucky Warbler <i>Oporornis formosus</i></b>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Apr 20 to Aug 20

NAME	BREEDING SEASON
<p>Lesser Yellowlegs <i>Tringa flavipes</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a></p>	Breeds elsewhere
<p>Long-eared Owl <i>asio otus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  <a href="https://ecos.fws.gov/ecp/species/3631">https://ecos.fws.gov/ecp/species/3631</a></p>	Breeds Mar 1 to Jul 15
<p>Long-tailed Duck <i>Clangula hyemalis</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.  <a href="https://ecos.fws.gov/ecp/species/7238">https://ecos.fws.gov/ecp/species/7238</a></p>	Breeds elsewhere
<p>Prairie Warbler <i>Dendroica discolor</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 1 to Jul 31
<p>Prothonotary Warbler <i>Protonotaria citrea</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Apr 1 to Jul 31
<p>Purple Sandpiper <i>Calidris maritima</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Razorbill <i>Alca torda</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds Jun 15 to Sep 10
<p>Red-breasted Merganser <i>Mergus serrator</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i>            This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds May 10 to Sep 10
<p>Red-necked Phalarope <i>Phalaropus lobatus</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere
<p>Red-throated Loon <i>Gavia stellata</i>            This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds elsewhere



NAME	BREEDING SEASON
<b>Ring-billed Gull <i>Larus delawarensis</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Roseate Tern <i>Sterna dougallii</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds May 10 to Aug 31
<b>Royal Tern <i>Thalasseus maximus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 31
<b>Ruddy Turnstone <i>Arenaria interpres morinella</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Rusty Blackbird <i>Euphagus carolinus</i></b> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Short-billed Dowitcher <i>Limnodromus griseus</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a>	Breeds elsewhere
<b>Surf Scoter <i>Melanitta perspicillata</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Thick-billed Murre <i>Uria lomvia</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 15
<b>White-winged Scoter <i>Melanitta fusca</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
<b>Willet <i>Tringa semipalmata</i></b> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
<b>Wilson's Storm-petrel <i>Oceanites oceanicus</i></b> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere

NAME	BREEDING SEASON
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

## PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

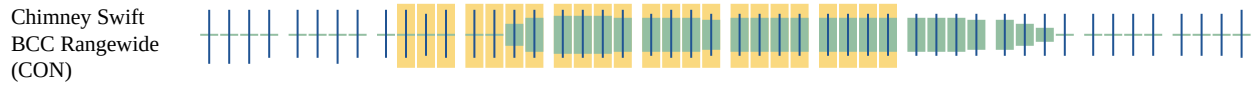
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

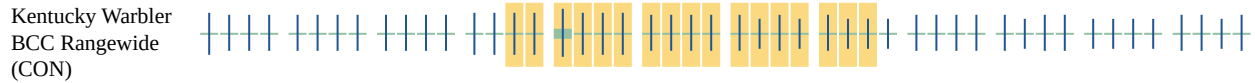
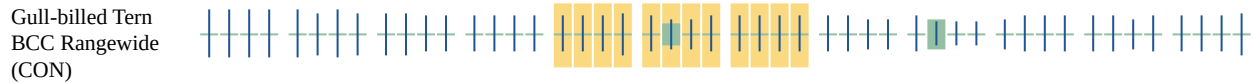
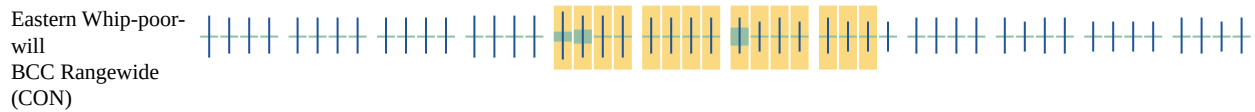
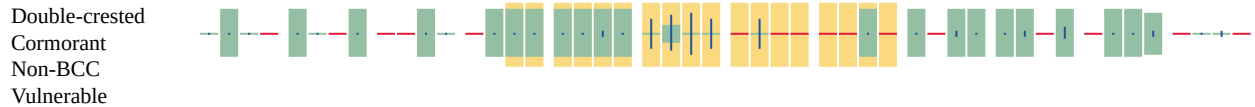
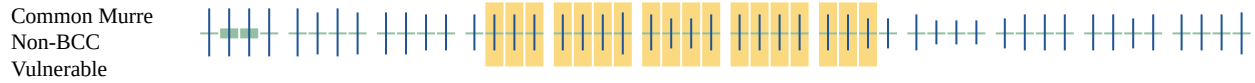
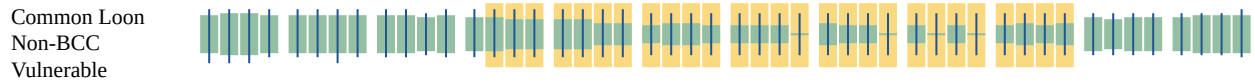
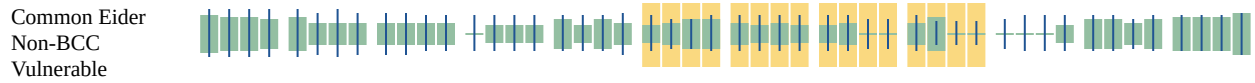
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.



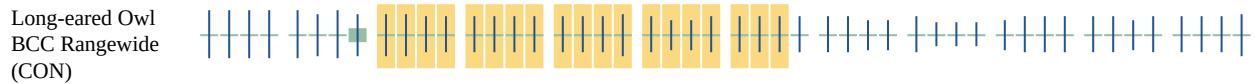
BCC Rangewide (CON)



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC





### BCC Rangewide (CON)

Surf Scoter  
Non-BCC  
Vulnerable



Thick-billed Murre  
Non-BCC  
Vulnerable



White-winged  
Scoter  
Non-BCC  
Vulnerable



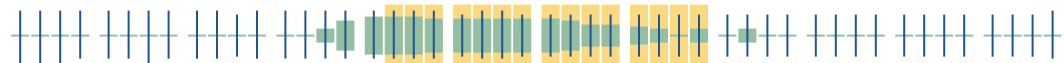
Willet  
BCC Rangewide  
(CON)



Wilson's Storm-  
petrel  
Non-BCC  
Vulnerable



Wood Thrush  
BCC Rangewide  
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## MIGRATORY BIRDS FAQ

**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
  2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
  3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).
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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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## WETLANDS

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

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## **IPAC USER CONTACT INFORMATION**

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Environmental Services, D.P.C

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Phone: 7172981059

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# State of New Jersey

## DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

501 East State Street

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

Trenton, New Jersey 08625-0420

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

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

**PHILIP D. MURPHY**

*Governor*

**TAHESHA L. WAY**

*Lt. Governor*

**SHAWN M. LATOURETTE**

*Commissioner*

January 11, 2024

Amanda Stank  
Environmental Design & Research  
557 Clermont Drive  
Harrisburg, PA 17112

Re: Atlantic Shores South Offshore Wind Generation Project  
Sea Girt and Manasquan Boroughs, Wall and Howell Townships, Monmouth County

Dear Amanda Stank:

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](https://nj.gov/dep/parksandforests/natural/docs/nhpcodes_2010.pdf).

NHP File No. 24-4007421-29486



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. 24-4007421-29486

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

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
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	Yes	1 page(s) 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	3 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) 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	Yes	1 page(s) included

**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**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed	Location
<i>Vascular Plants</i>									
Amaranthus pumilus	Seabeach Amaranth	LT	E	LP, HL	G2	S1	Y	2014-09-12	Wreck Pond on both sides of Spring Lake/Sea Girt border, and south 2.8 km to Main St. in Manasquan, in Monmouth County.
Polygonum glaucum	Sea-beach Knotweed		E	LP, HL	G3	S1	Y	2011-08-25	Sea Girt, from northern border by Wreck Pond south to National Guard Training Center.

Total number of records: 2



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

<b>Class</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Feature Type</b>	<b>Rank</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
<i>Amphibia</i>								
	Fowler's Toad	Anaxyrus fowleri	Occupied Habitat	2	NA	Special Concern	G5	S3
	Pine Barrens Treefrog	Hyla andersonii	Occupied Habitat	3	NA	State Threatened	G4	S2
	Pine Barrens Treefrog	Hyla andersonii	Vernal Pool Breeding	3	NA	State Threatened	G4	S2
<i>Aves</i>								
	American Kestrel	Falco sparverius	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	American Kestrel	Falco sparverius	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	American Oystercatcher	Haematopus palliatus	Nesting Area	2	NA	Special Concern	G5	S3B,S3N
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Barred Owl	Strix varia	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Cooper's Hawk	Accipiter cooperii	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N

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

<b>Class</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Feature Type</b>	<b>Rank</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
	Glossy Ibis	<i>Plegadis falcinellus</i>	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	<i>Ardea herodias</i>	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Horned Lark	<i>Eremophila alpestris</i>	Non-breeding Sighting	2	NA	Special Concern	G5	S2B,S3N
	Least Tern	<i>Sternula antillarum</i>	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Least Tern	<i>Sternula antillarum</i>	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Northern Harrier	<i>Circus cyaneus</i>	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Osprey	<i>Pandion haliaetus</i>	Foraging	3	NA	State Threatened	G5	S2B,S4N
	Osprey	<i>Pandion haliaetus</i>	Nest	3	NA	State Threatened	G5	S2B,S4N
	Piping Plover	<i>Charadrius melodus</i>	Nesting Area	5	Federally Listed Threatened	State Endangered	G3	S1B,S1N
	Snowy Egret	<i>Egretta thula</i>	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	<i>Egretta tricolor</i>	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Veery	<i>Catharus fuscescens</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Wood Thrush	<i>Hylocichla mustelina</i>	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
	Yellow-crowned Night-heron	<i>Nyctanassa violacea</i>	Foraging	3	NA	State Threatened	G5	S2B,S2N

***Mammalia***

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

<b>Class</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Feature Type</b>	<b>Rank</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
	Fin Whale	Balaenoptera physalus	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G3G4	S1
	Humpback Whale	Megaptera novaeangliae	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G4	S1
	North Atlantic Right Whale	Eubalaena glacialis	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G1	S1
<b>Reptilia</b>								
	Atlantic Leatherback	Dermochelys coriacea	Occupied Habitat	5	Federally Listed Endangered	State Endangered	G2	S1
	Bog Turtle	Glyptemys muhlenbergii	Occupied Habitat	5	Federally Listed Threatened	State Endangered	G3	S1
	Eastern Box Turtle	Terrapene carolina carolina	Occupied Habitat	2	NA	Special Concern	G5T5	S3
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

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

<b>Vernal Pool Habitat Type</b>	<b>Vernal Pool Habitat ID</b>
Potential vernal habitat area	1415
Potential vernal habitat area	1418
Potential vernal habitat area	1419
Potential vernal habitat area	1421
Total number of records:	4



**Other Animal Species  
On the Project Site Based on  
Additional Species Tracked by  
Endangered and Nongame Species Program**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
<i>Invertebrate Animals</i>					
Grammia placentia	Placentia Tiger Moth			G3G4	S1S3
Metarranthis pilosaria	Coastal Bog Metarranthis			G3G4	S3S4
Total number of records:	2				

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

<b><u>Report Name</u></b>	<b><u>Included</u></b>	<b><u>Number of Pages</u></b>
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	Yes	1 page(s) 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	3 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	Yes	1 page(s) included

**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**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed	Location
<i>Vascular Plants</i>									
Amaranthus pumilus	Seabeach Amaranth	LT	E	LP, HL	G2	S1	Y	2014-09-12	Wreck Pond on both sides of Spring Lake/Sea Girt border, and south 2.8 km to Main St. in Manasquan, in Monmouth County.
Arnoglossum atriplicifolium	Pale Wild Caraway		E	LP, HL	G4G5	S1	Y	1953-07-25	One mile southwest of Allenwood.
Helonias bullata	Swamp-pink	LT	E	LP, HL	G3	S3	Y	1954-04-22	One mile west of Allenwood.
Polygonum glaucum	Sea-beach Knotweed		E	LP, HL	G3	S1	Y	2011-08-25	Sea Girt, from northern border by Wreck Pond south to National Guard Training Center.

Total number of records: 4

<p><b>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</b></p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
<i>Amphibia</i>								
	Fowler's Toad	Anaxyrus fowleri	Occupied Habitat	2	NA	Special Concern	G5	S3
	Pine Barrens Treefrog	Hyla andersonii	Occupied Habitat	3	NA	State Threatened	G4	S2
	Pine Barrens Treefrog	Hyla andersonii	Vernal Pool Breeding	3	NA	State Threatened	G4	S2
<i>Aves</i>								
	American Kestrel	Falco sparverius	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	American Kestrel	Falco sparverius	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	American Oystercatcher	Haematopus palliatus	Nesting Area	2	NA	Special Concern	G5	S3B,S3N
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Barred Owl	Strix varia	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Cooper's Hawk	Accipiter cooperii	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Cooper's Hawk	Accipiter cooperii	Nest	2	NA	Special Concern	G5	S3B,S4N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N



**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**

<b>Class</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Feature Type</b>	<b>Rank</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Horned Lark	Eremophila alpestris	Non-breeding Sighting	2	NA	Special Concern	G5	S2B,S3N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Least Tern	Sternula antillarum	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Northern Harrier	Circus cyaneus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Osprey	Pandion haliaetus	Foraging	3	NA	State Threatened	G5	S2B,S4N
	Osprey	Pandion haliaetus	Nest	3	NA	State Threatened	G5	S2B,S4N
	Piping Plover	Charadrius melodus	Nesting Area	5	Federally Listed Threatened	State Endangered	G3	S1B,S1N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Veery	Catharus fuscescens	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Wood Thrush	Hylocichla mustelina	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N
	Yellow-crowned Night-heron	Nyctanassa violacea	Nesting Colony	3	NA	State Threatened	G5	S2B,S2N

***Mammalia***

**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**

<b>Class</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Feature Type</b>	<b>Rank</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
	Fin Whale	Balaenoptera physalus	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G3G4	S1
	Humpback Whale	Megaptera novaeangliae	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G4	S1
	North Atlantic Right Whale	Eubalaena glacialis	Live Individual Sighting	5	Federally Listed Endangered	State Endangered	G1	S1
<b>Reptilia</b>								
	Atlantic Leatherback	Dermochelys coriacea	Occupied Habitat	5	Federally Listed Endangered	State Endangered	G2	S1
	Bog Turtle	Glyptemys muhlenbergii	Occupied Habitat	5	Federally Listed Threatened	State Endangered	G3	S1
	Eastern Box Turtle	Terrapene carolina carolina	Occupied Habitat	2	NA	Special Concern	G5T5	S3
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

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

<b>Vernal Pool Habitat Type</b>	<b>Vernal Pool Habitat ID</b>
Vernal habitat area	2821
Potential vernal habitat area	1415
Potential vernal habitat area	1418
Potential vernal habitat area	1419
Potential vernal habitat area	1421
Potential vernal habitat area	1423
Total number of records:	6

**Other Animal Species  
In the Immediate Vicinity of the Project Site Based on  
Additional Species Tracked by  
Endangered and Nongame Species Program**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Protection Status</b>	<b>State Protection Status</b>	<b>Grank</b>	<b>Srank</b>
<i>Invertebrate Animals</i>					
Cicindela patricola consentanea	New Jersey Pine Barrens Tiger Beetle			G3T1T3	S2S3
Grammia placentia	Placentia Tiger Moth			G3G4	S1S3
Metarranthis pilosaria	Coastal Bog Metarranthis			G3G4	S3S4
Total number of records:	3				



## New Jersey Landscape Regions Results

(Atlantic Coastal, Piedmont Plains and Pinelands)

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
1	Agriculture	Cropland and Pastureland	Pinelands	No
1	Agriculture	Other Agriculture	Pinelands	No
1	Forest	Coniferous Forest (10-50% Crown Closure)	Pinelands	No
1	Forest	Deciduous Forest (>50% Crown Closure)	Atlantic Coastal	No
1	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	No
1	Forest	Deciduous Forest (10-50% Crown Closure)	Atlantic Coastal	No
1	Forest	Deciduous Forest (10-50% Crown Closure)	Pinelands	No
1	Forest	Mixed Deciduous/Coniferous Brush/Shrubland	Atlantic Coastal	No
1	Forest	Mixed Deciduous/Coniferous Brush/Shrubland	Piedmont Plains	No
1	Forest	Mixed Deciduous/Coniferous Brush/Shrubland	Pinelands	No
1	Forest	Old Field (< 25% Brush Covered)	Pinelands	No
1	Urban	Commercial/Services	Piedmont Plains	No
1	Urban	Commercial/Services	Pinelands	No
1	Urban	Other Urban or Built-Up Land	Piedmont Plains	No
1	Urban	Other Urban or Built-Up Land	Pinelands	No
1	Urban	Recreational Land	Piedmont Plains	No
1	Urban	Recreational Land	Pinelands	No
1	Urban	Residential, High Density Or Multiple Dwelling	Pinelands	No
1	Urban	Residential, Rural, Single Unit	Atlantic Coastal	No
1	Urban	Residential, Rural, Single Unit	Piedmont Plains	No
1	Urban	Residential, Rural, Single Unit	Pinelands	No
1	Urban	Residential, Single Unit, Medium Density	Piedmont Plains	No
1	Urban	Transportation/Communication/Utilities	Pinelands	No
1	Wetlands	Agricultural Wetlands (Modified)	Pinelands	No

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
1	Wetlands	Deciduous Wooded Wetlands	Pinelands	No
2	Agriculture	Cropland And Pastureland	Atlantic Coastal	No
2	Forest	Coniferous Forest (>50% Crown Closure)	Pinelands	No
2	Forest	Deciduous Forest (>50% Crown Closure)	Atlantic Coastal	No
2	Forest	Deciduous Forest (>50% Crown Closure)	Piedmont Plains	No
2	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	No
2	Forest	Deciduous Forest (10-50% Crown Closure)	Atlantic Coastal	No
2	Forest	Deciduous Forest (10-50% Crown Closure)	Piedmont Plains	No
2	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Piedmont Plains	No
2	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Pinelands	No
2	Forest	Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	Piedmont Plains	No
2	Forest	Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	Pinelands	No
2	Urban	Other Urban Or Built-Up Land	Atlantic Coastal	No
2	Urban	Upland Rights-Of-Way Undeveloped	Pinelands	No
2	Water	Artificial Lakes	Pinelands	No
2	Wetlands	Deciduous Wooded Wetlands	Atlantic Coastal	No
2	Wetlands	Deciduous Wooded Wetlands	Pinelands	No
2	Wetlands	Mixed Wooded Wetlands (Deciduous Dom.)	Pinelands	No
2	Wetlands	Mixed Wooded Wetlands (Coniferous Dom.)	Pinelands	No
3	Forest	Coniferous Forest (>50% Crown Closure)	Pinelands	No
3	Forest	Coniferous Forest (10-50% Crown Closure)	Pinelands	No
3	Forest	Deciduous Brush/Shrubland	Pinelands	No
3	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	No
3	Forest	Deciduous Forest (10-50% Crown Closure)	Pinelands	No

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
3	Forest	Mixed Forest (>50% Coniferous With >50% Crown Closure)	Pinelands	No
3	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Pinelands	No
3	Urban	Recreational Land	Atlantic Coastal	No
3	Urban	Upland Rights-Of-Way Undeveloped	Pinelands	No
3	Water	Artificial Lakes	Pinelands	No
3	Wetlands	Coniferous Wooded Wetlands	Pinelands	No
3	Wetlands	Deciduous Wooded Wetlands	Atlantic Coastal	No
3	Wetlands	Deciduous Wooded Wetlands	Piedmont Plains	No
3	Wetlands	Deciduous Wooded Wetlands	Pinelands	No
3	Wetlands	Herbaceous Wetlands	Pinelands	No
3	Wetlands	Mixed Wooded Wetlands (Coniferous Dom.)	Pinelands	No
3	Wetlands	Mixed Wooded Wetlands (Deciduous Dom.)	Atlantic Coastal	No
3	Wetlands	Mixed Wooded Wetlands (Deciduous Dom.)	Pinelands	No
4	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	No
4	Urban	Military Installations	Atlantic Coastal	No
4	Water	Streams and Canals	Pinelands	No
4	Wetlands	Deciduous Wooded Wetlands	Pinelands	No
5	Agriculture	Cropland and Pastureland	Atlantic Coastal	Yes
5	Forest	Mixed Deciduous/Coniferous Brush/Shrubland	Pinelands	Yes
5	Forest	Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	Pinelands	Yes

## **Appendix C**

Photo Documentation





**Photograph 1**

Residential Area Bordering Roadway

**Coordinates:**  
40.13341389°, -74.05508333°

**Habitat Type:**  
Developed



**Photograph 2**

Residential Area Bordering Roadway

**Coordinates:**  
40.13111111°, -74.04612778°

**Habitat Type:**  
Developed

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 3**

Forested Habitat along  
Pedestrian Bike Path

**Coordinates:**  
40.14036944°, -74.09779444°

**Habitat Type:**  
Forest



**Photograph 4**

Herbaceous and Forested  
Habitat along Pedestrian Bike  
Path

**Coordinates:**  
40.13224167°, -74.07548611°

**Habitat Type:**  
Forest

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*



**Photograph 5**

Dune habitat near Monmouth  
Landfall (landward side of dunes)

**Coordinates:**  
40.119019°, -74.032508°

**Habitat Type:**  
Dune



**Photograph 6**

Dune habitat near Monmouth  
Landfall (beachward side of  
dunes)

**Coordinates:**  
40.119042°, -74.032136°

**Habitat Type:**  
Dune



**Atlantic Shores Offshore Wind – Larrabee Onshore Study Area**

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 7**

Beach and dune habitat near Monmouth Landfall facing west.

**Coordinates:**  
40.118656°, -74.0318°

**Habitat Type:**  
Beach/Dune



**Photograph 8**

Wetland in Forested Habitat

**Coordinates:**  
40.16298333°, -74.14859722°

**Habitat Type:**  
Forest Wetland

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 9**

Forested Wetland Habitat

**Coordinates:**  
40.1568°, -74.11875278°

**Habitat Type:**  
Forest Wetland



**Photograph 10**

Meadow Habitat and Sand  
Roadway around Larrabee  
Substation

**Coordinates:**  
40.11455833°, -74.1902°

**Habitat Type:**  
Herbaceous Upland

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 11**

Upland roadside edge habitat along Hospital Road

**Coordinates:**

40.14°, -74.125619°

**Habitat Type:**

Upland Mixed Herbaceous, Shrub and Forested



**Photograph 12**

Upland mixed forest along Easy Street

**Coordinates:**

40.139783°, -74.151842°

**Habitat Type:**

Forest

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 13**

Herbaceous Wetland Habitat

**Coordinates:**  
40.12426389°, -74.187225°

**Habitat Type:**  
Herbaceous Wetland



**Photograph 14**

Forested upland Habitat with  
thick shrub understory

**Coordinates:**  
40.152672°, -74.162353°

**Habitat Type:**  
Forest

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 15**

Forested wetland habitat with thick shrub understory

**Coordinates:**  
40.152161°, -74.163131°

**Habitat Type:**  
Forest Wetland



**Photograph 16**

Forested upland habitat (mixed forest)

**Coordinates:**  
40.141006°, -74.172858°

**Habitat Type:**  
Forest

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 17**

Herbaceous Wetland in Forested Area

**Coordinates:**

40.16297222°, -74.14775833°

**Habitat Type:**

Herbaceous Wetland



**Photograph 18**

Upland scrub-shrub and scrub-shrub wetland

**Coordinates:**

40.128742°, -74.1839°

**Habitat Type:**

Scrub-shrub Wetland/Upland

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





**Photograph 19**

Roadside maintained lawn and scrub-shrub

**Coordinates:**

40.124206°, -74.187897°

**Habitat Type:**

Herbaceous/Scrub-shrub Upland



**Photograph 20**

Herbaceous oldfield

**Coordinates:**

40.115558°, -74.1949°

**Habitat Type:**

Herbaceous Upland

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*





Photograph 21

Open Water Pond

**Coordinates:**

40.14602222°, -74.10704167°

**Habitat Type:**

Waterbody

## Atlantic Shores Offshore Wind – Larrabee Onshore Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell, Monmouth County, New Jersey

*Habitat Suitability Assessment Report*



## **Appendix D**

Bog Turtle Habitat Survey Memorandum



## Memorandum

**To:** Atlantic Shores Offshore Wind, LLC  
**From:** Environmental Design & Research  
**Date:** March 8, 2023  
**Reference:** Bog Turtle Habitat Assessment – Larrabee  
**EDR Project No:** 20043

Environmental Design & Research conducted a targeted habitat suitability survey for bog turtles (*Glyptemys muhlenbergii*) within the Larrabee Onshore Interconnection Cable Route within Allaire State Park in Wall Township, Monmouth County, New Jersey. This area is mapped as potential habitat for this species by the United States Fish & Wildlife Service (USFWS). The purpose of this survey was to document the existing conditions and evaluate these conditions for the potential habitat suitability for bog turtle. This memorandum provides a description of the species, typical habitat, a summary of the conditions observed, and photograph documentation.

