

Appendix II-E1

Habitat Suitability Assessment Report – Cardiff and O&M Facility Study Areas

May 2024

Habitat Suitability Assessment Report

Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study
Areas

City of Atlantic City, City of Pleasantville and Egg Harbor
Township, Atlantic County, New Jersey

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ACRONYM LIST

ACE	Atlantic City Electric
ASS	Active Season Sighting
Atlantic Shores	Atlantic Shores Offshore Wind, LLC
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
N	Nest
NBS	Non-Breeding Sighting
NC	Nesting Colony
NJDEP	New Jersey Department of Environmental Protection
NJDOT	New Jersey Department of Transportation
NOAA	National Oceanic and Atmospheric Administration
OH	Occupied Habitat
POI	Point of Interconnection
PT	Proposed Threatened
ROW	Right-of-Way
SP	Special Concern
T	Threatened
UN	Urban Nest
USFWS	United States Fish & Wildlife

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 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 & endangered species) associated with the onshore infrastructure necessary to support the Projects' interconnection to the existing Cardiff Substation located in Egg Harbor Township, Atlantic County, New Jersey. The wildlife habitat suitability assessment study area (herein referred to as the Cardiff Study Area) includes the proposed onshore interconnection route rights-of-way (ROWs) from the proposed Atlantic Landfall in the City of Atlantic City, Atlantic County, New Jersey; the proposed onshore substation and/or converter station site options located in Egg Harbor Township, New Jersey; and the Cardiff point of interconnection (POI). In addition, this report also includes the results of the wildlife habitat suitability assessment associated with Atlantic Shores' proposed Operations and Maintenance (O&M) Facility site (referred to herein as the O&M Facility Study Area) also located in Atlantic City, New Jersey. Collectively the Cardiff and O&M Facility Study Areas are referred to as the Study Areas.

General land use within the Cardiff Study Area consists of transportation (New Jersey Department of Transportation [NJDOT], Atlantic County, and municipal roadways), public utilities such as Atlantic City Electric (ACE) power line ROWs, railroads, commercial services, and industrial/residential development. Land use within the O&M Facility Study Area consists of vacant urban lots, paved streets, and bulkheaded/developed waterfront on the Atlantic City Harbor.

Exhibit 1: Cardiff Study Area Location (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 Oceanic and Atmospheric (NOAA) Fisheries administer the ESA. The USFWS has primary responsibility over terrestrial and freshwater organisms and the NOAA Fisheries 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 2020a).

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 2020d):

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 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 & 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 Cardiff and O&M Facility Study Areas and provide an assessment of the suitability of the habitat to support wildlife species, particularly threatened & 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 & endangered species protected by Section 7 of the ESA under their jurisdiction. EDR also used NJDEP's Pinelands and Atlantic Coastal Landscape Project data to determine the documented occurrence of state (and federal) listed species and their general locations. Further, 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 Cardiff Study Area are provide in Subsection 2.3.

2.1 USFWS Information for Planning and Consultation

The USFWS IPaC identified 10 species within the Cardiff Study Area and/or O&M Facility Study Area that ranged from "Candidate" to "Endangered" status. The species identified included: two mammals—the northern long-eared bat (*Myotis septentrionalis*) and the tricolored bat (*Perimyotis subflavus*); three birds—

eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), piping plover (*Charadrius melodus*), and the red knot (*Calidris canutus rufa*); one insect—the monarch butterfly (*Danaus plexippus*); and four plants—American chaffseed (*Schwalbea americana*), Knieskern's beaked-rush (*Rhynchospora knieskernii*), seabeach amaranth (*Amaranthus pumilus*), and swamp pink (*Helonias bullata*). No critical habitat for these species was designated within the Study Areas. Typical habitat for each species is summarized in Table 1. The USFWS identified potential habitat for American chaffseed and swamp pink within and adjacent to the Cardiff Study Area. Field investigations were conducted within these areas to evaluate the suitability of the habitat to support American chaffseed and swamp 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 – Endangered Species Act Species

Species	Common Name	Status ¹	Typical Habitat	Mapped Habitat in Cardiff Study Area
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	E	<p>Summer Habitat: roost underneath bark, in cavities or in crevices of both live and dead trees. May also roost in caves and mines.</p> <p>Winter: hibernate in caves and mines with large passages, large entrances, constant temperature and high humidity.</p> <p>Feeding: understory of forested hillsides and ridges (USFWS 2020b).</p>	No
<i>Perimyotis subflavus</i>	Tricolored Bat	PE	<p>Foraging: most foraging occurs in mature stands of trees or buffer zones along perennial streams. Generally riparian areas are ideal for foraging.</p> <p>Maternity/Summer Roost: mainly in dead or live tree foliage. Rock crevices, caves and mines are also used for resting places. Maternity roots 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
<i>Laterallus jamaicensis ssp. jamaicensis</i>	Eastern Black Rail	T	<p>Breeding Habitat: tidal or non-tidal marsh that can range in salinity from salt to brackish to fresh water. Typically found in salt and brackish marshes with dense vegetation. Can also be found in upland areas directly adjacent to marshes.</p>	No

Species	Common Name	Status ¹	Typical Habitat	Mapped Habitat in Cardiff Study Area
			Migratory Habitat: wet prairies, wet meadows, and hay fields (USFWS 2020).	
<i>Charadrius melodus</i>	Piping Plover	T	Breeding and Nesting Habitat: 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	Migratory Habitat: 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 2019).	No
<i>Donaus plexippus</i>	Monarch Butterfly	C	Breeding Habitat: eggs are layed 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 2022).	No
<i>Schwalbea americana</i>	American Chaffseed	E	Habitat: 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

Species	Common Name	Status ¹	Typical Habitat	Mapped Habitat in Cardiff Study Area
<i>Rhynchospora knieskernii</i>	Knieskern's Beaked-rush	T	Habitat: endemic to 5 counties in the NJ Pine Barrens. Restricted to early successional habitats in pitch pine lowland forests within pine barrens. Prefers a substrate that is nutrient poor, highly acidic, fine grained mineral soils and can frequently be found over clay deposits and sometimes found on bog iron deposits. Prefers areas with a fluctuating water level, bare or sparsely vegetated areas that remain open due to disturbances either natural or human-caused (NatureServe 2020m).	No
<i>Amaranthus pumilus</i>	Seabeach Amaranth	T	Habitat: occurs on barrier islands, usually on coastal over-wash 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	Habitat: 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 2020c).	No

¹: Federal Conservation Status: C = Candidate, T = Threatened, E = Endangered, PT = Proposed Threatened

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

- The Migratory Bird Treaty Act of 1918
- The Bald and Golden Eagle Protection Act of 1940

- 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 or proximate to the Study Areas.

Table 2. Results of IPaC Review – Migratory Bird Species

Species	Common Name	Status	Breeding Season
<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>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>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>Aquila chrysaetos</i>	Golden Eagle	Not a BCC	Breeds elsewhere
<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>Rallus elegans</i>	King Rail	BCC	May 1 to Sep 5
<i>Tringa flavipes</i>	Lesser Yellowlegs	BCC	Breeds elsewhere
<i>Asio otus</i>	Long-eared Owl	BCC	Mar 1 to Jul 15
<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>Phalaropus fulicarius</i>	Red Phalarope	Not a BCC	Breeds elsewhere