### Species Description

The bog turtle is a federally threatened and state endangered turtle that is approximately 4.5 inches in length and predominantly brown with orangey-yellow areas behind and above each tympanum (ear) (USFWS, 2023). They also have orange markings on their head, neck and limbs, with occasional spots toward the tail end of the shell on the plastron (underside).

### Suitable Habitat

Bog turtles occupy shallow wetland habitats that tend to be open-canopy herbaceous sedge bogs, fens, or wetland meadows. The wetlands generally contain herbaceous plants such as tussock sedges (*Carex stricta*) that form hummocks, cattail (*Typha* sp.), grass-of-parnassus (*Parnassia* sp.), shrubby cinquefoil (*Dasiphora fruticosa*), and poison sumac (*Toxicodendron vernix*) (USFWS, 2023). Preferred wetlands have microhabitats that provide areas for foraging, nesting, basking, sheltering, and hibernating. The microhabitats consist of soft, muddy bottoms, broken up by wet and dry pockets, low volumes of standing or slow-moving ground and surface water and vegetation dominated by low growing grasses and sedges (USFWS, 2023).

### Habitat in Project Area

#### Location #1: 100-Acre Parcel, Howell Township, New Jersey

Habitat on site consists of successional upland forest, with forested wetlands along the North Branch Metedeconk River. Wetland habitat, as described in the wetland delineation report performed by DuBois Environmental Consultants in 2018, consists of red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), and river birch (*Betula nigra*). The shrub layer is dominated by saplings of species in the overstory as well as southern arrowwood (*Viburnum dentatum*) and sweet pepperbush (*Clethra alnifolia*). The herbaceous layer is dominated by soft rush (*Juncus effusus*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), onion grass (*Romulea rosea*) and other unidentified sedge species. Soils in wetland areas consisted of sand and sandy loam soils meeting criteria for histic epipedon (A2), thick dark surface (A12) and dark surface (S7) hydric soil indicators. Muck or organic soils were not observed.

Based on the existing conditions, it is unlikely that the habitat present in the Project Area within the 100-acre parcel is suitable to support bog turtle during any portion of their life cycle. The existing habitat does not provide the typical microhabitats that bog turtles rely on for many parts of their life-cycle activities, such as foraging, nesting, basking, hibernating, and sheltering. Bog turtles also prefer areas with ample sunlight. The existing soils within the Project Area are not soft or mucky and vegetation is dominated by deciduous trees (which limits sunlight reaching the ground especially during the growing season) with shrubs interspersed and minimal herbaceous cover. Therefore, the wetlands within the Project Area were determined to not be suitable for bog turtles.

### Representative Photos



**Photograph 1. Representative photo of upland habitat within the Parcel**



**Photograph 2. Representative photo of wetland habitat within the Parcel**





**Photograph 3. Representative photo of the Metedeconk River within the Parcel**

### **Location #2: Allaire State Park, Hospital Road, Howell Township, New Jersey**

Investigations conducted in February 2023 indicate the presence of marginally suitable bog turtle habitat in a portion of Allaire State Park that is adjacent to the Project Area west of Hospital Road (see Figure 1 and attached photographs). Wetland habitat in this area occurs adjacent to a pedestrian walkway and consists of red maple (*Acer rubrum*), phragmites (*Phragmites australis*), cattails (*Typha* sp.), tussock sedge (*Carex stricta*), and woolgrass (*Scirpus cyperinus*). Although this area was determined to be marginally suitable due to the vegetation species observed and proximity to historical records of bog turtles, the wetland is not likely to support bog turtles because of its presence in the floodplain of the Manasquan River which is known to flood on a regular basis. Additionally, the wetland observed did not have standing or slow flowing surface water influenced by groundwater. Instead, this wetland is supported by hydrology from precipitation events and flooding from the river. This area was assessed because this marginally suitable bog turtle habitat occurs proximate to the open cut trenching that is proposed in Hospital Road. No Project activities will occur within or have a high likelihood of impacting this area of potential bog turtle habitat. There was no potential bog turtle habitat identified along the section of the Manasquan River where the onshore interconnection cable will be installed via horizontal directional drill.

## Representative Photos



Photograph 4. Potential bog turtle habitat along pedestrian walkway within Allaire State Park.





Photograph 5. Potential bog turtle habitat along pedestrian walkway within Allaire State Park



Photograph 7. Representative photo of the Manasquan River





Photograph 6. Representative photo of upland habitat along the Manasquan River



Photograph 8. Representative photo of the Manasquan River and adjacent upland habitat

## Resources

United States Fish & Wildlife Service (USFWS). 2023. Bog Turtle. Available at:  
<https://www.fws.gov/species/bog-turtle-glyptemys-muhlenbergii>. (Accessed February 2023).



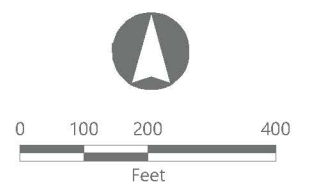


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell  
Monmouth County, New Jersey

#### Species Memo

- ↑ Photograph Location
- ▭ Study Area



Prepared March 8, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





Figure 1. Bog Turtle Photograph Location

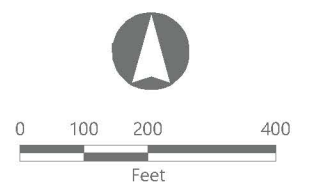
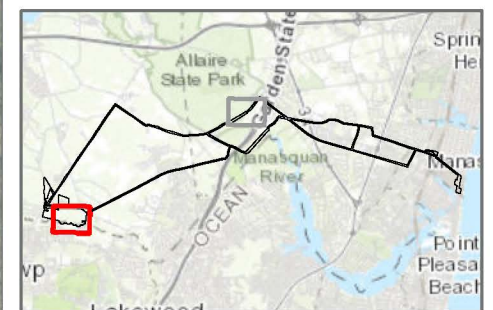


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Species Memo

- Photograph Location
- Study Area



Prepared March 8, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES  
offshore wind



## **Appendix E**

Swamp Pink Habitat Survey Memorandum



## Memorandum

**To:** Atlantic Shores Offshore Wind, LLC  
**From:** Environmental Design & Research  
**Date:** March 8, 2023  
**Reference:** Swamp Pink Habitat Assessment – Larrabee  
**EDR Project No:** 20043

Environmental Design & Research conducted a targeted habitat suitability survey for swamp pink (*Helonias bullata*) within the Larrabee Onshore Interconnection Cable Route within Allaire State Park in Wall Township, Monmouth County, New Jersey. This area is mapped as potential habitat for this species by the United States Fish & Wildlife Service (USFWS). The purpose of this survey was to document the existing conditions and evaluate these conditions for the potential habitat suitability for swamp pink. This memorandum provides a description of the species, typical habitat, a summary of the conditions observed, and photograph documentation.

### Species Description

Swamp pink has smooth, oblong, dark green leaves that form an evergreen rosette (USFWS, 2023). In spring the rosettes grow a stalk that can reach over three feet tall and produces a 1- to -3-inch-long cluster of 30 to 50 small pink flowers that are dotted with pale blue anthers (USFWS, 2023).

### Suitable Habitat

Swamp pink prefers wetland habitats that may include swampy forested wetlands that border meandering streams; headwater wetlands; sphagnum, hummocky, dense, Atlantic white cedar swamps; wet meadows; bogs; and spring seepage areas (ECOS, 2023). Specific requirements include areas in wetlands that are perennially saturated, but not inundated by floodwater with a water table that is at or near the surface with little fluctuation during spring and summer months. Swamp pink prefers shaded areas with canopy closure ranging from 20 to 100% and is often found on hummocks that are formed by trees, shrubs and sphagnum mosses (ECOS, 2023).

### Habitat in Project Area

Habitat on site consists of successional upland forest, with forested wetlands along delineated stream 26-ST04 (unnamed tributary to Manasquan River). Wetland habitat, as observed in February 2023, is limited to areas directly adjacent to the stream that were created through erosion or bank sloughing and the groundwater seeps that confluence the stream. The majority of the banks are raised from the stream bed with an open tree canopy with isolated areas of dense coverage from shrubs. In addition, significant invasive species such as Japanese stilt grass and dense leaf cover on the ground creates a thick mat creating a challenging growing medium for other herbaceous species.



The habitat found within the Project Area is not considered ideal for the proliferation of swamp pink because there are limited wetland areas that have a long-lasting perennial water table, areas are densely vegetated in the shrub canopy, significant populations of invasive species occur in the upland and streamside areas and heavy leaf litter covers the majority of the ground. Additionally, the water flow along and water level within the stream fluctuate throughout the year depending on meteorological and environmental patterns, such as precipitation patterns and the percentage of seasonal canopy cover, respectively. During periods of frequent and/or heavy rainfall, there is potential that the stream would overflow its banks into the adjacent wetlands, where present, impacting the amount of soil saturation and standing water within these wetlands. While this stream is formed at the headwaters and has contributing flow throughout its reach by groundwater seeps, the open canopy, lack of suitable soils or hummocks, significant invasive species, and significant changes in water level and flow of the stream, indicate that this habitat is not suitable for swamp pink.



Photograph 1. Steep banks along stream





**Photograph 2. Gentle floodplain slope with heavy tree canopy**



**Photograph 3. Gentle floodplain slope with wetland habitat and thick growth**





**Photograph 4. Steeply sloped banks with heavy shrub cover**



**Photograph 5. Gently sloped floodplain with dense canopy and thick leaf litter**





**Photograph 6. Sloughed stream bank with dense leaf litter and open overstory**



**Photograph 7. Steeply sloped banks and medium density overstory**

## Resources

United States Fish & Wildlife Service (USFWS). 2023. Swamp Pink. Available at:

<https://www.fws.gov/species/swamp-pink-helonias-bullata>. (Accessed February 2023).

United States Fish & Wildlife Service Environmental Conservation Online System (ECOS). 2023. Swamp pink (*Helonias bullata*). Available at:

<https://ecos.fws.gov/ecp/species/4333#:~:text=Swamp%20pink%20occurs%20in%20a,bogs%3B%20and%20spring%20seepage%20areas>. (Accessed February 2023).





Figure 1. Swamp Pink Photograph Location

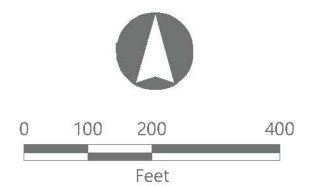


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Species Memo

-  Photograph Location
-  Study Area



Prepared March 8, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

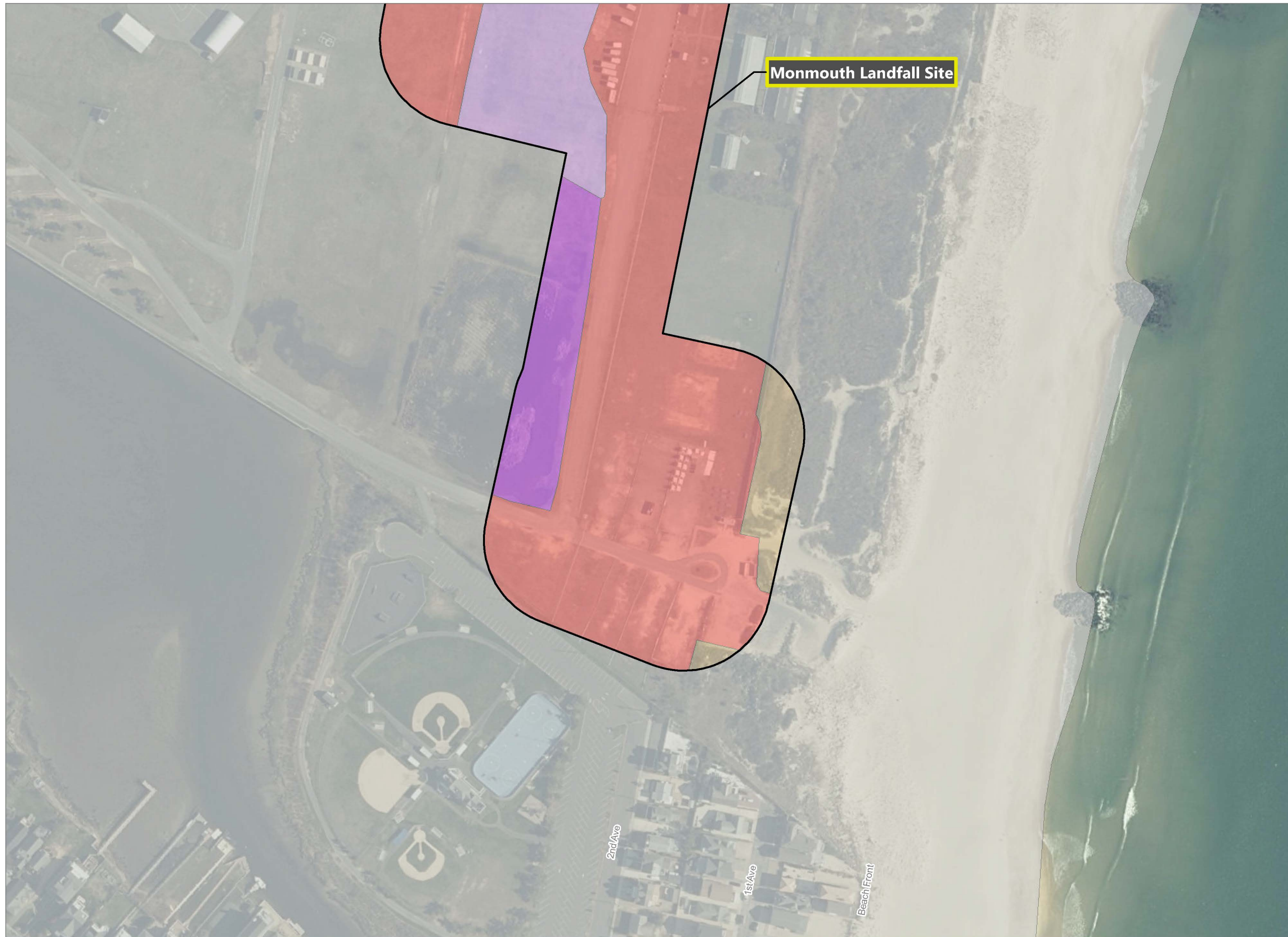
ATLANTIC SHORES  
offshore wind

EDR



## **Appendix F**

### Habitat Assessment Mapping



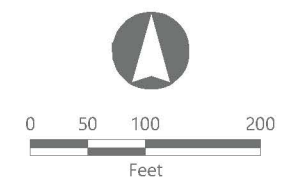
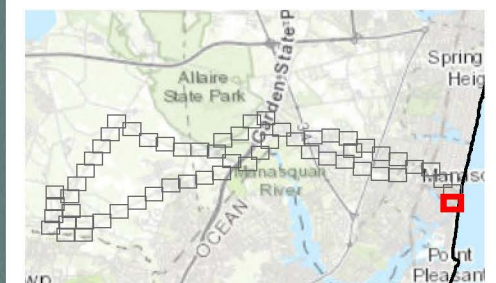
Monmouth Landfall Site

### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

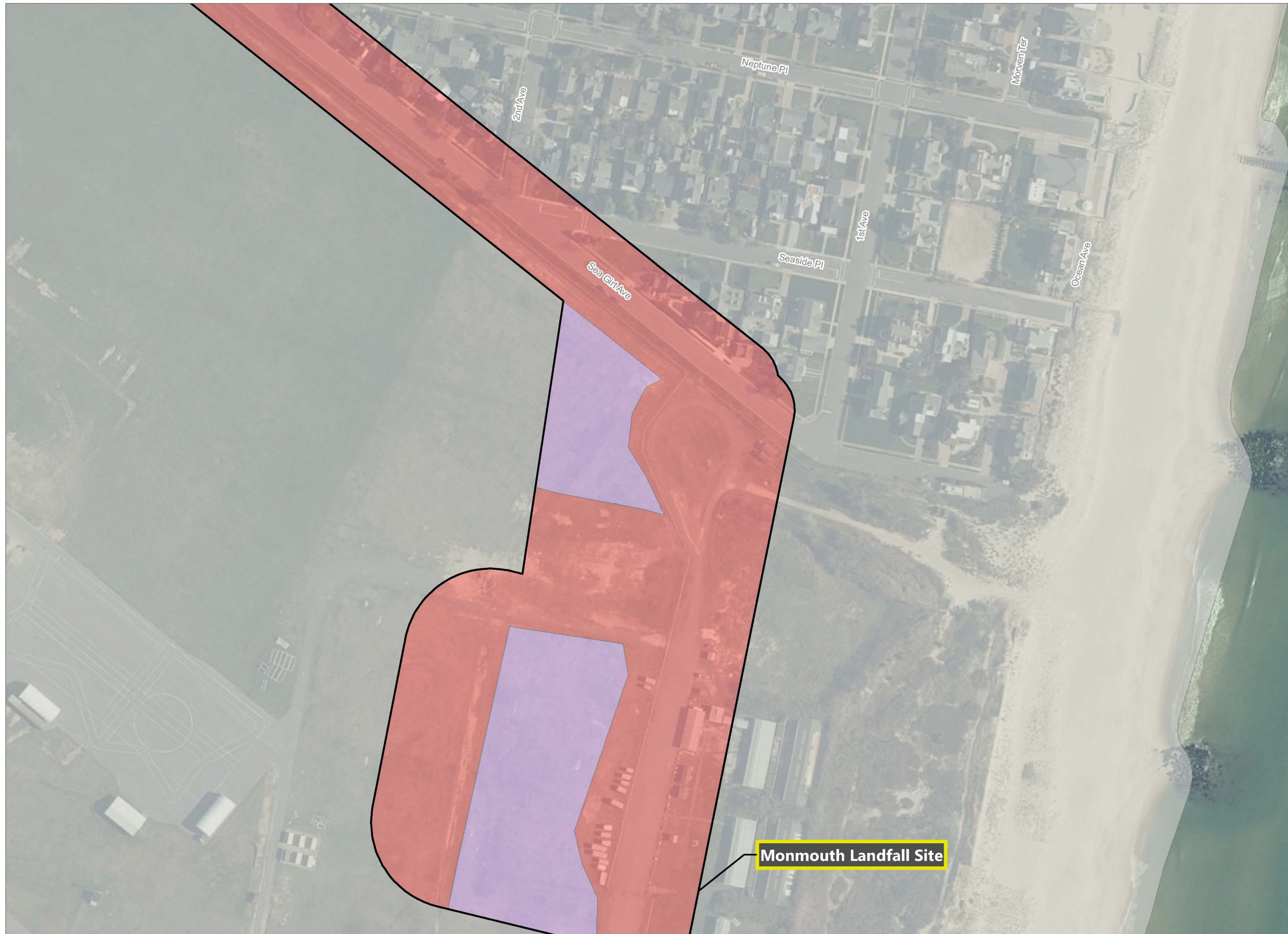
- Habitat Assessment
- Beach with Vegetation
  - Developed/Disturbed
  - Herbaceous
  - Herbaceous Wetland
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES  
offshore wind



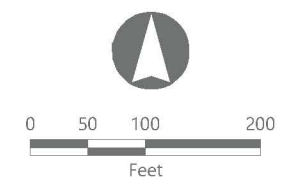
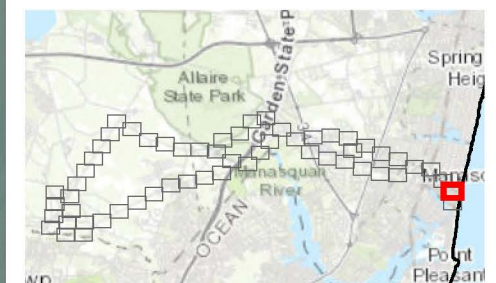


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### **Habitat Suitability Assessment Report**

- Habitat Assessment
- Developed/Disturbed
  - Herbaceous
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





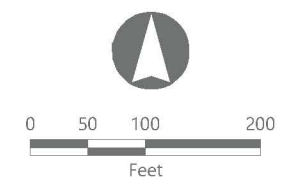


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





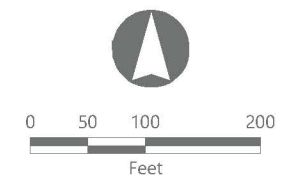


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

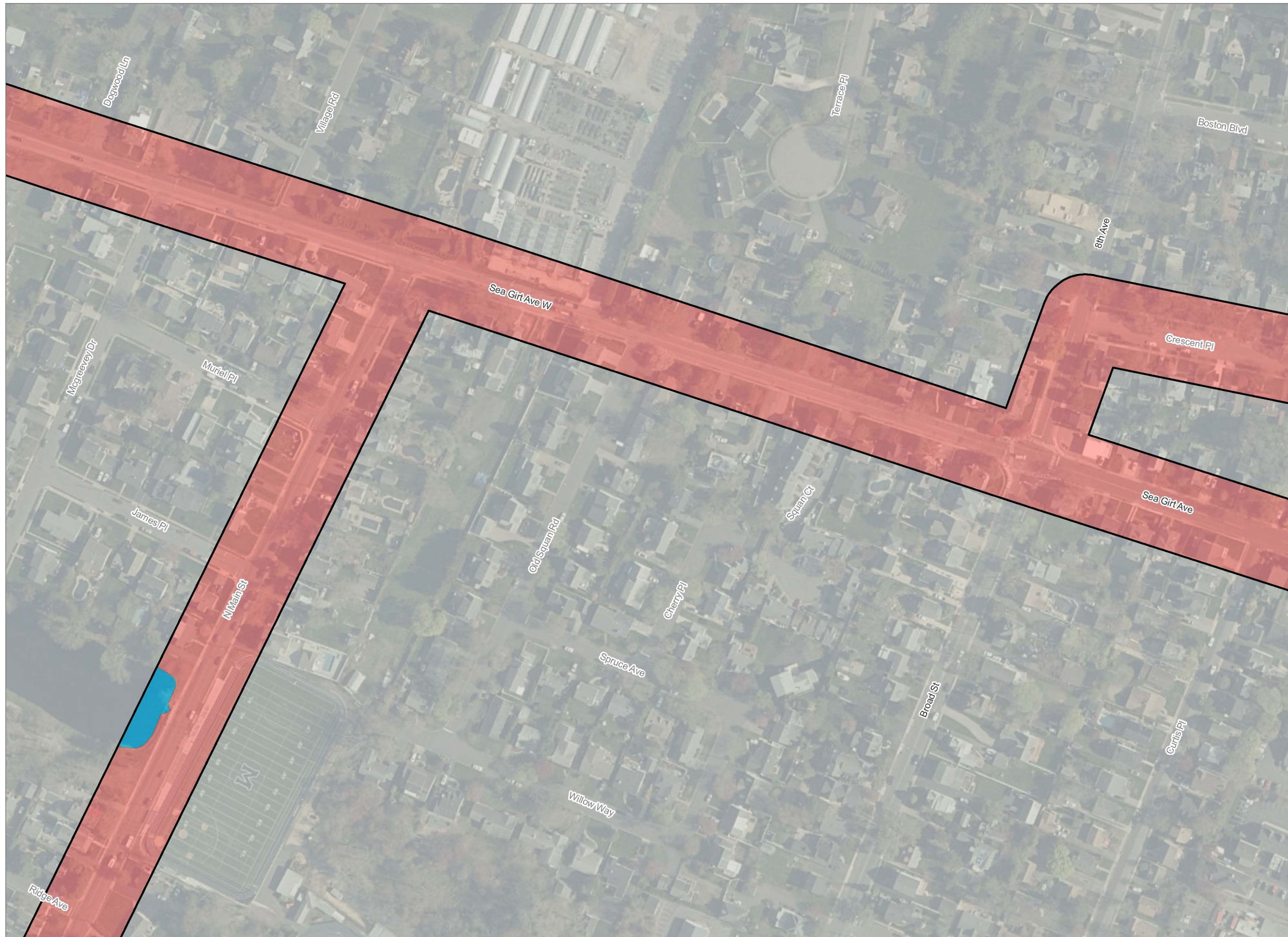




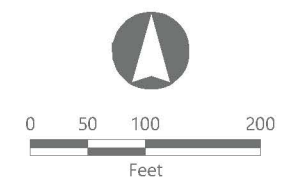
### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
- Developed/Disturbed
  - Water
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

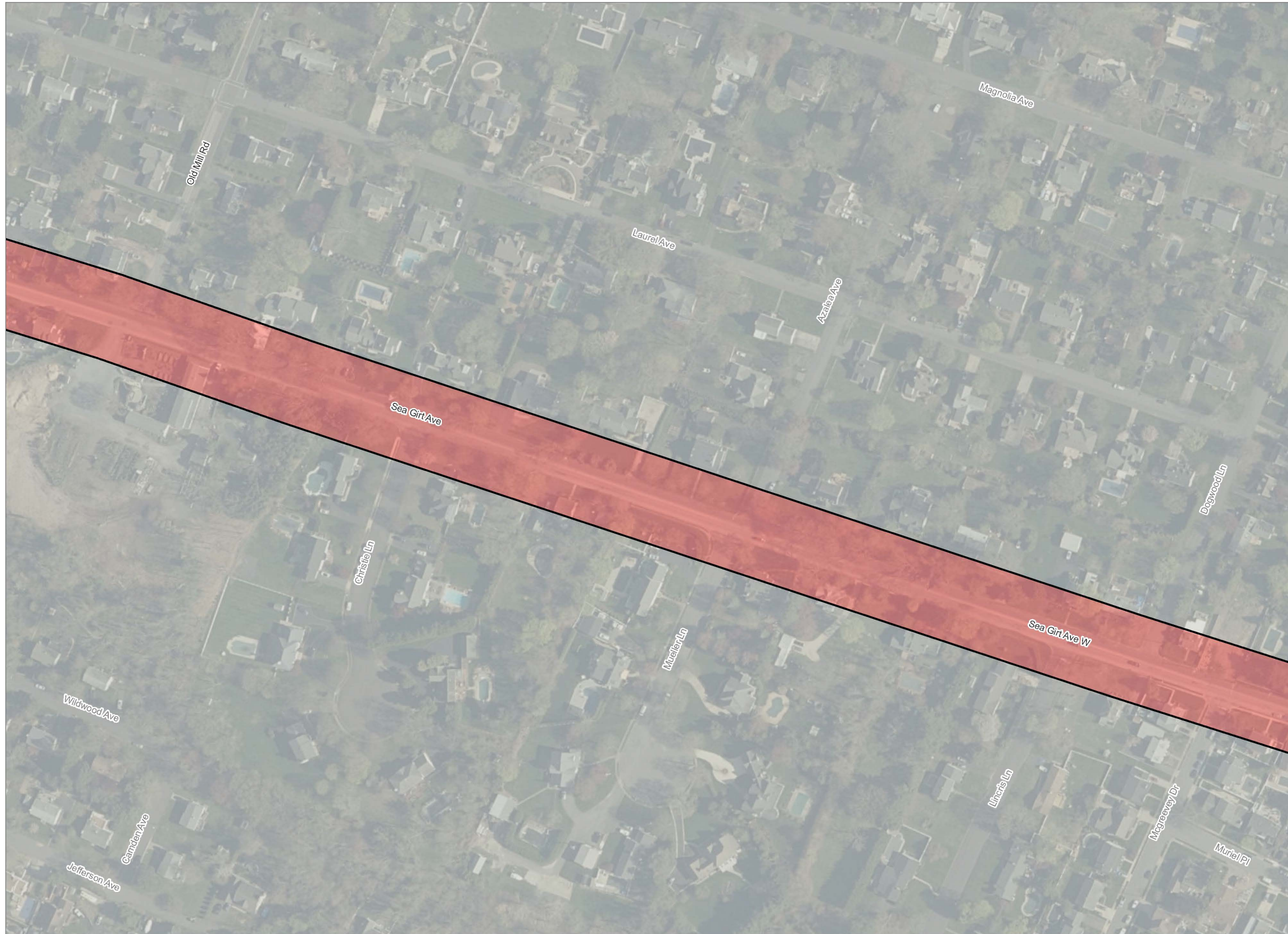




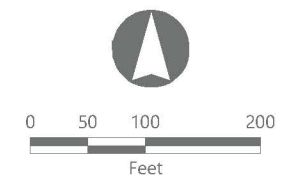
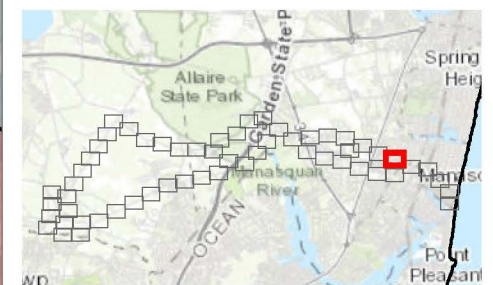
### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
- Developed/Disturbed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





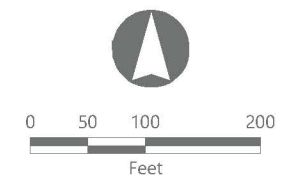


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Forest - Deciduous
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery



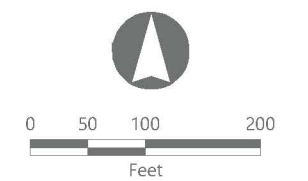
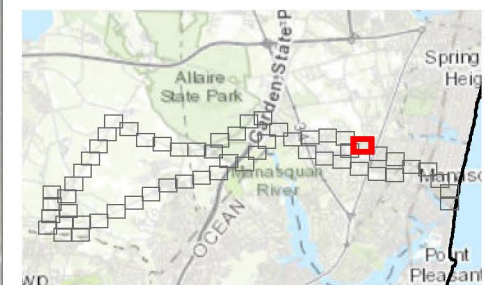
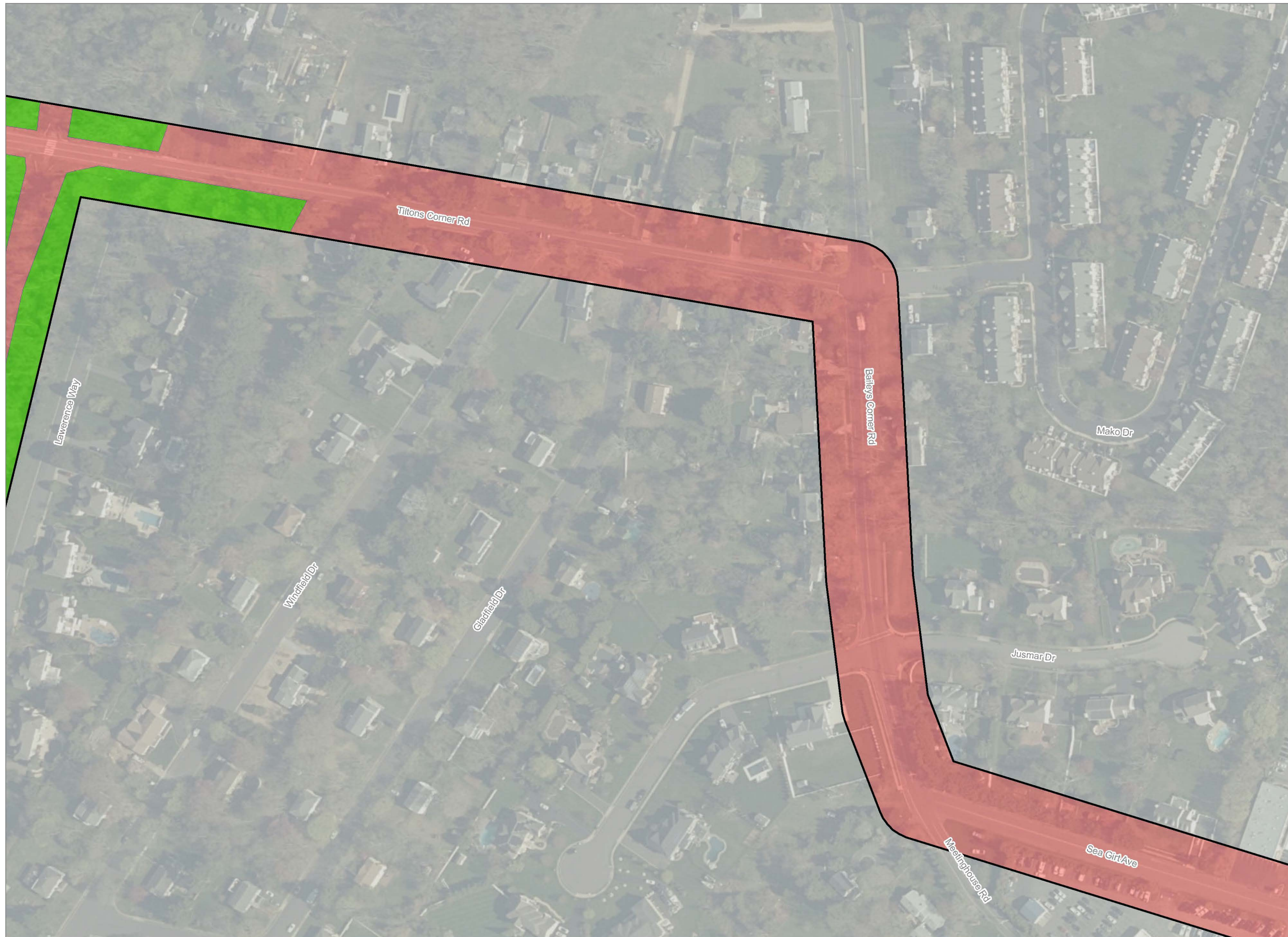


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

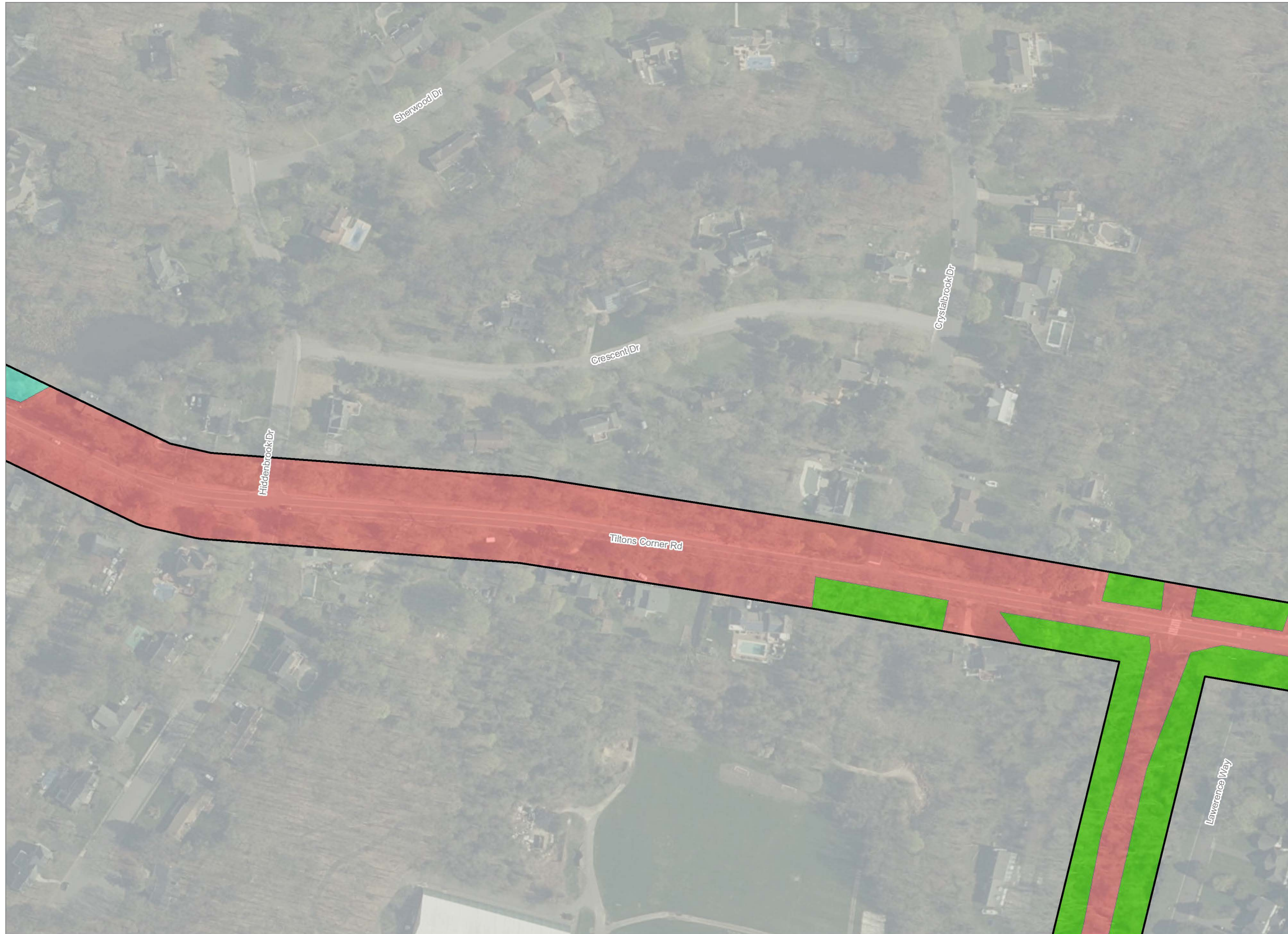
ATLANTIC SHORES  
offshore wind



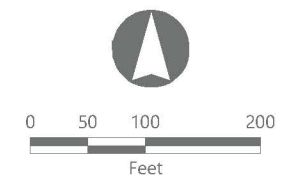
### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Forested Wetland
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery

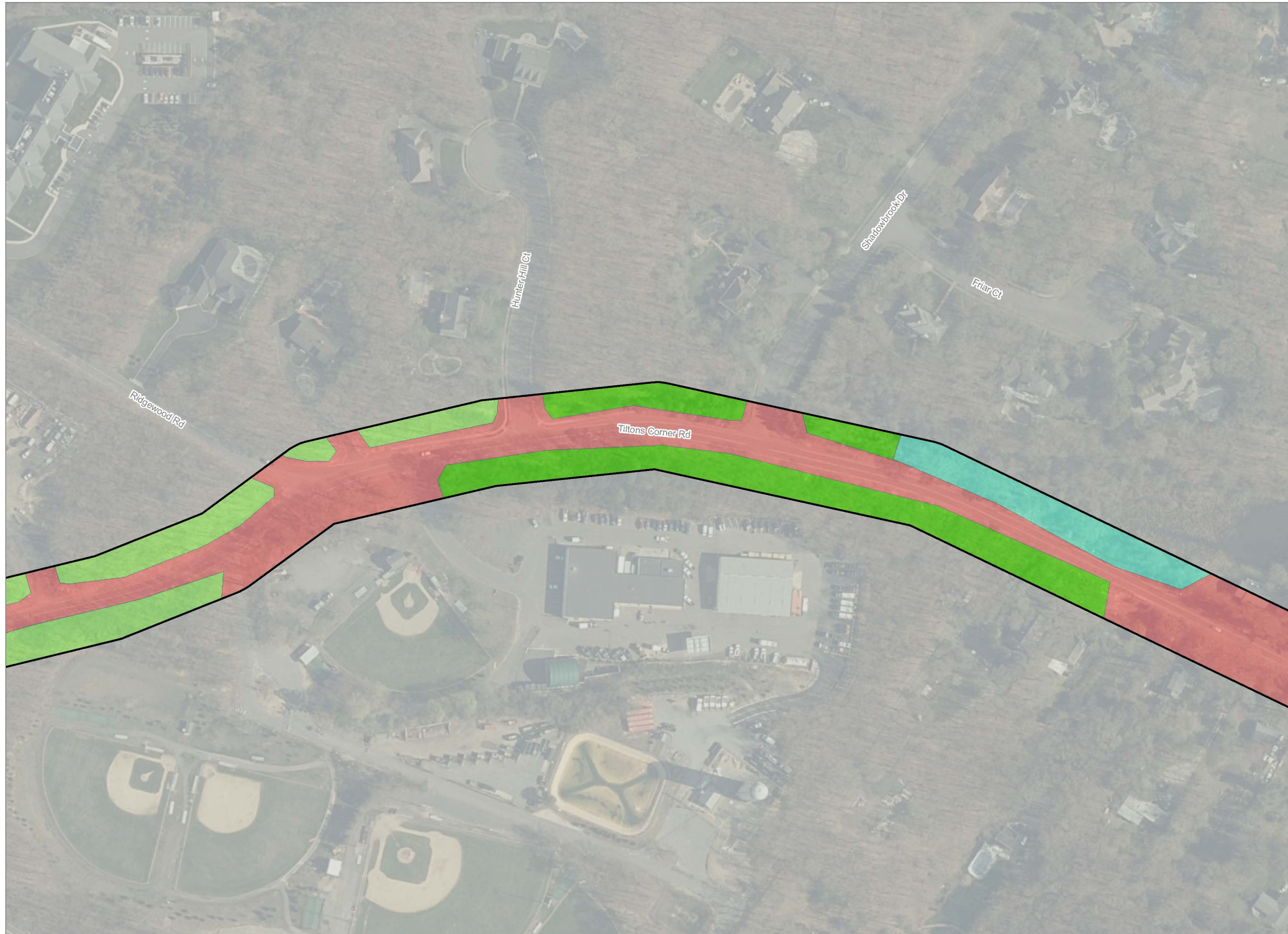




### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
- Developed/Disturbed
  - Forest - Deciduous
  - Forest - Mixed
  - Forested Wetland
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



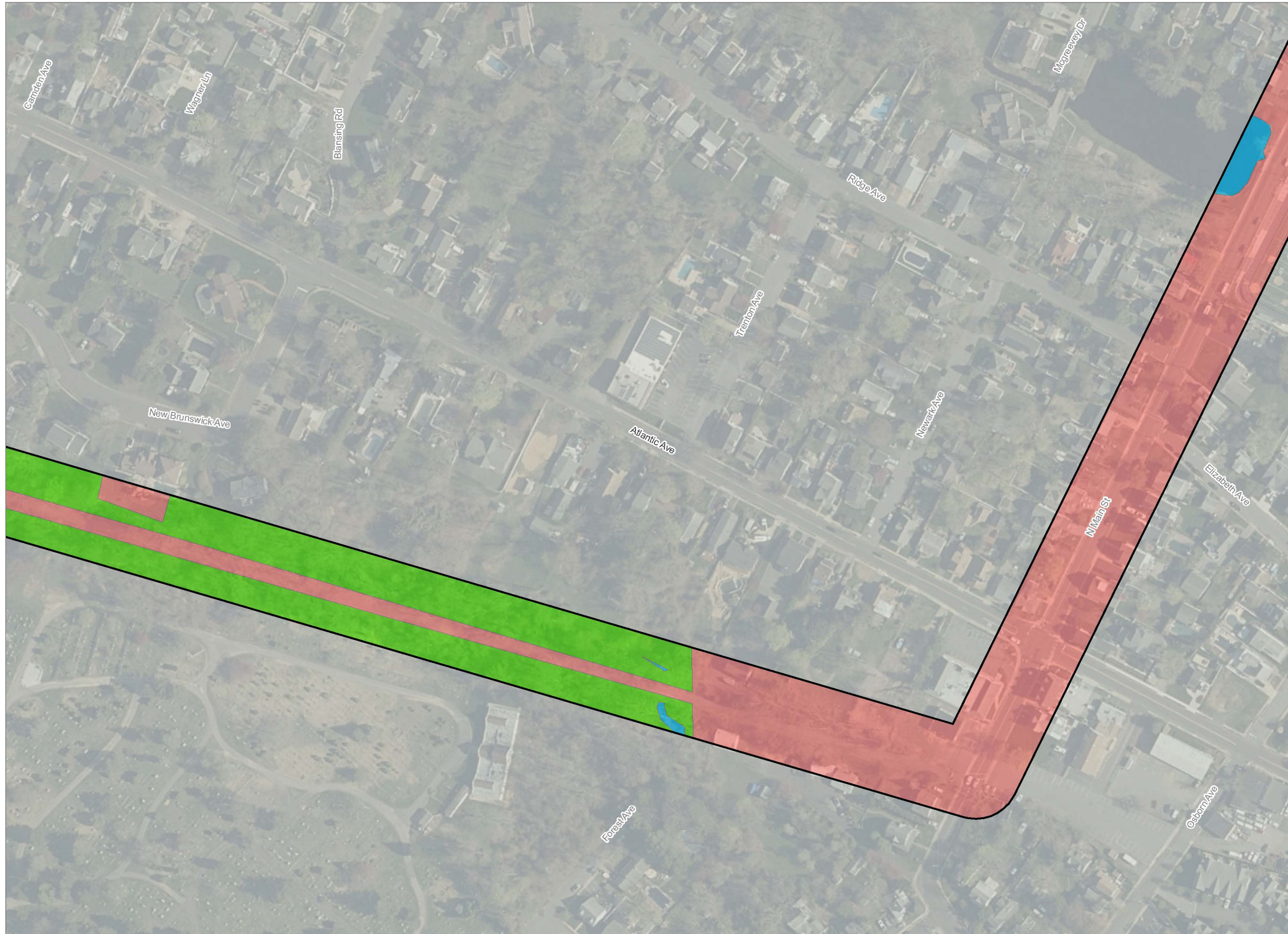
- Habitat Assessment
- Developed/Disturbed
  - Forest - Deciduous
  - Herbaceous
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





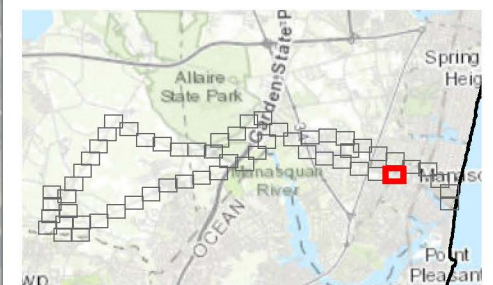


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Water
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