Species	Common Name	Status	Breeding Season
<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>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>Melanitta fusca</i>	White-winged Scoter	Not a BCC	Breeds elsewhere
<i>Tringa semipalmata</i>	Willet	BCC	Apr 20 to Aug 5
<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 Cardiff Study Area, a request for information from the 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 Cardiff 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 and/or proximate to the Study Areas 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 ¹	Typical Habitat	Habitat Type Mapped in Cardiff Study Area ²
<i>Haliaeetus leucocephalus</i>	Bald Eagle	E	General: usually found in areas close to open water. Nesting: area that is safe from human disturbance, usually in a tree (CWF 2020).	F
<i>Strix varia</i>	Barred Owl	T	General: 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 2020o).	BS, NBS
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron	T	Feeding: along the edges of ponds or creeks and in marshes. Nesting and Roosting: 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 2020a).	F
<i>Rynchops niger</i>	Black Skimmer	E	Nesting: from Sandy Hook to Cape May along the Atlantic Coast. Nest in open sandy beaches, inlets, and offshore islands with sparse vegetation. May also nest on wrack mats on marsh islands. Foraging: shallow water tidal creeks, inlets and ponds. Coastal and estuarine habitats are used throughout the year (CWF 2020b).	F
<i>Hydroprogne caspia</i>	Caspian Tern	SC	Nesting: salt marshes, coastal estuaries with a preference for open, flat and sparsely vegetated areas. May nest on sand, pebbly shores or marshy soil. Winter: beaches, impoundments, isolated spits, and managed wetlands (CWF 2020c).	F

Species	Common Name	NJ State Conservation Status ¹	Typical Habitat	Habitat Type Mapped in Cardiff Study Area ²
<i>Bubulcus ibis</i>	Cattle Egret	T	General: Only occur in New Jersey in the summer months. Preferred habitat consists of wet agricultural land and marshy areas. Nesting: nest in colonies often with other species starting in March to mid-April. The season usually ends by mid-September (CWF 2012).	F
<i>Sterna hirundo</i>	Common Tern	SC	Nesting: in colonies on barrier islands, barrier beaches, promontories attached to the mainland, salt marshes and occasionally freshwater marshes on substrates of sand, shell, cobble or gravel with sparse vegetation. Will occasionally nest in artificial substrate if natural ones are not available. Staging (rest and feed): inlets and offshore areas on undisturbed beaches and sand flats near tidal inlets (CWF 2020d).	F
<i>Plegadis falcinellus</i>	Glossy Ibis	SC	Nesting: in colonies with other species on the ground of marshes or in small trees and bushes near water. General: found in marshes, swamps, lagoons, pond margins, lakes, flooded pastures and in fresh, brackish or salt water (NatureServe 2020l).	F
<i>Ardea herodias</i>	Great Blue Heron	SC	General: freshwater and brackish marshes, lake edges, rivers, bays, lagoons, ocean beaches, fields and meadows. Nesting: high in trees in swamps and forested areas. Occasionally on bushes or the ground. Generally located close to foraging habitats (NatureServe 2020a).	F
<i>Gelochelidon nilotica</i>	Gull-Billed Tern	SC	General: coastlines, salt marshes, estuaries, plowed fields, and occasionally along rivers, lakes, and in freshwater marshes. Breeding: sandy barrier islands, beaches and sandy shores of saline marshes and dredge spoil islands. (NatureServe 2020h).	F, NC
<i>Sternula antillarum</i>	Least Tern	E	Breeding: 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 habitat artificial areas similar to the natural ones	F

Species	Common Name	NJ State Conservation Status ¹	Typical Habitat	Habitat Type Mapped in Cardiff Study Area ²
			like dredge spoil areas and flat rooftops covered with gravel. Nests are generally found in areas above the high tide mark on beaches (NatureServe 2020n).	
<i>Egretta caerulea</i>	Little Blue Heron	SC	General: marshes, ponds, lakes, meadows, mudflats, streams, and other bodies of calm shallow water. Prefers freshwater areas. Nesting: above the ground or water in trees and shrubs. (NatureServe 2020d).	F
<i>Myotis septentrionalis</i>	Northern Myotis	E	Summer Habitat: roost underneath bark, in cavities or in crevices of both live and dead trees. May also roost in caves and mines. Winter: hibernate in caves and mines with large passages, large entrances, constant temperature and high humidity Feeding: understory of forested hillsides and ridges (USFWS 2020b).	ASS
<i>Pandion haliaetus</i>	Osprey	T	General: 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>Falco peregrinus</i>	Peregrine Falcon	E	General: various open situations especially where there are suitable nesting cliffs. When not breeding occurs in areas where prey concentrate (farmlands, marshes, lakeshores, river mouths, tidal flats, dunes and beaches, cities). Nesting: often on a ledge or hole on a face of a rocky cliff or crag. River banks, open bogs, large stick nests of other species, tree hollows, and man-made structures. Ideal locations include undisturbed areas with a wide view, near water and close to plentiful prey. Man-made sites include tall buildings, bridges, rock quarries and raised platforms (NatureServe 2020g).	UN
<i>Dryophytes andersonii</i>	Pine Barrens Treefrog	E	General Habitat: specialized acidic habitat such as pitch pine lowlands and Atlantic	OH, BS