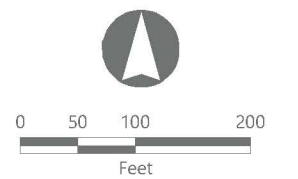


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of Manasquan, Township of Wall, and Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Study Area



Prepared February 28, 2023  
Basemap: NJ Office of GIS 2020 Natural Color Imagery





### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Herbaceous Wetland
  - Study Area



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Basemap: NJ Office of GIS 2020 Natural Color Imagery





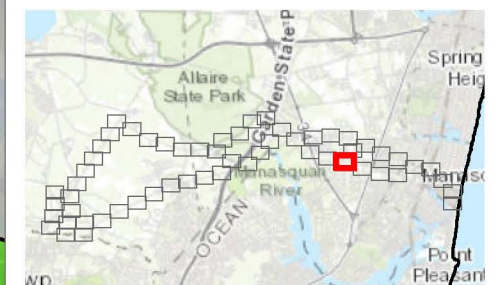


### Atlantic Shores South Offshore Wind – Larrabee Onshore Project Study Area

Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### **Habitat Suitability Assessment Report**

- Habitat Assessment
- Developed/Disturbed
  - Forest - Mixed
  - Herbaceous Wetland
  - Study Area



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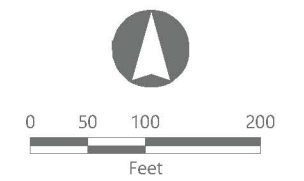
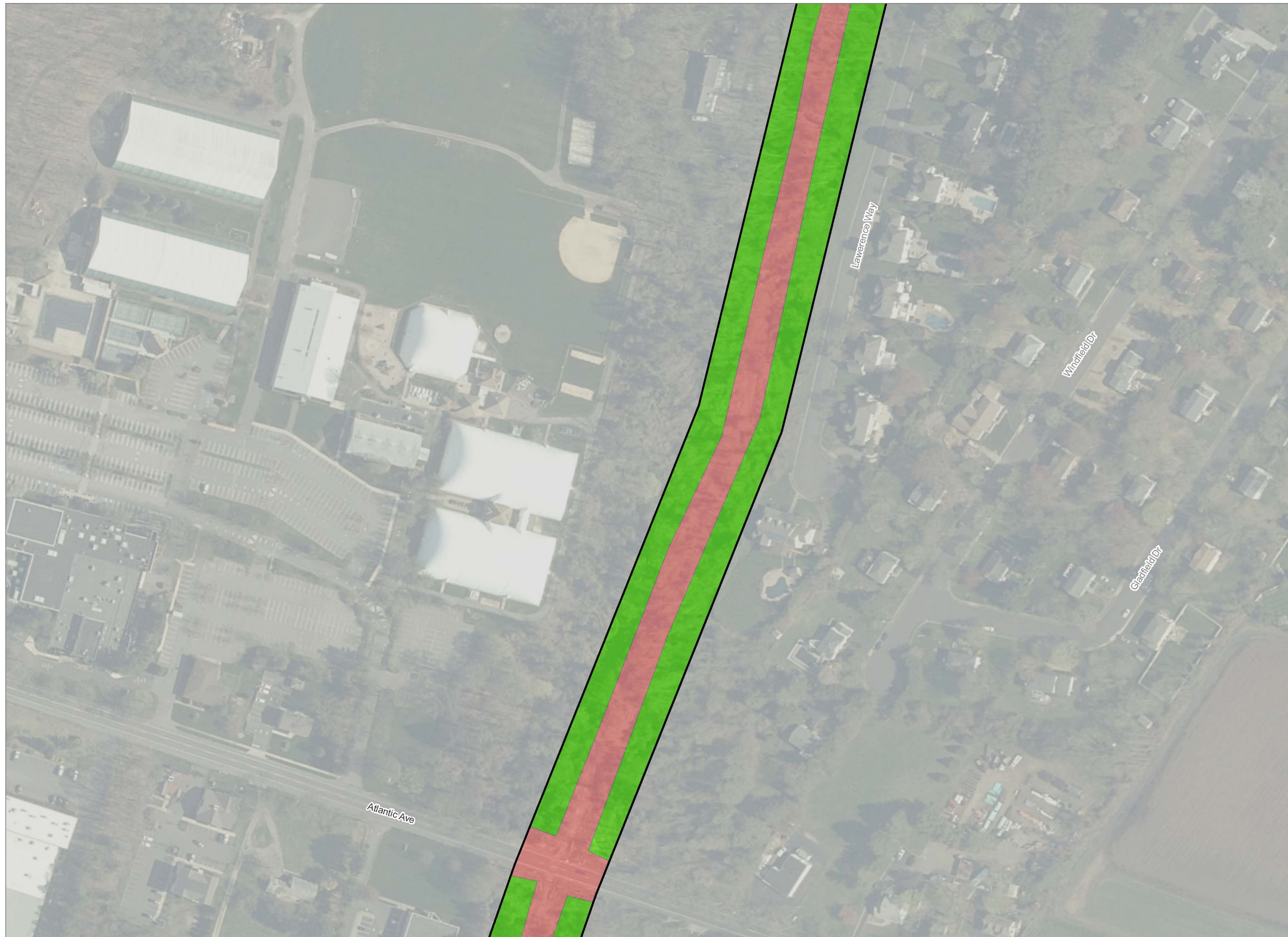


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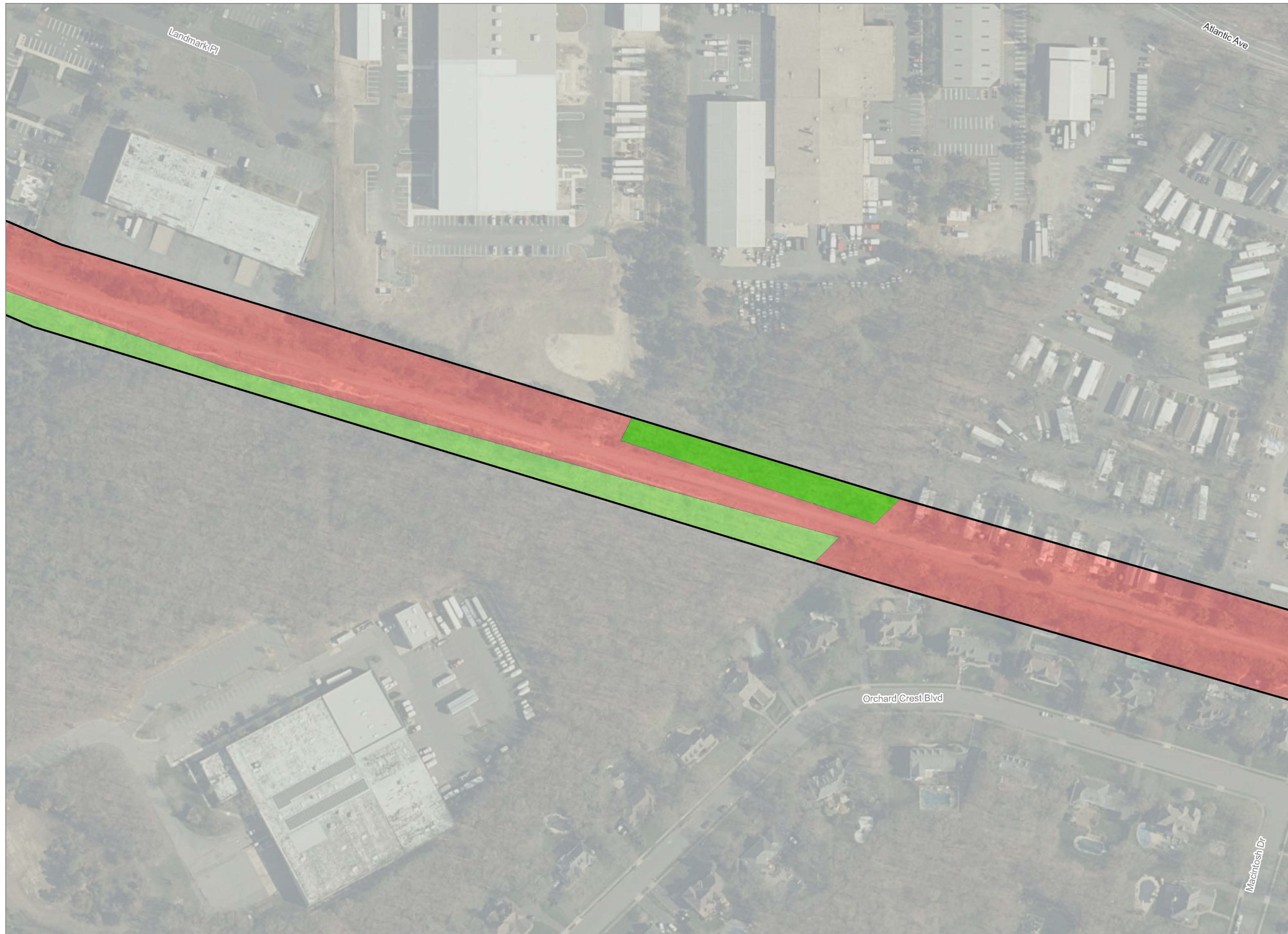
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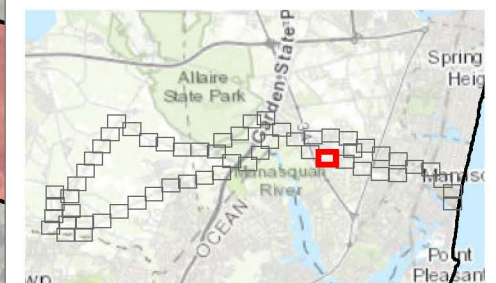


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Borough of Sea Girt, Borough of  
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  - Forest - Deciduous
  - Forest - Mixed
  - Study Area



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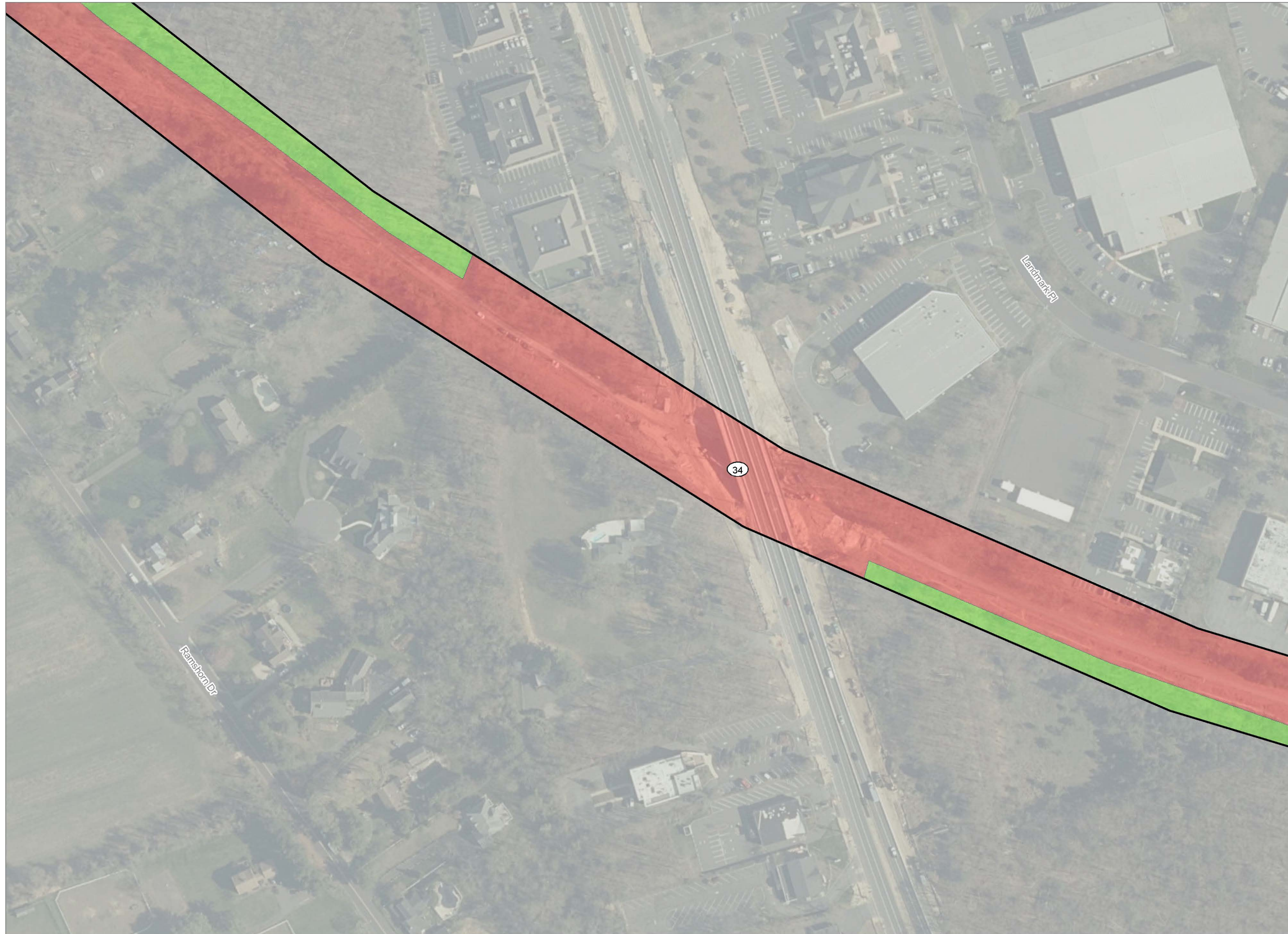


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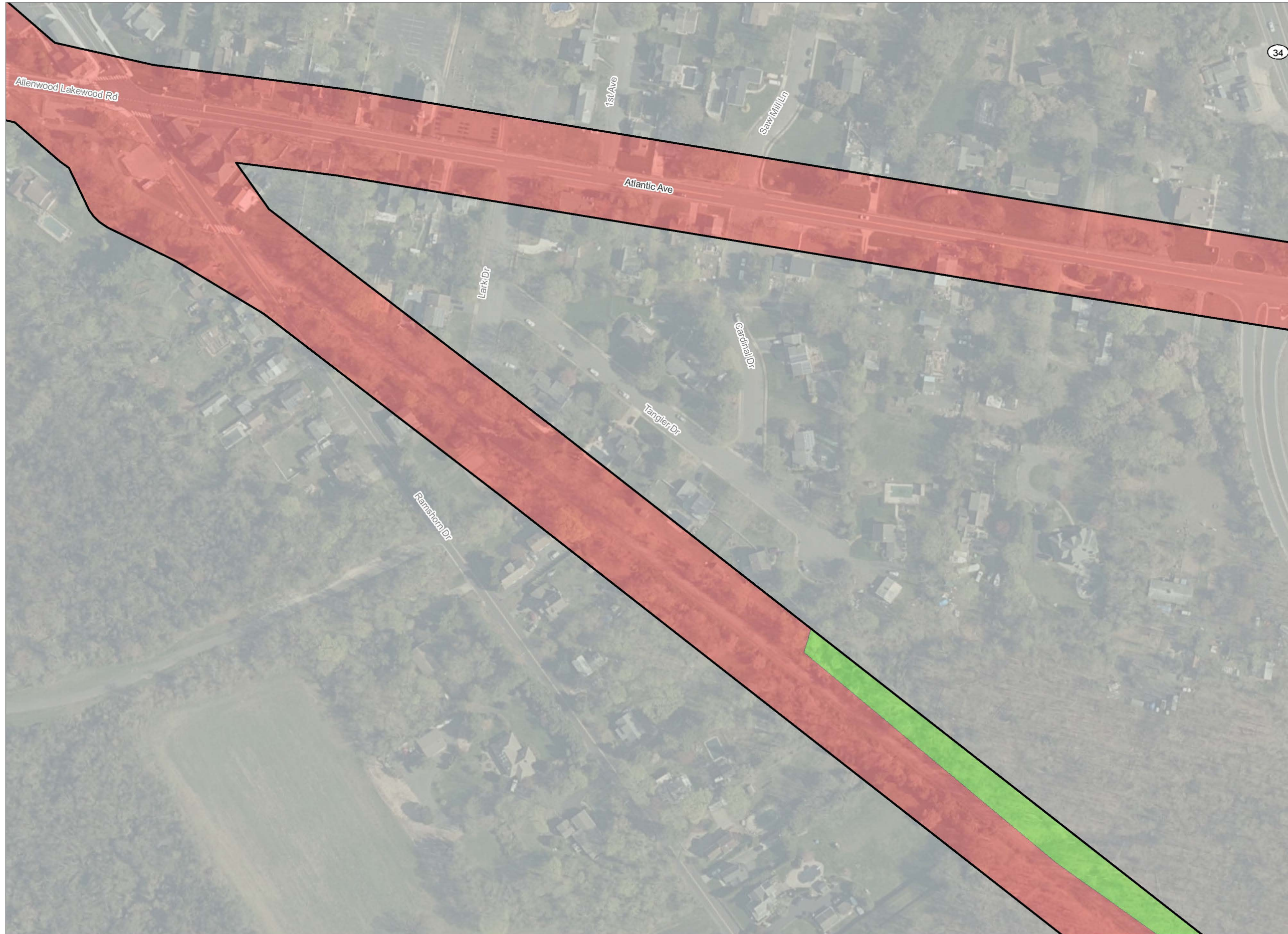




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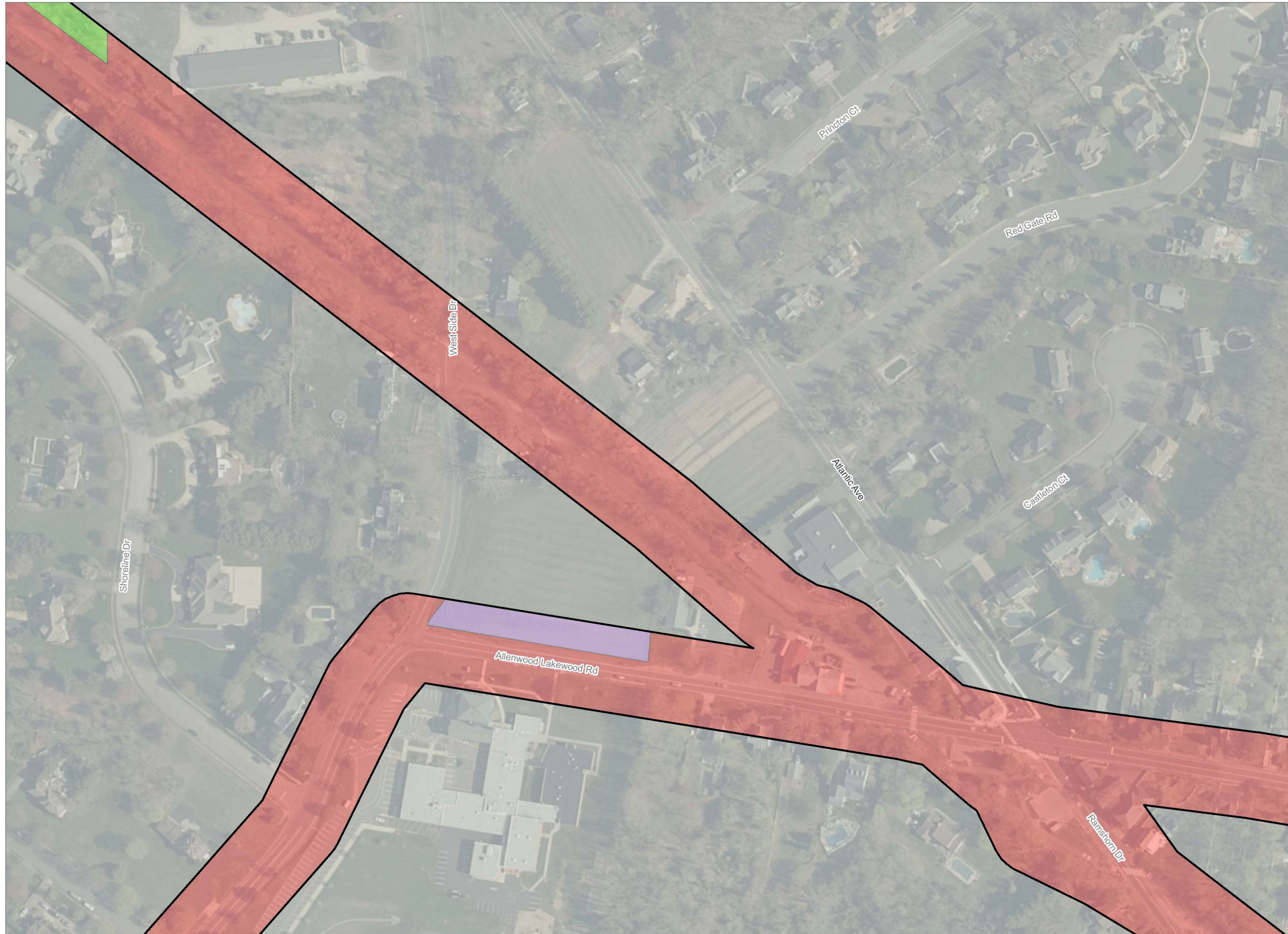




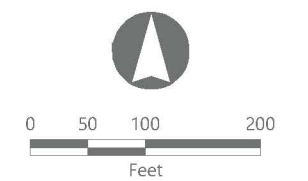
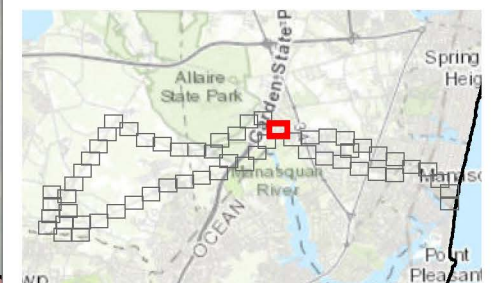
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#### Habitat Suitability Assessment Report



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  - Study Area



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Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Agricultural
  - Developed/Disturbed
  - Forest - Deciduous
  - Forested Wetland
  - Herbaceous
  - Scrub-Shrub Wetland
  - Study Area



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ATLANTIC SHORES  
offshore wind