Species	Common Name	NJ State Conservation Status ¹	Typical Habitat	Habitat Type Mapped in Cardiff Study Area ²
			white cedar swamps that are covered in dense mats of sphagnum moss. Breeding: temporary woodland ponds, white cedar bogs, and seepage areas along tributaries to major rivers and streams. Preference for water that has sphagnum moss, sedges, grasses or other aquatic plants within densely forested/shrubby areas.	
<i>Egretta thula</i>	Snowy Egret	SC	General: Marshes, lakes, ponds, and shallow coastal habitats. Nesting: trees or shrubs over water or ground. Will occasionally nest on the ground or in marsh vegetation (NatureServe 2020e).	F
<i>Clemmys guttata</i>	Spotted Turtle	SC	General: unpolluted, shallow bodies of water that have a soft bottom and aquatic vegetation. Small marshes, marshy pasture, bogs, fens, woodland streams, swamps, small ponds, vernal pools, and lake margins. Can occur in brackish tidal streams. Favorable areas are ponds surrounded by generally undisturbed meadow or undergrowth. Will move seasonally among different wetland types and spend significant amounts of time on land during summer. Hibernation: muddy bottoms of waterways or bogs in communal hibernacula. With water depths ranging from 22 to 37 inches with a slow but steady flow of water. Can also occur where there is a water flow through densely vegetated wetlands with a deep and soft mucky substrate. Nesting: well-drained soils or marshy pastures with grass or sedge tussock or mossy hummocks, in open areas at the edge of thick vegetation or similar areas that are exposed to sun. Favorable nesting sites are in sandy, sparsely vegetated strips and washouts along agricultural fields (NatureServe 2020c).	OH

Species	Common Name	NJ State Conservation Status ¹	Typical Habitat	Habitat Type Mapped in Cardiff Study Area ²
<i>Egretta tricolor</i>	Tricolored Heron	SC	General: Marshes, ponds, rivers, islands and found in salt and freshwater habitats. Nesting: usually near salt water in thickets of tidal marshes and rushes of freshwater marshes (NatureServe 2020f).	F
<i>Helmitheros vermivorum</i>	Worm-Eating Warbler	SC	Breeding: Well-drained upland deciduous forests with understory patches of shrubs, drier portions of stream swamps with an understory of mountain laurel, deciduous woods near streams, heavily associated with hillsides. Nests on the ground against roots or stems of shrubs or saplings in a small cavity. Nests can also be found against rock outcrops. Non-Breeding: various forests, woodlands, scrub and thicket habitats. In winter it lives in undergrowth and subcanopy layers of forests (NatureServe 2020i).	BS
<i>Nyctanassa violacea</i>	Yellow-Crowned Night-Heron	T	General: marshes, swamps, lakes, mainly coastal habitats. Nesting: Trees in wooded areas near water, occasionally in shrubs or on the ground NatureServe 2020j).	F, NC

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

2: Habitat Type Mapped in Cardiff Study Area: ASS = Active Season Sighting, BS = Breeding Sighting, F = Foraging, N = Nest, NC = Nesting Colony, NBS = Non-Breeding Sighting, OH = Occupied Habitat, UN = Urban Nest (Atlantic City)

2.3 Descriptions of Habitat Types Mapped within the Cardiff Study Area

The Cardiff Study Area ranges from shallow, flat shorelines to dunes, to the east to open water back bay tidal marshes, to deciduous and mixed forests along the onshore interconnection cable corridors and substations. This section describes the common characteristics of coastal terrestrial habitats that occur within and directly adjacent to the Cardiff 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 Atlantic County is approximately 53 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 the 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 that consists of approximately 1.1 million acres in portions of Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, and Ocean counties. 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 reptiles and amphibians, and 91 fish species (State of New Jersey 2021b).
 - The Pinelands reserve is managed by the Pinelands Commission and is defined by three separate zones: protected areas, managed use areas, and zones of cooperation. The only portion of the Cardiff Study Area that occurs within the Pinelands is the onshore facilities of Cardiff within Egg Harbor Township, west of the Garden State Parkway. The Pinelands ecosystem extends beyond the boundaries of the reserve. Forested wetlands characteristic of the Pinelands ecosystem occurs adjacent to the Cardiff Study Area and have been previously discussed under the deciduous/mixed forest habitat type.

- Within the overall Pinelands ecosystem, 43 animal species are known to occur within the Pinelands are listed as threatened or endangered by the New Jersey Division of Fish and Wildlife. 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 Cardiff Study Area.
- *Tidal Marsh/Back-Bay/Coastal River*: Tidal salt marshes can be found throughout coastal New Jersey and contain numerous plant and animal species, particularly avian and fish species, that have adapted to saline conditions and temperature extremes (MTEC 1995). Tidal marsh creeks have tidal currents that continuously deposit sediment and nutrients from bays into rivers making the salinity change rapidly from salt to brackish water. This deposition of sediment and nutrients also allows specially adapted plant species to thrive in these areas.
 - Plant species typical of these back-bays and salt marshes include: Annual salt marsh aster (*Aster subulatus*), big cordgrass (*Spartina cynosuroides*), saltmarsh cordgrass (*Spartina alterniflora*), salt hay (*Spartina patens*) marsh elder (*Iva frutescens*), and common reed (*Phragmites australis*) (MTEC 1995).
 - Common wildlife species, including fish, that occur within these areas include white perch (*Morone americana*), striped bass (*Morone saxatilis*), bluefish (*Pomatomus saltatrix*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*) diamondback terrapin (*Malaclemys terrapin*), snapping turtle (*Chelydra serpentina*), mud turtle (*Kinosternon subrubrum*), raccoon (*Procyon lotor*), and muskrat (*Ondatra zibethicus*). The striped bass, alewife and blueback herring are among a small group of fish that are anadromous, living predominantly in marine or brackish waters but migrate into fresh water in the spring to spawn.
 - Salt marsh habitats provide nesting and foraging habitat for resident and seasonal avian species. In addition, during the spring and fall migration, many avian species use this habitat as a stopover to rest and feed. Some representative bird species found in these coastal habitats include American Bittern (*Botaurus lentiginosus*), Great Blue Heron (*Ardea herodias*), Snowy Egret (*Egretta thula*), Willet (*Catoptrophorus semipalmatus*), Laughing Gull (*Larus atricilla*), and Seaside Sparrow (*Ammodramus maritima*), among many others. In addition to common bird species found in salt marsh habitats, several federal and state-listed threatened and endangered species utilize these habitats.

Although not within the Cardiff Study Area, dune and beach habitat occur immediately adjacent to the east of the eastern extent of the Cardiff Study Area in Atlantic City, 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 NJ, 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.

2.4 Descriptions of Habitat Types Mapped within the O&M Facility Study Area

The O&M Facility Area is characterized as a vacant urban lot adjacent to the waters of Atlantic City Harbor. There is no natural habitat within the O&M Facility Study Area and only urban adapted avian and mammal species would be expected.