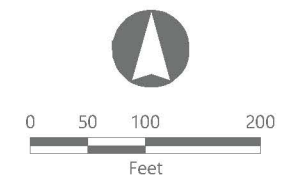


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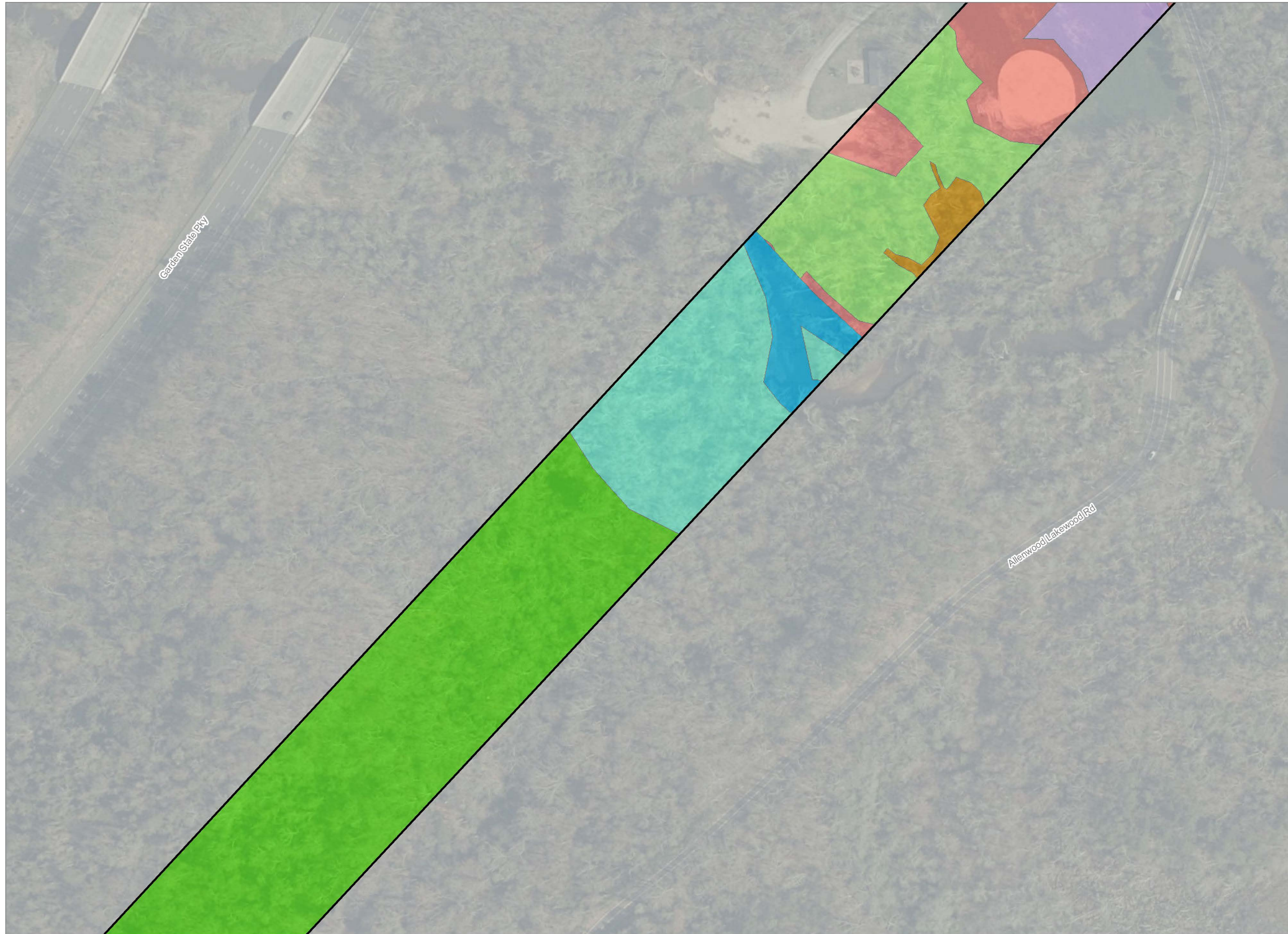
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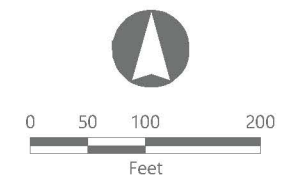


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  - Forest - Evergreen
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  - Forest - Evergreen
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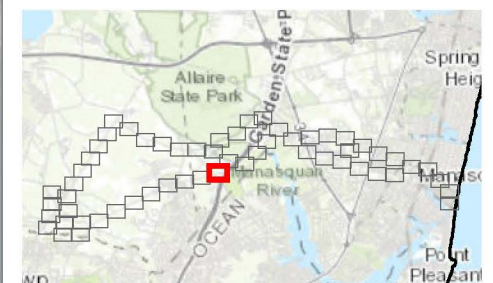


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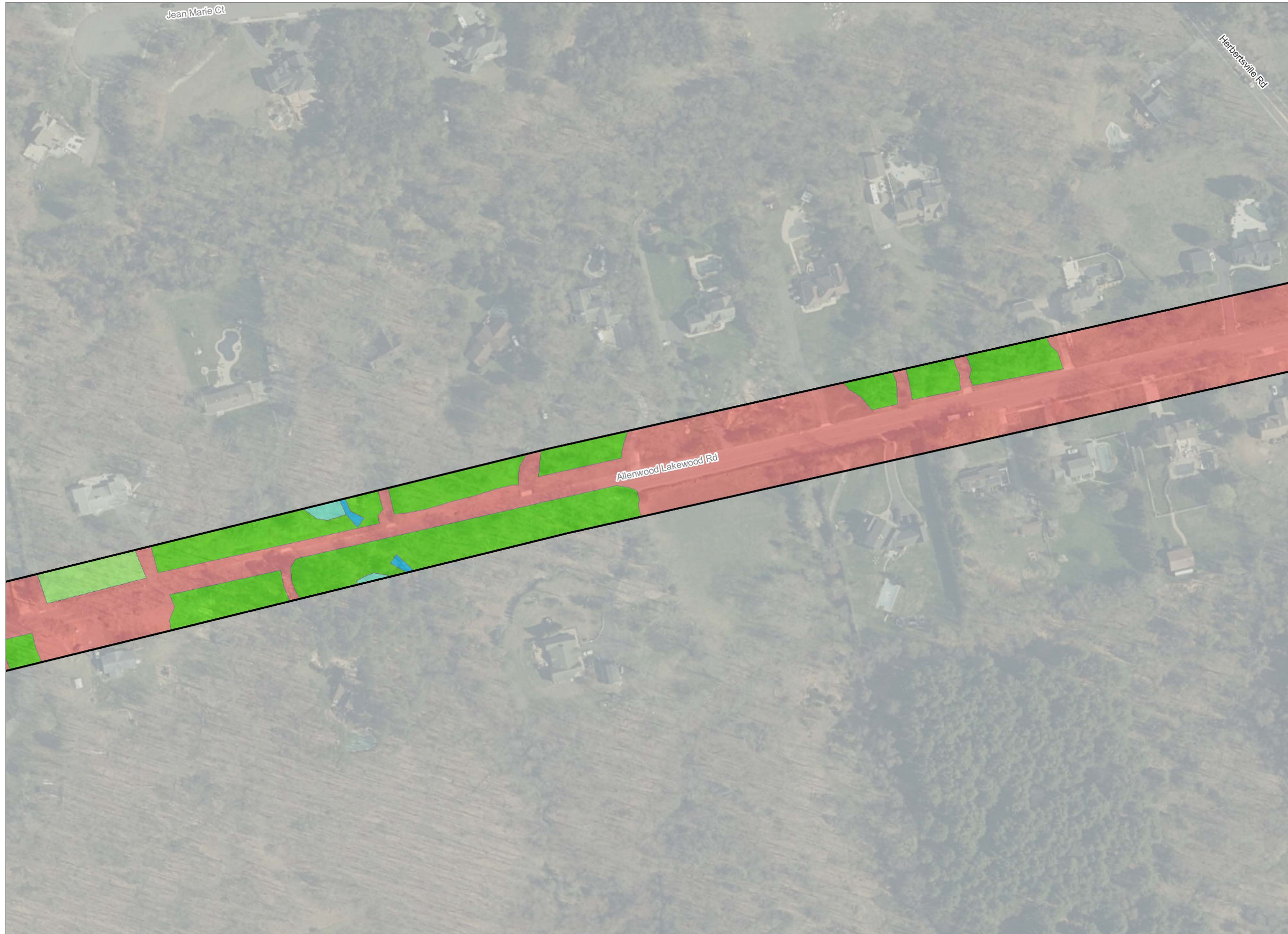
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Borough of Sea Girt, Borough of  
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  - Water
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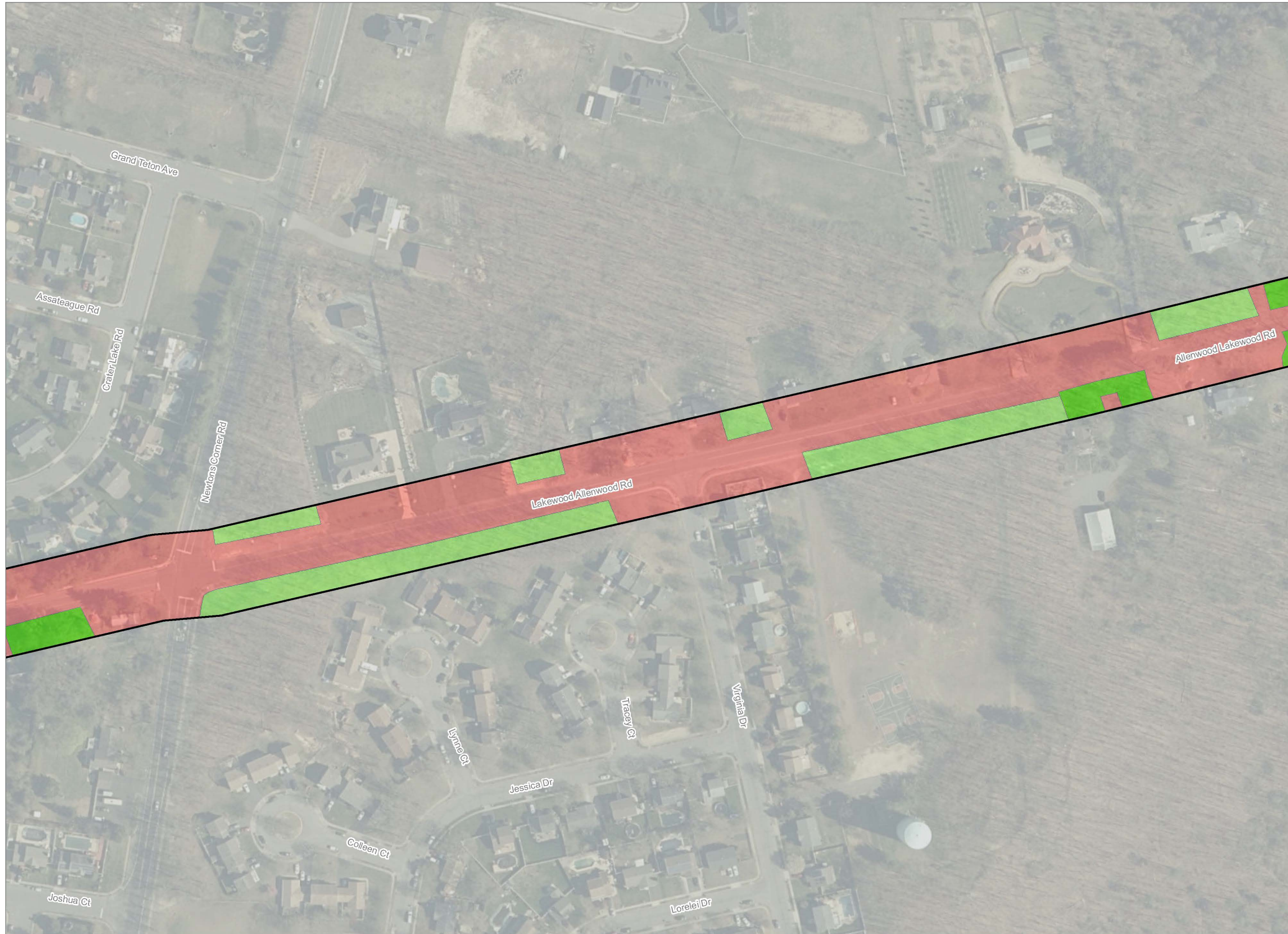




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offshore wind



**Atlantic Shores South  
Offshore Wind –  
Larrabee Onshore  
Project Study Area**

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**Habitat Suitability Assessment  
Report**



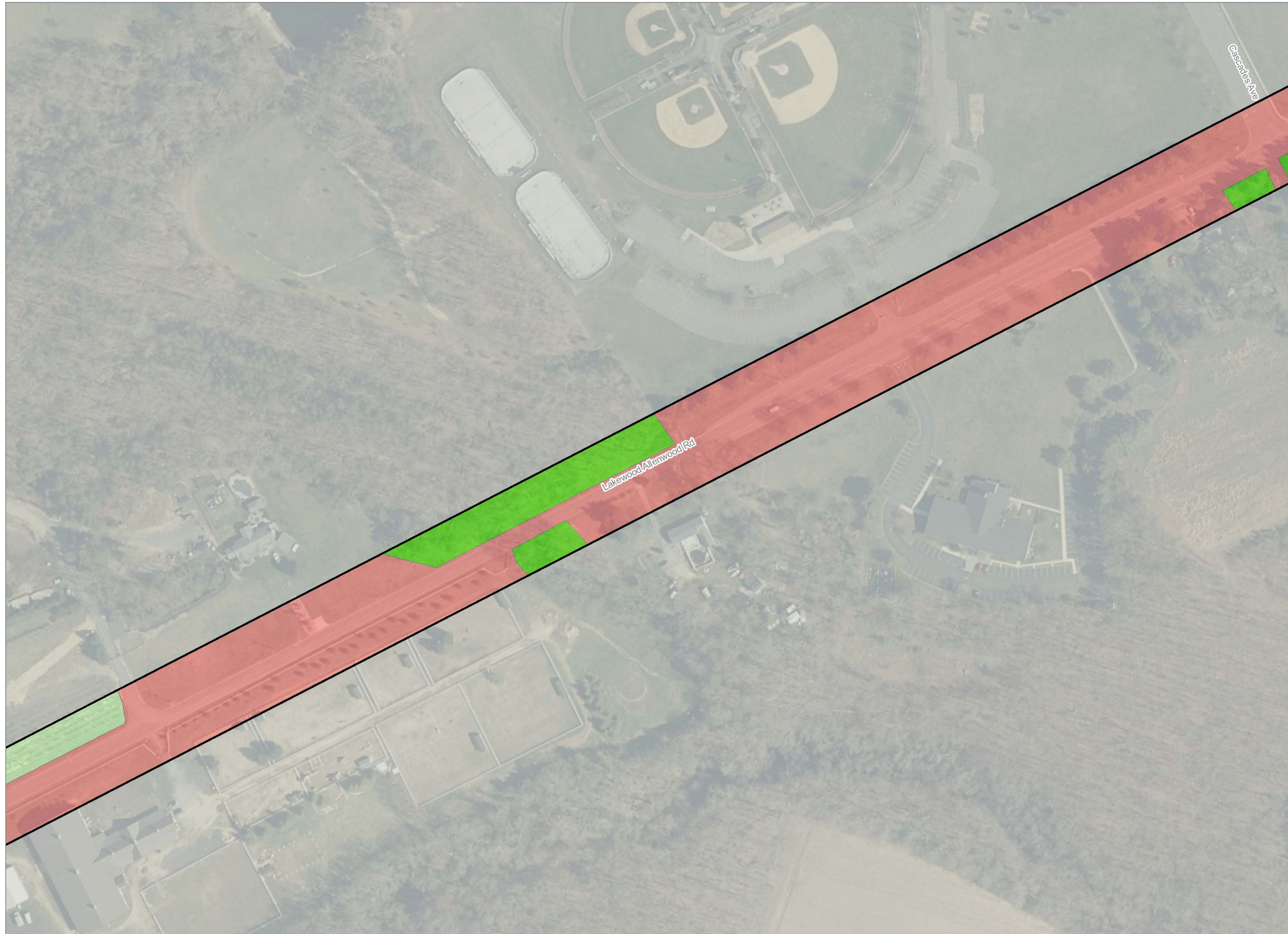
- Habitat Assessment
- Developed/Disturbed
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  - Forest - Mixed
  - Herbaceous
  - Study Area



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





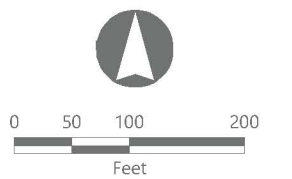


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Borough of Sea Girt, Borough of  
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#### **Habitat Suitability Assessment Report**

- Habitat Assessment
-  Agricultural
  -  Developed/Disturbed
  -  Forest - Mixed
  -  Study Area



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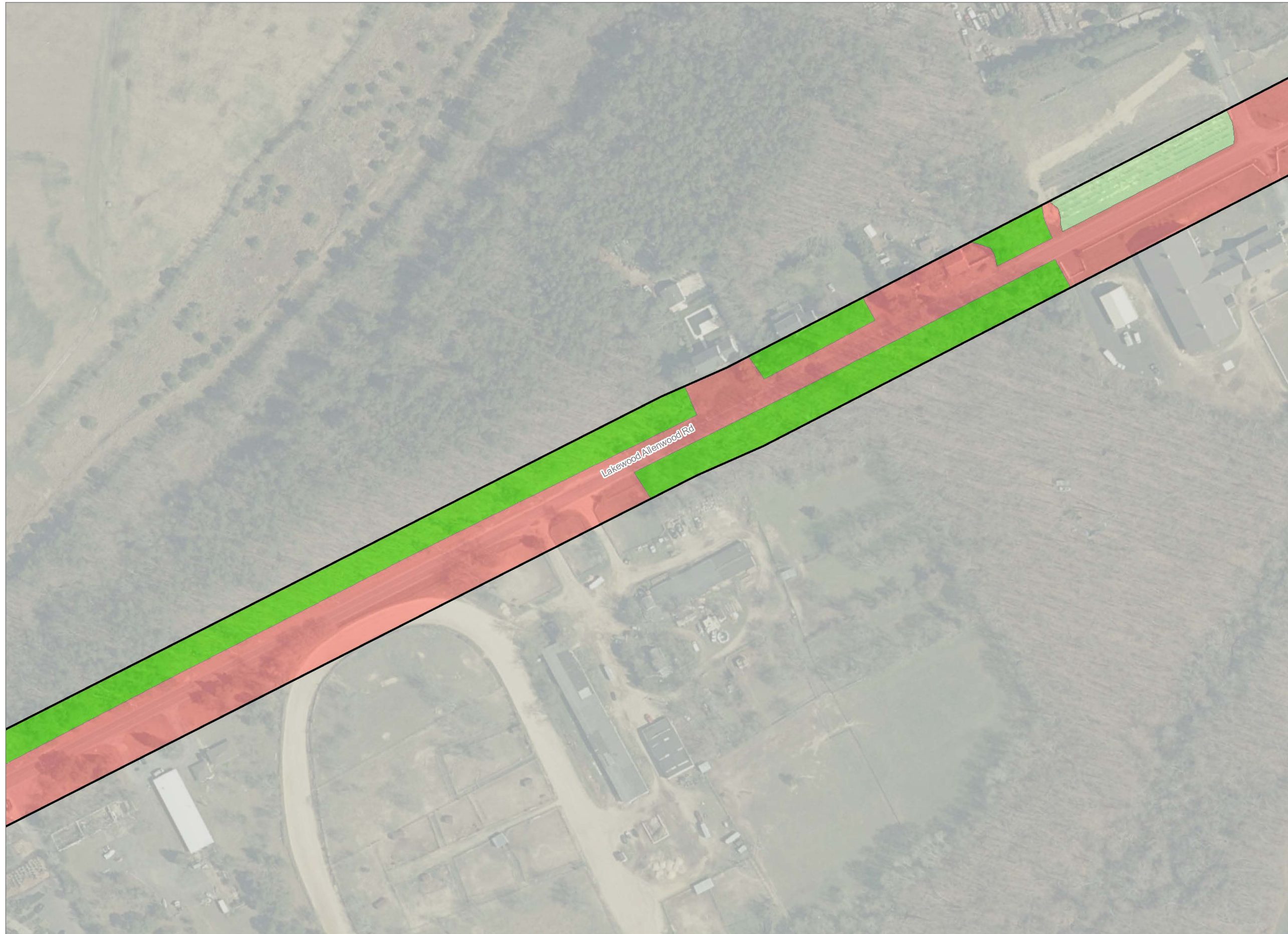
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offshore wind



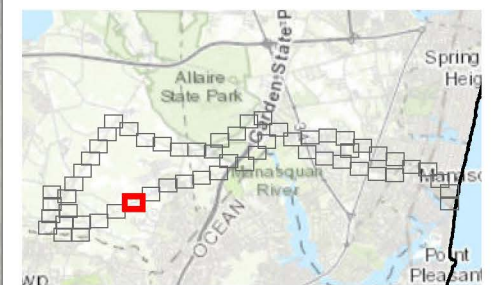
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#### Habitat Suitability Assessment Report



- Habitat Assessment
- Agricultural
  - Developed/Disturbed
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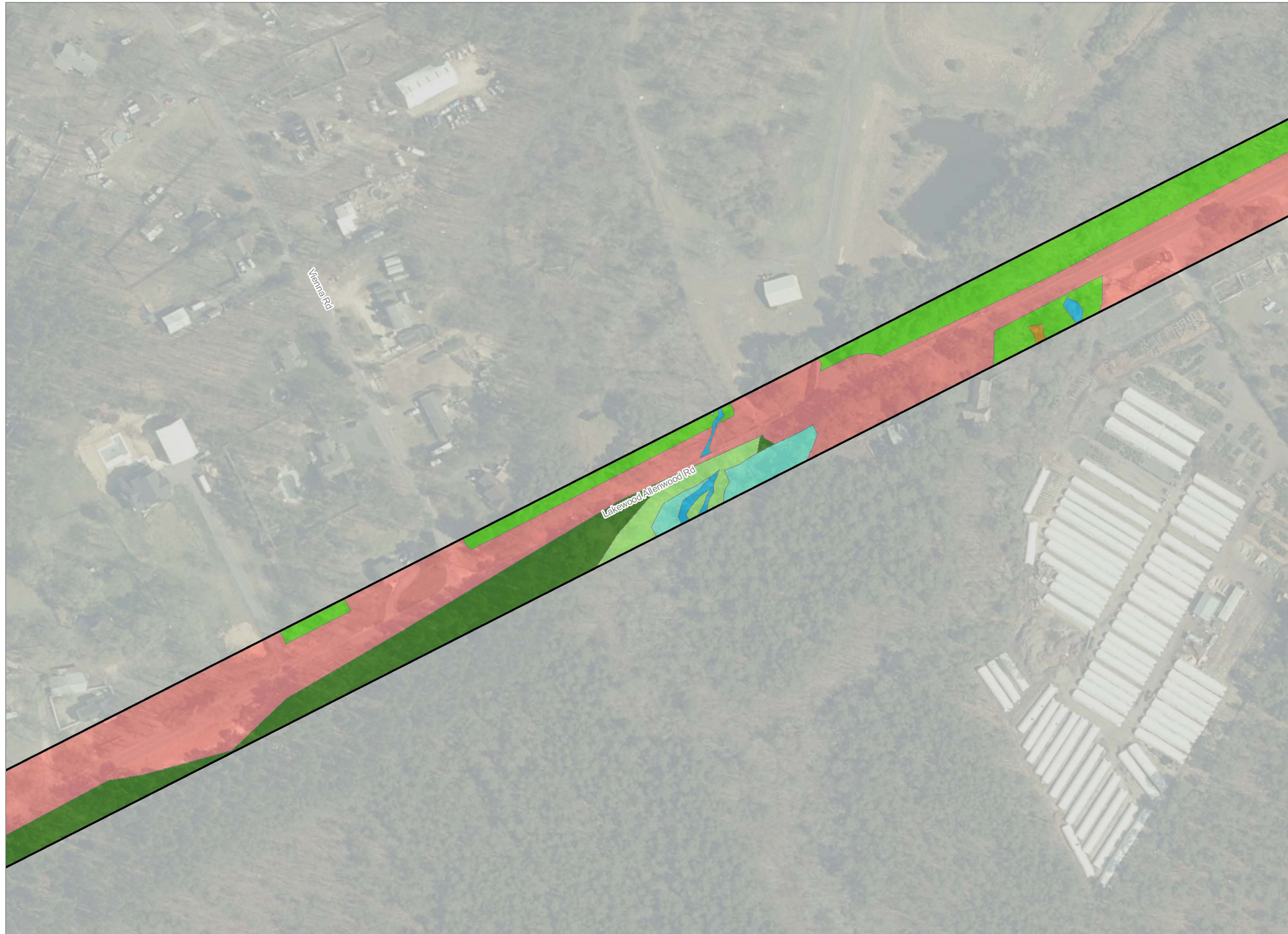




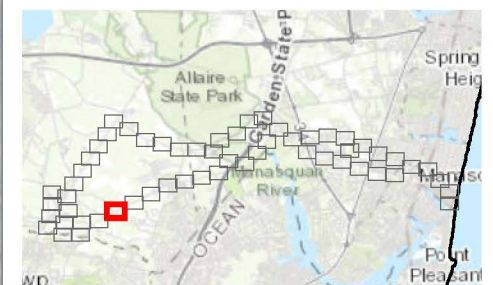
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#### Habitat Suitability Assessment Report



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  - Forest - Evergreen
  - Forest - Mixed
  - Forested Wetland
  - Scrub-Shrub Wetland
  - Water
  - Study Area



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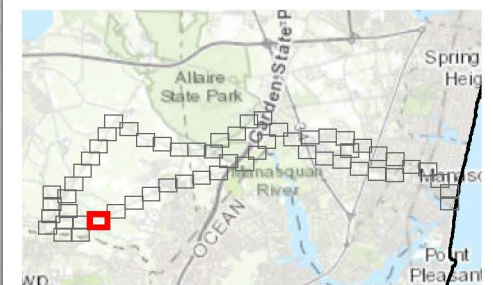
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#### Habitat Suitability Assessment Report



- Habitat Assessment
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  - Herbaceous Wetland
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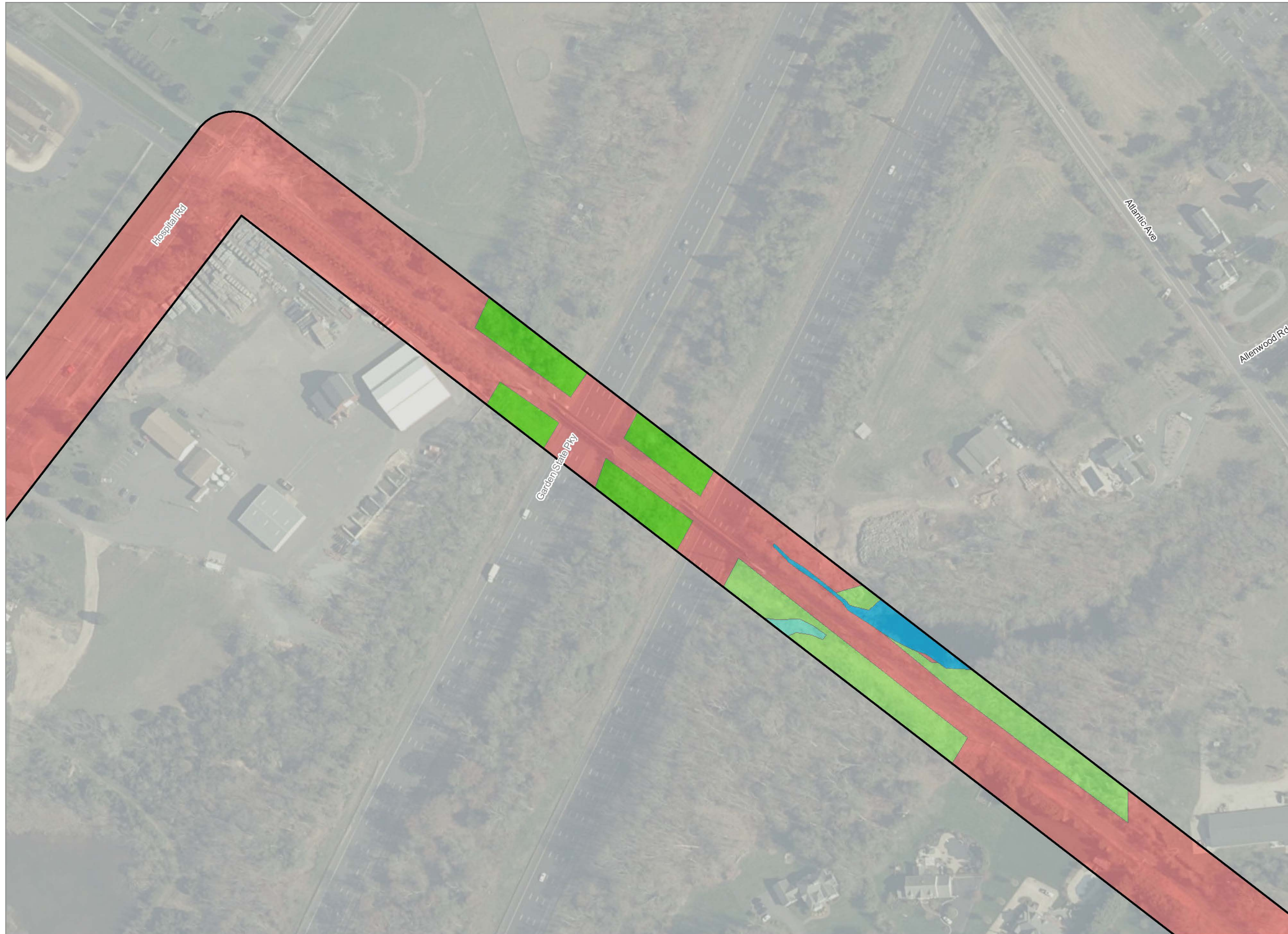




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#### Habitat Suitability Assessment Report



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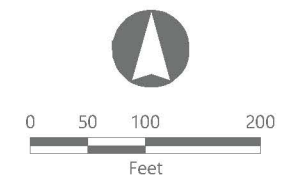


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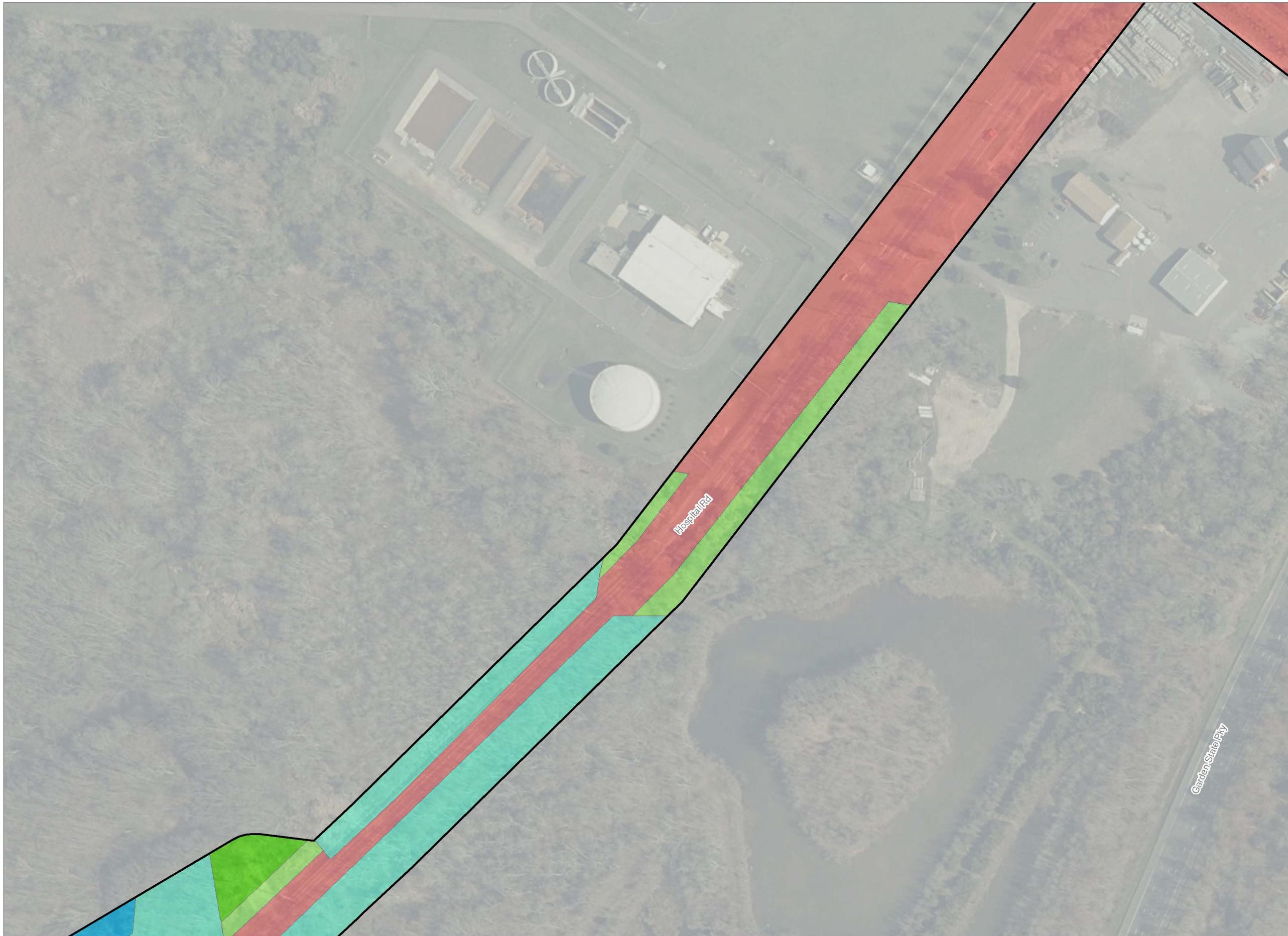
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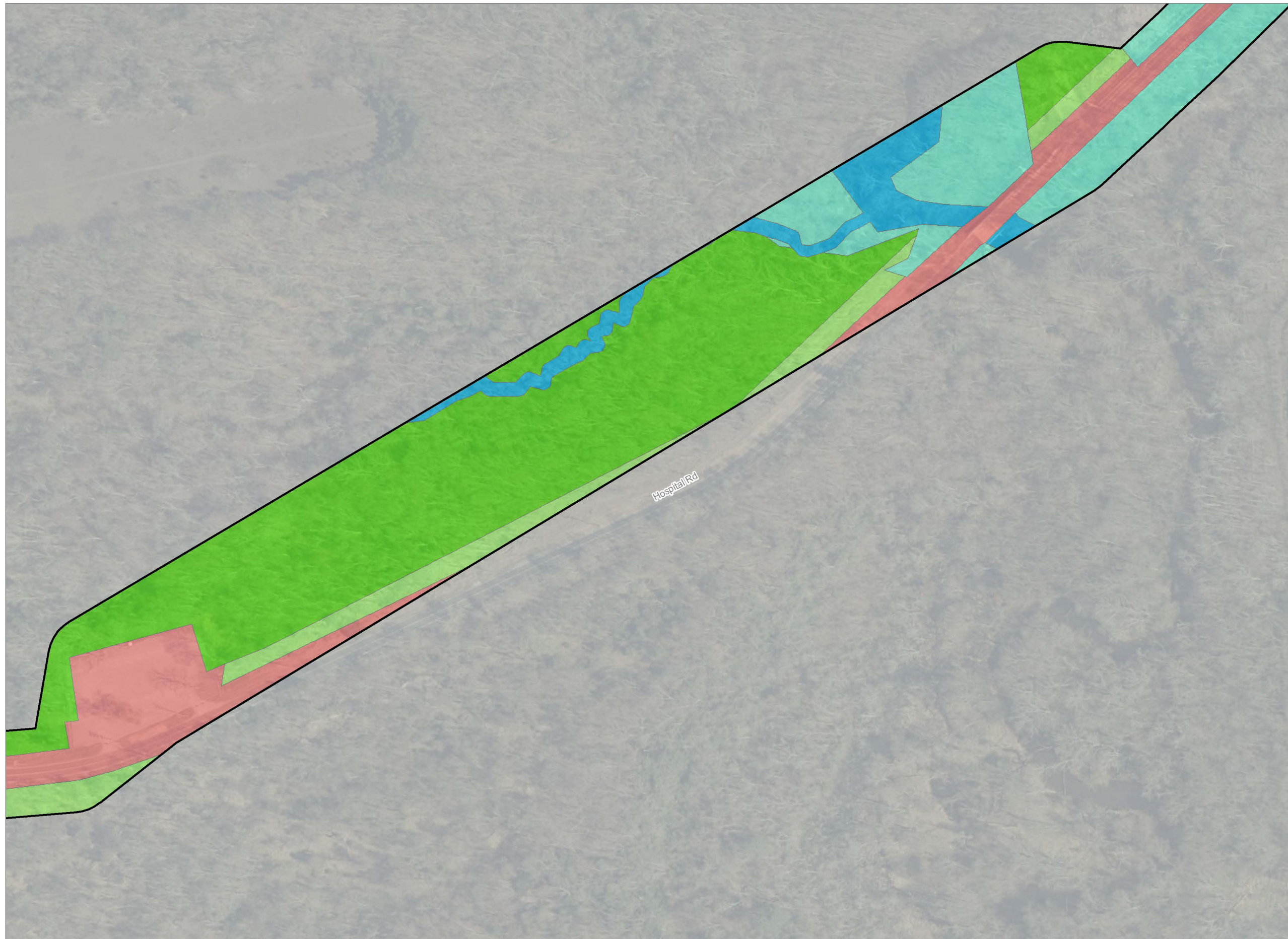




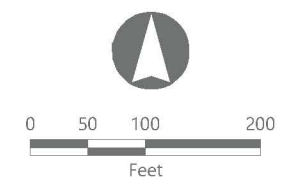
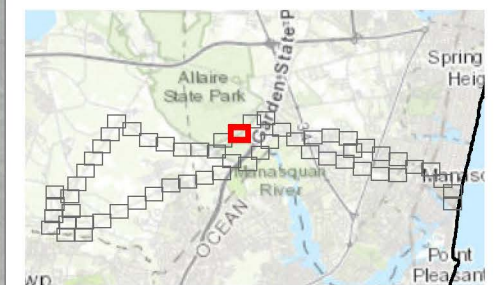
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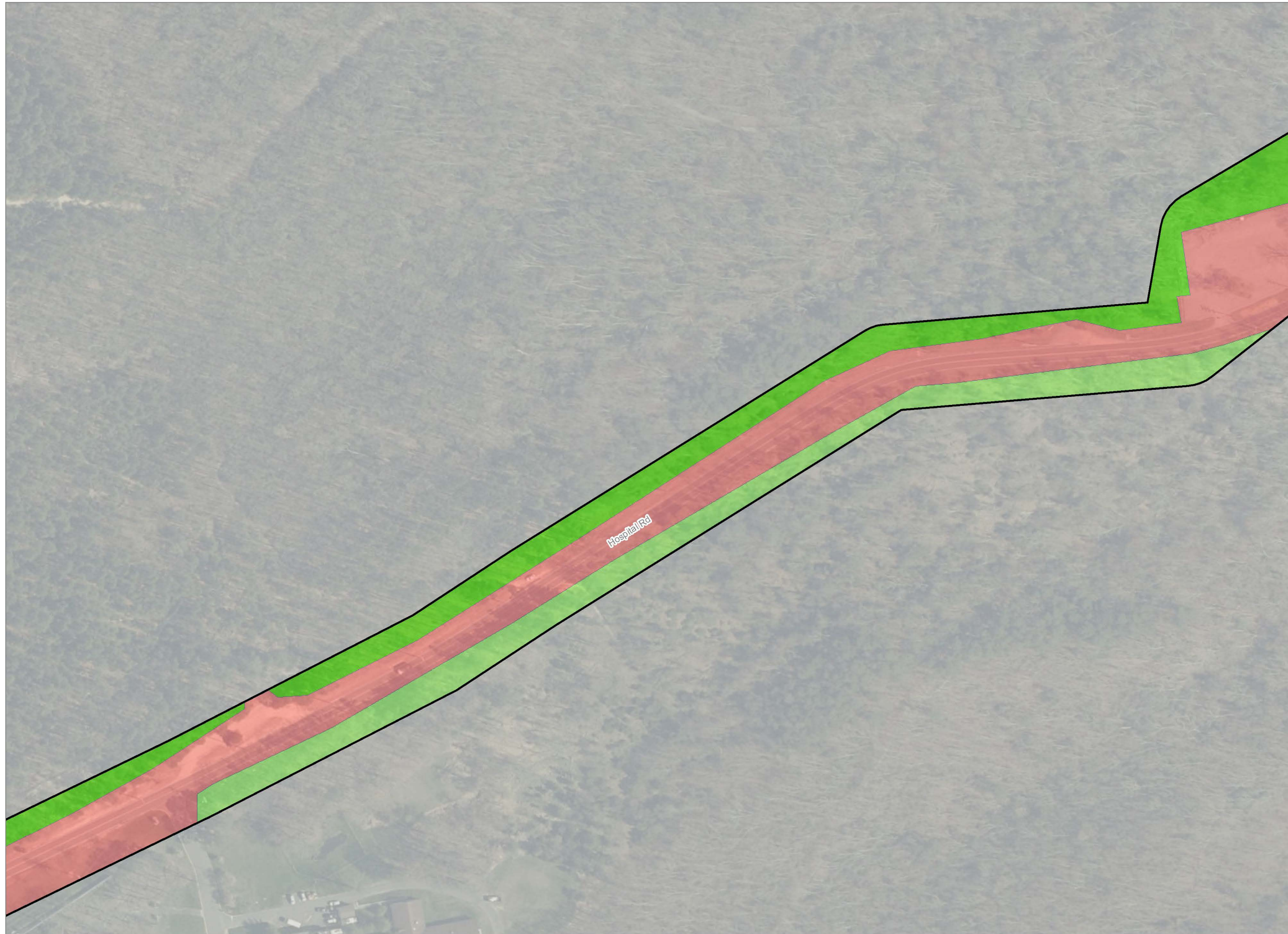




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#### Habitat Suitability Assessment Report



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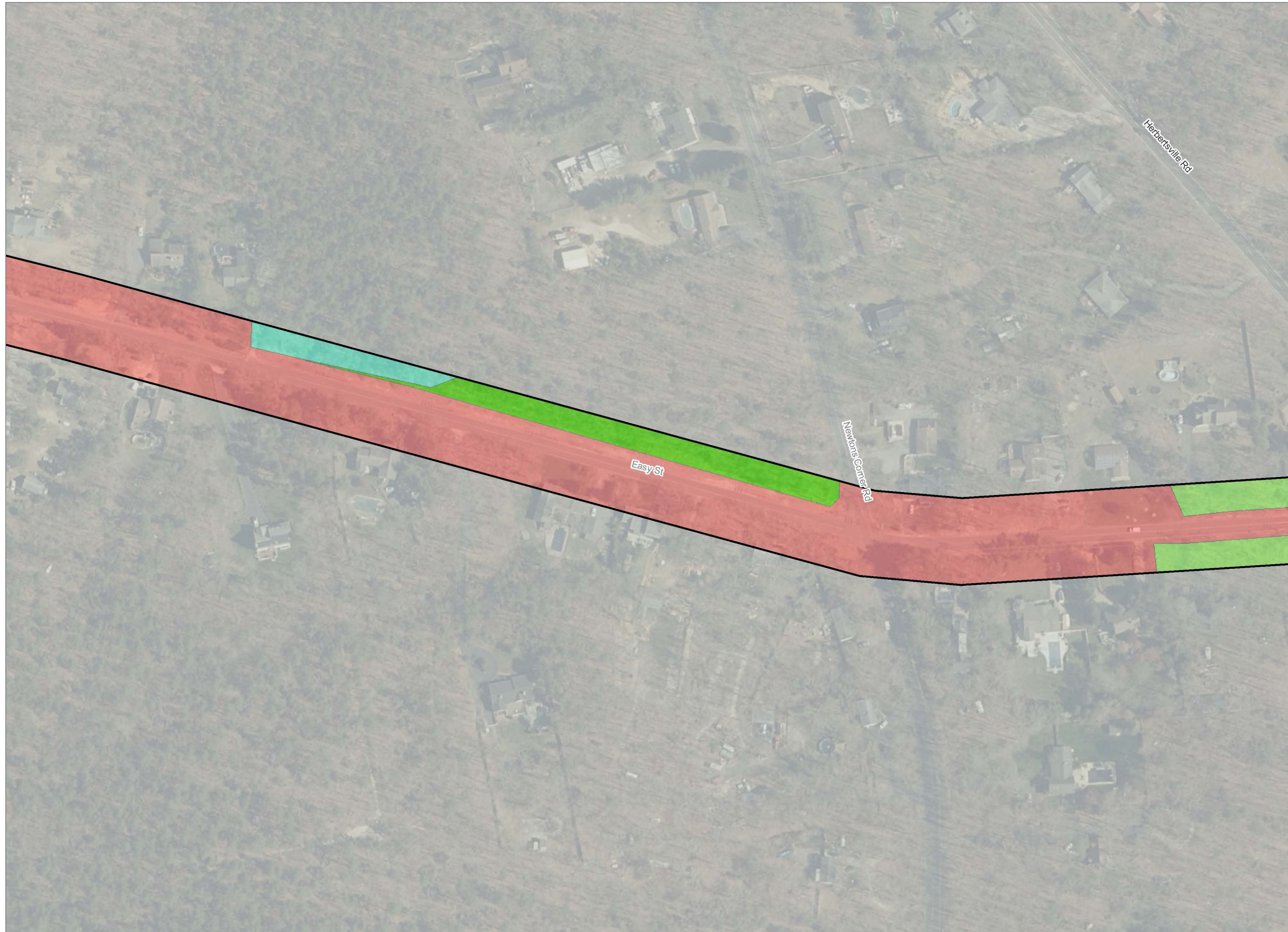




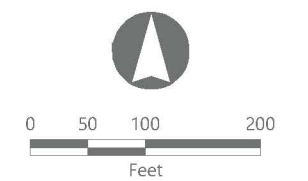
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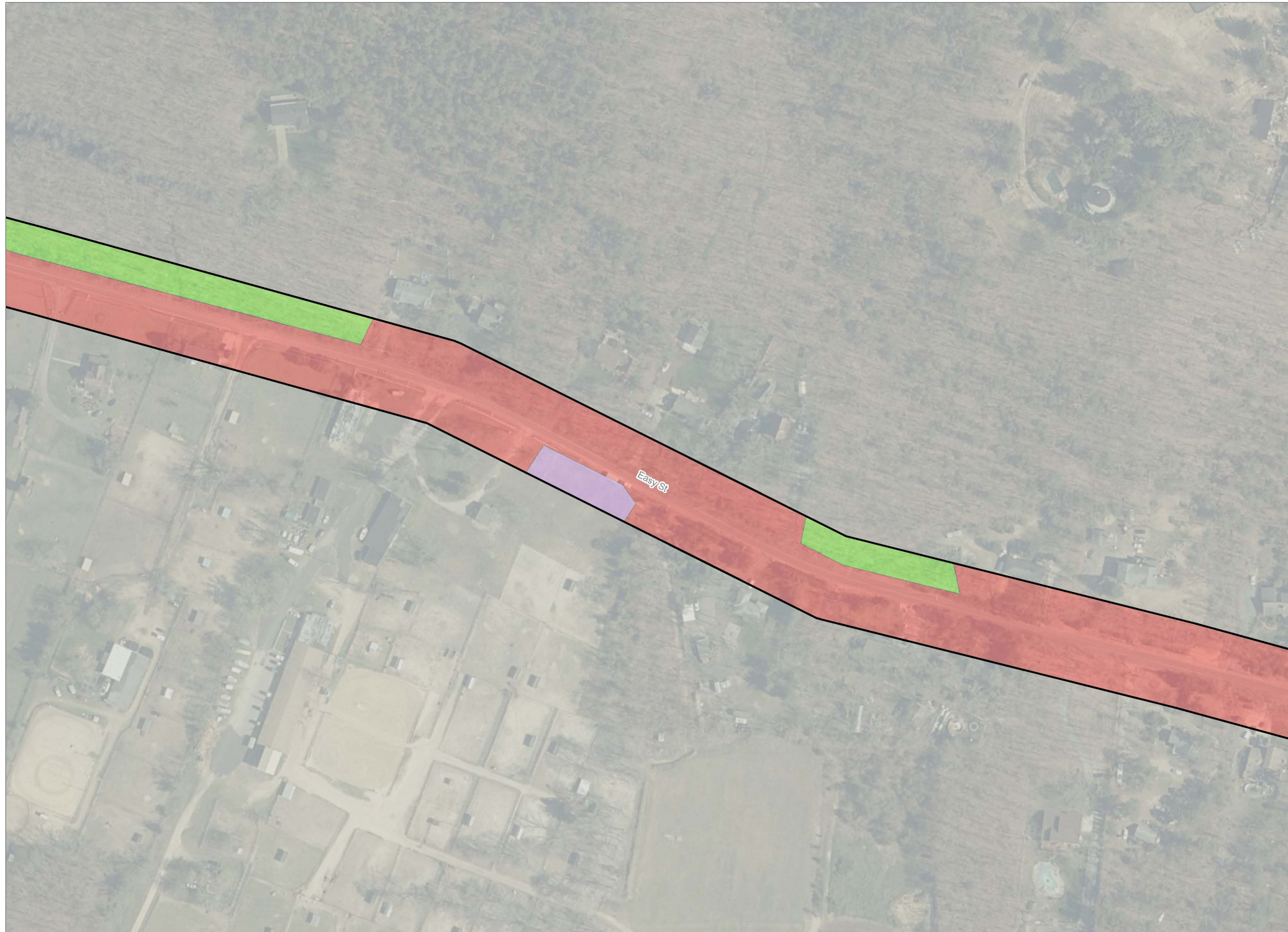




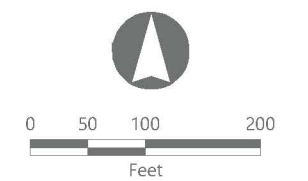
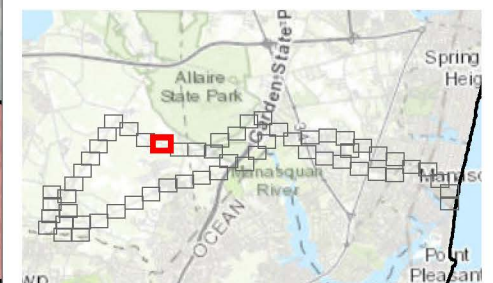
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ATLANTIC SHORES  
offshore wind

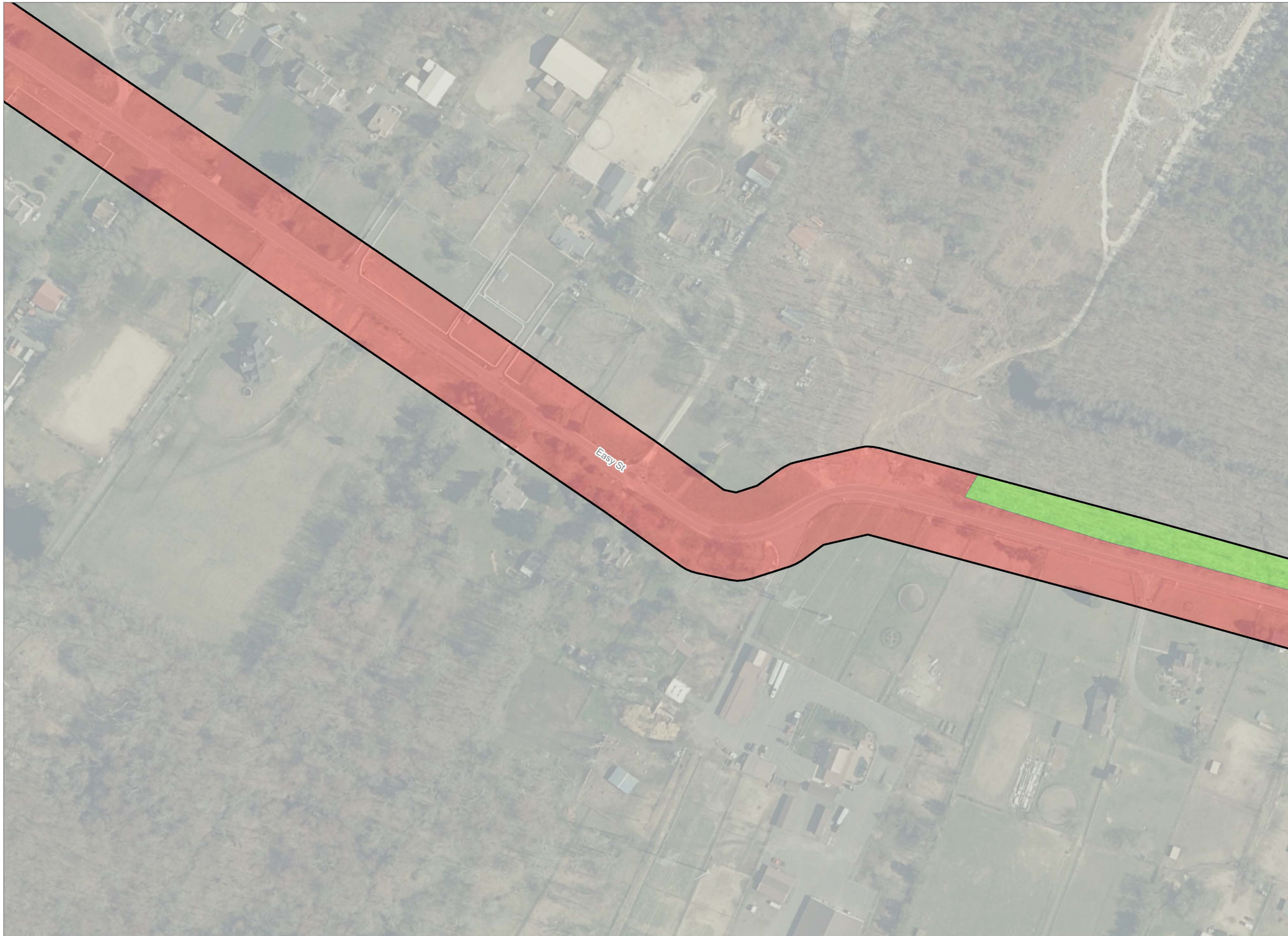


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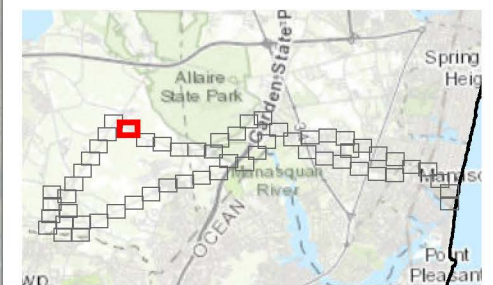
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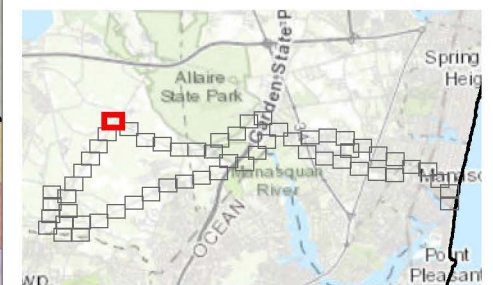
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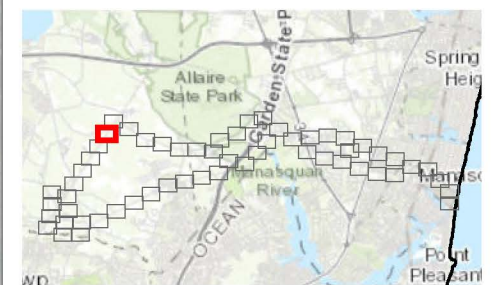


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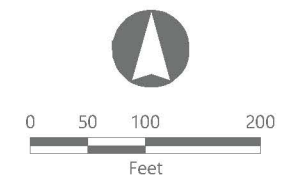
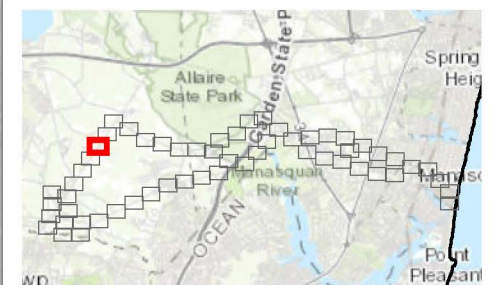


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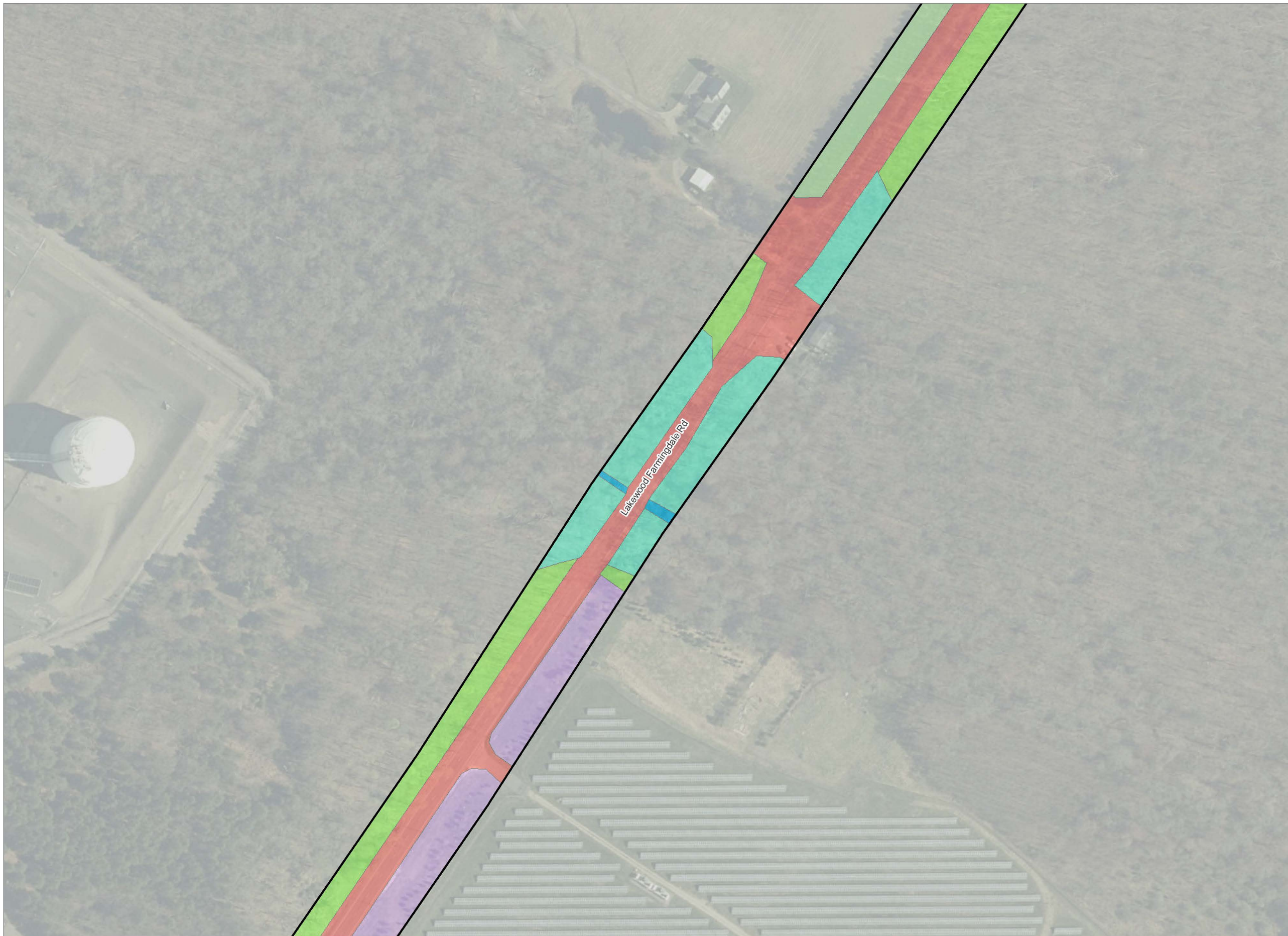
Borough of Sea Girt, Borough of  
Manasquan, Township of Wall, and  
Township of Howell  
Monmouth County, New Jersey

#### Habitat Suitability Assessment Report

- Habitat Assessment
- Agricultural
  - Developed/Disturbed
  - Forest - Deciduous
  - Forested Wetland
  - Herbaceous
  - Water
  - Study Area



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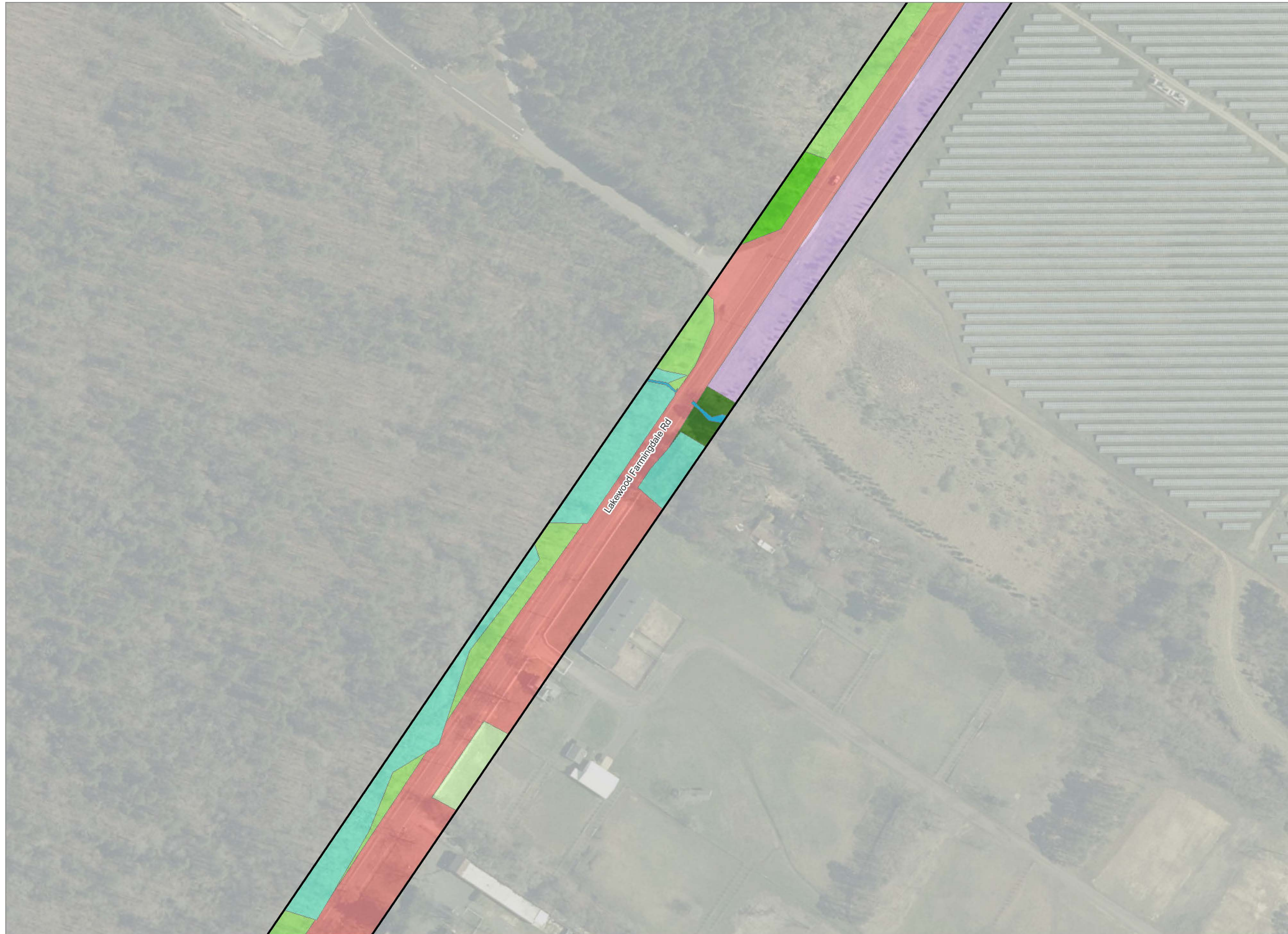




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Monmouth County, New Jersey

#### Habitat Suitability Assessment Report



- Habitat Assessment
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  - Developed/Disturbed
  - Forest - Deciduous
  - Forest - Evergreen
  - Forest - Mixed
  - Forested Wetland
  - Herbaceous
  - Water
  - Study Area



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#### **Habitat Suitability Assessment Report**



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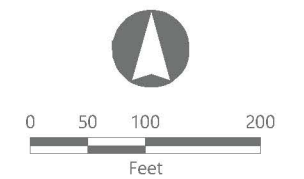


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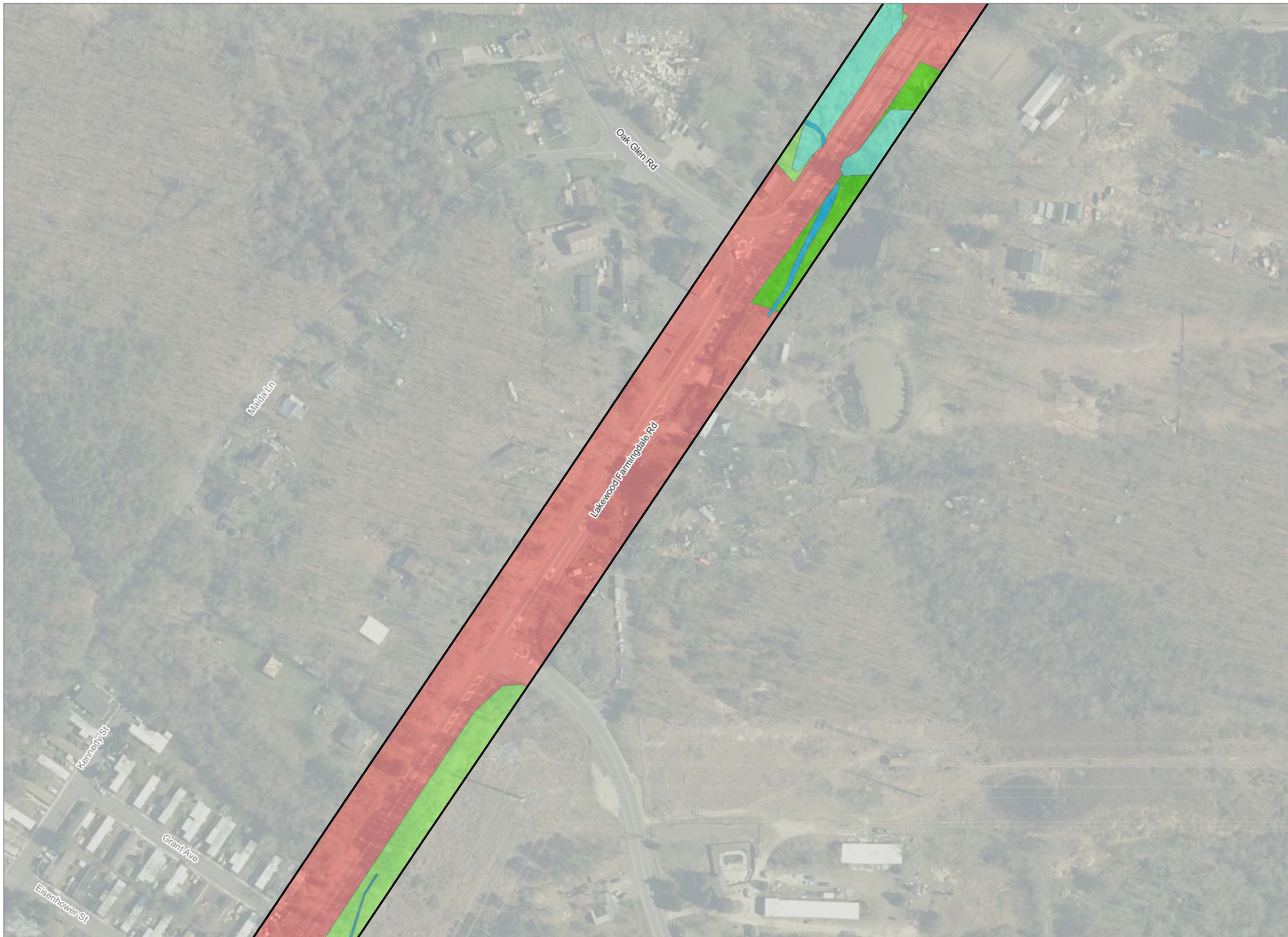
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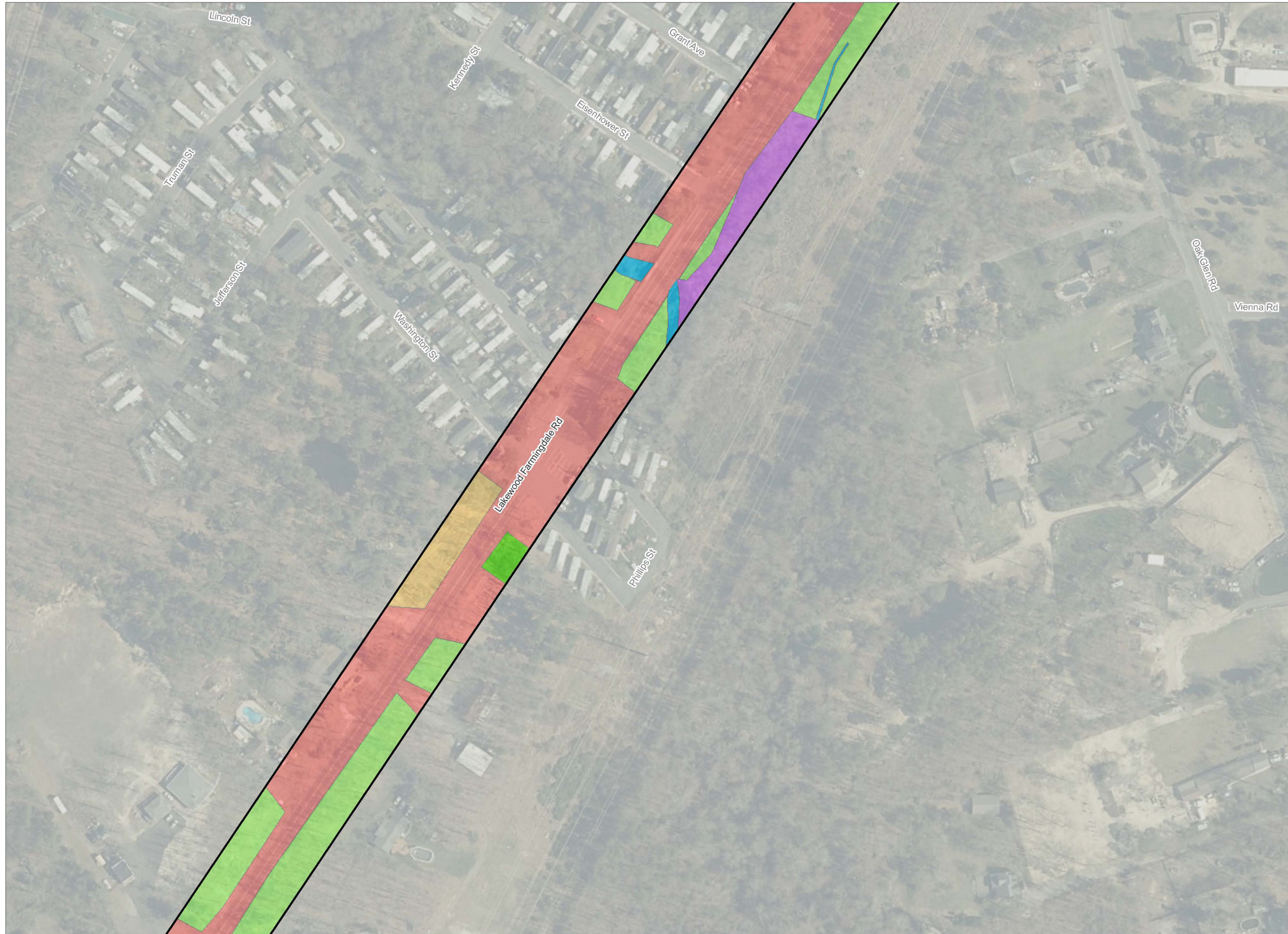
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- Developed/Disturbed
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  - Forest - Mixed
  - Herbaceous Wetland
  - Scrub-Shrub
  - Water
  - Study Area



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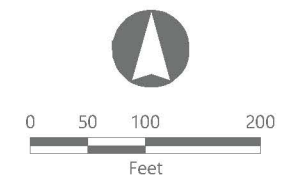


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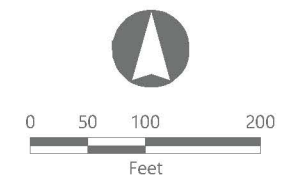
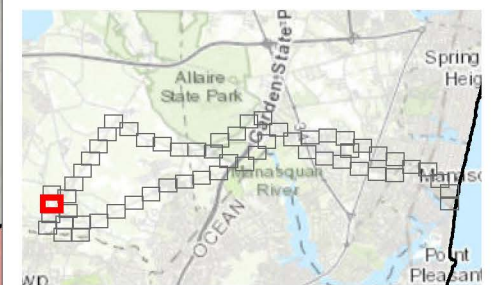


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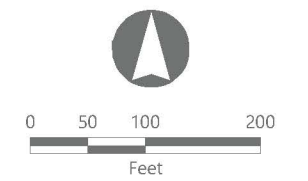


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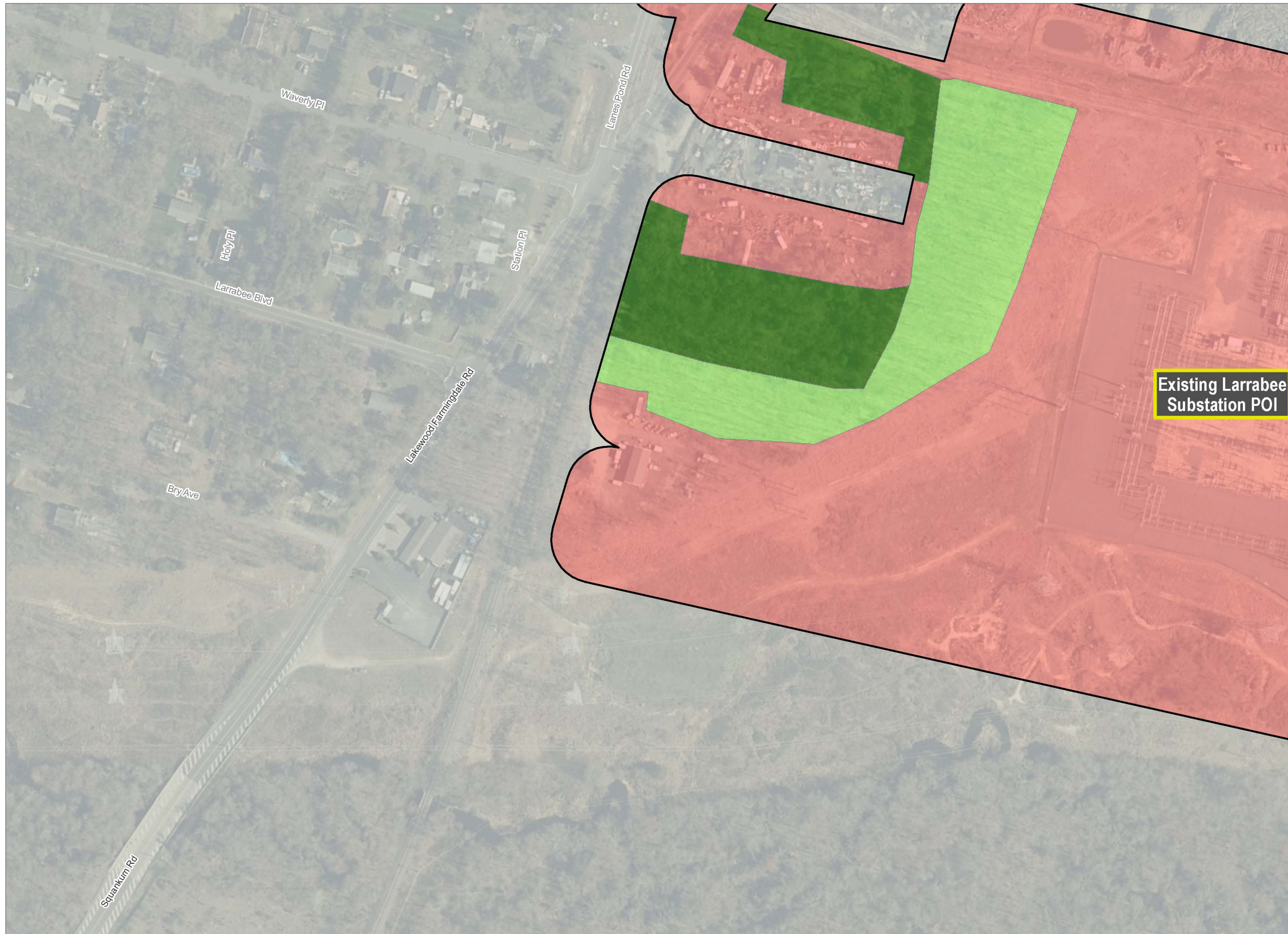
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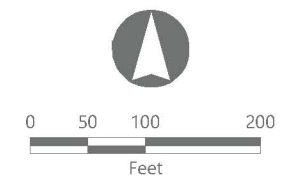
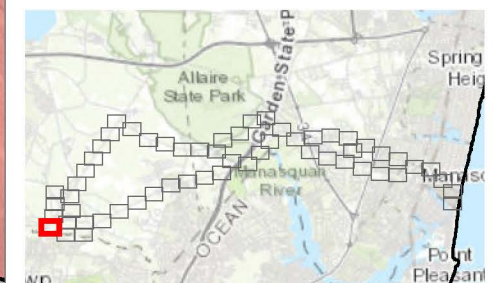
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**Existing Larrabee Substation POI**



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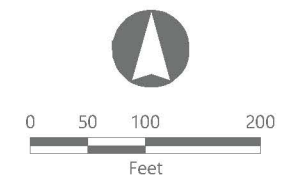


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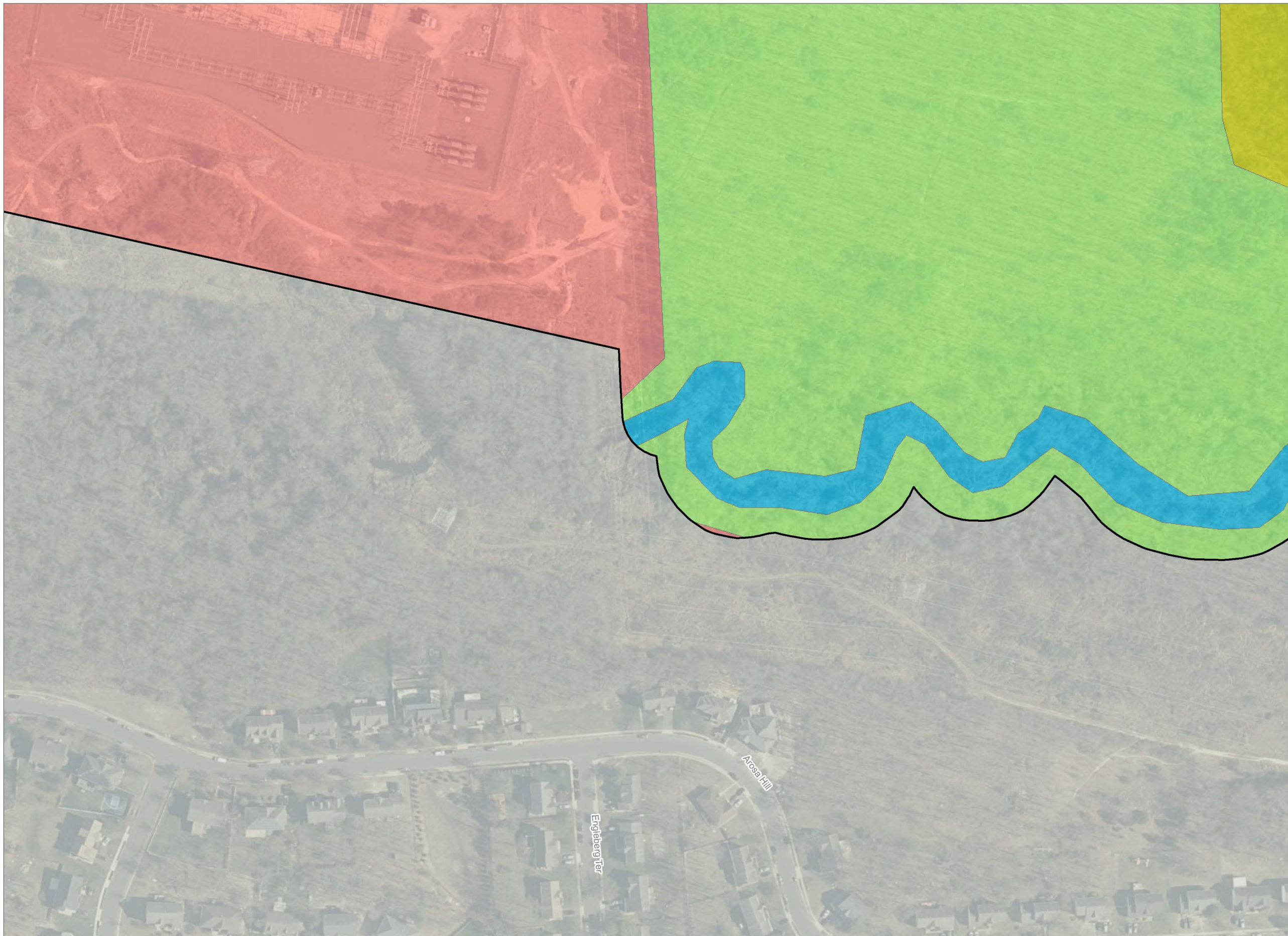
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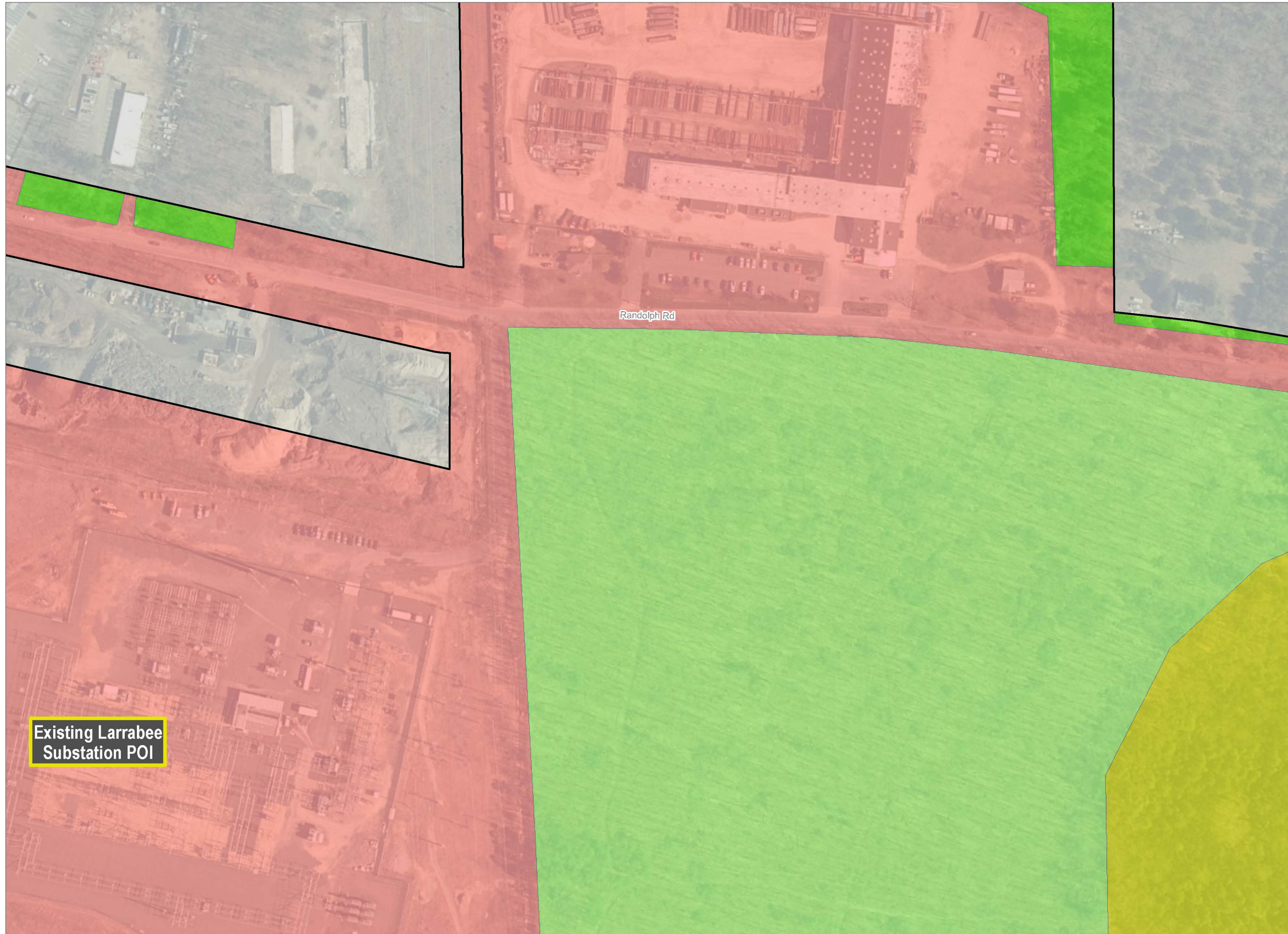
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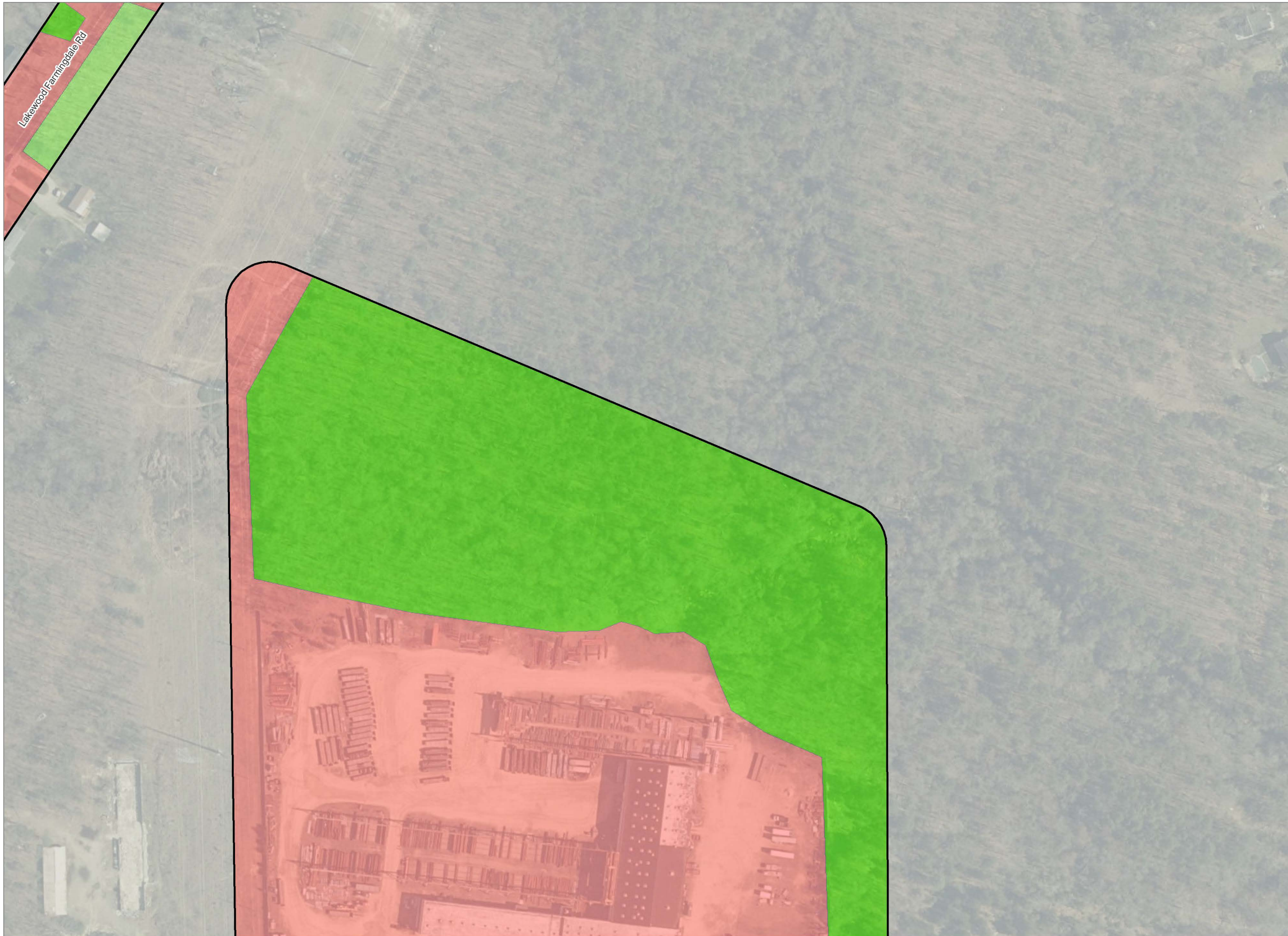
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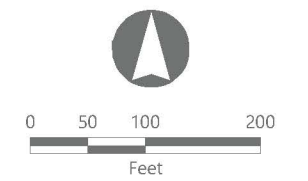


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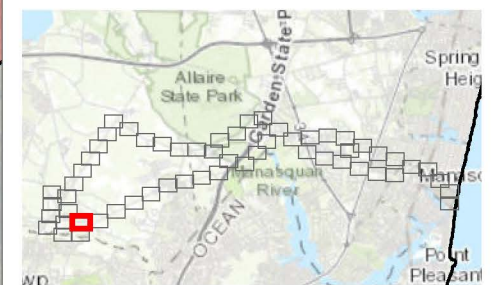
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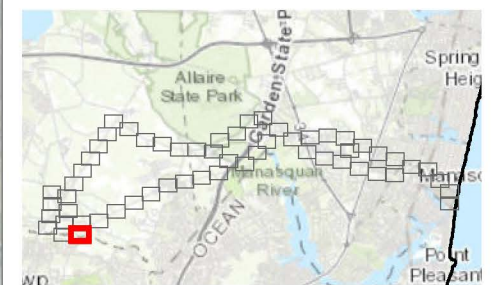
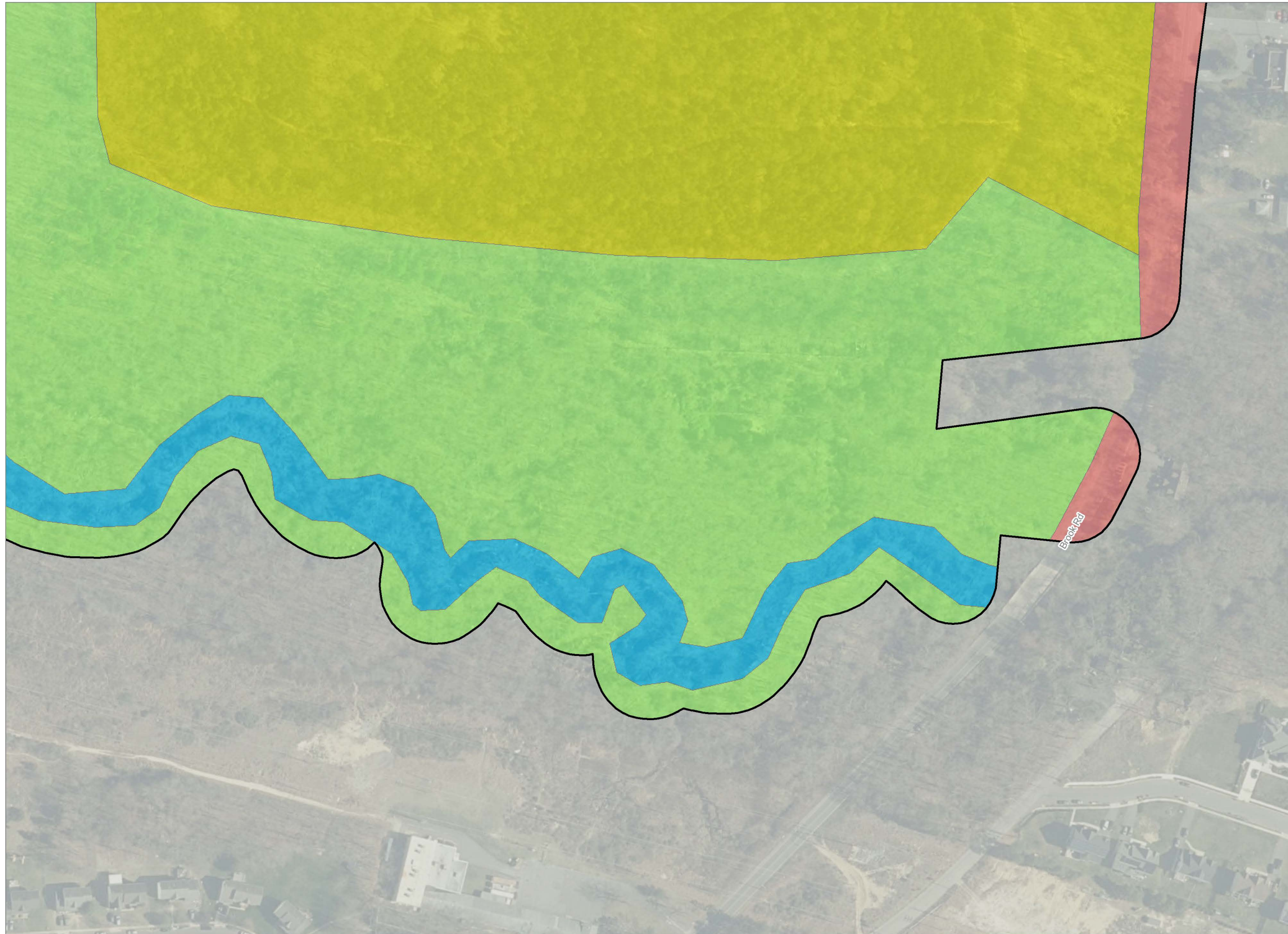


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