3.0 FIELD INVESTIGATIONS

Field investigations of vernal pools were conducted within the Cardiff Study Area by EDR on April 2, 2020, and habitat assessment studies were conducted on June 22 through June 24, 2020, September 14, 2021, July 11 and 12, 2022, and February 2023. Vernal pool surveys were also conducted during June 2020, September 2021, and August 11, 2022, field surveys for the additional portions of the Cardiff Study Area and O&M Facility Study Area. Since the September 2021 and August 2022 field surveys of the O&M Facility Study Area and project-modifications to the Cardiff Study Area were conducted outside of the survey window for vernal pools, additional vernal pool surveys will be conducted during spring 2023, and supplemental findings will be provided as appropriate. During all field studies, wildlife species observed, including threatened and endangered species, within the Study Areas were noted.

3.1 Vernal Pool Methodology

Vernal pool surveys consisted of systematically investigating the entire Cardiff Study Area. For each potential vernal pool area, data was collected that included photographs, documenting existing conditions within and adjacent to potential vernal pool areas, and collecting 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/buttressing/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 were performed within the Cardiff Study Area and immediately adjacent areas. The O&M Facility Study was only assessed from publicly accessible areas such as North Maryland Avenue. 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 Cardiff 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 Areas

Generally, the Cardiff Study Area occurs within established linear development ROWs such as roadways, railroads, transmission line ROWs, 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 Cardiff Study Area:

- **Developed/Disturbed Areas.** This type of habitat included areas such as roads, recreational trails, railroad corridors, buildings (residential, commercial, or industrial) maintained landscapes, and other areas associated with the built environment.
- **Forest – Mixed.** This habitat type generally occurred inland along the pedestrian bike path/transmission line ROW and was dominated by white oak (*Quercus alba*), pitch pine (*Pinus rigida*), black gum (*Nyssa sylvatica*), red oak (*Quercus rubra*), black oak (*Quercus velutina*), and red maple (*Acer rubrum*) in the canopy. The understory was dominated by pitch pine, spicebush (*Lindera benzoin*), honeysuckle (*Lonicera japonica*), raspberry (*Rubus idaeus*), and eastern red cedar (*Juniperus virginiana*). The herbaceous layer was dominated by grasses, round greenbrier (*Smilax rotundifolia*), Canada goldenrod (*Solidago canadensis*), and spotted knapweed (*Centaurea stoebe*).
- **Shrub – Deciduous.** This habitat type generally occurred inland along the pedestrian bike path. The shrub layer was dominated by black oak saplings, wild cherry saplings (*Prunus avium*), as well as shining sumac (*Rhus copallinum*), sassafras saplings (*Sassafras albidum*), and silver maple saplings (*Acer saccharinum*). The understory was dominated by wild grape (*Vitis* sp.), pokeweed (*Phytolacca decandra*), and goldenrod.
- **Shrub-Evergreen.** This habitat type occurred primarily in upland areas adjacent to tidal wetland areas along artificial berms such as the railroad and roadway corridors. The shrub layer was dominated by eastern red cedar and high tide bush (*Iva frutescens*). The herbaceous layer was dominated by common reed (*Phragmites australis*), poison ivy, and goldenrod.
- **Herbaceous Field.** This habitat type was mainly located in heavily disturbed areas within the ROW. Dominant herbaceous species included grasses, Chinese bush clover (*Lespedeza cuneata*), roundleaf greenbrier, deer tongue (*Dichanthelium clandestinum*), Canada goldenrod, mugwort (*Artemisia vulgaris*), wrinkle-leaf goldenrod (*Solidago rugosa*), spotted knapweed, white clover (*Trifolium repens*), asters (*Symphotrichum novae*), poison ivy, pokeweed, crown vetch (*Securigera varia*), Virginia creeper, and wild grape. Shrubs occurred occasionally and usually in small patches and included red cedar, multiflora rose and holly (*Ilex aquifolium*). Trees lined the outskirts of the fields and were dominated by red oak, white oak, black oak, sassafras and wild cherry.

- **Forested Wetlands.** This habitat type was mainly found in wooded areas within a gully along the pedestrian bike path. The canopy is dominated by red maples, with spicebush, black gum, red maple saplings, and blueberry (*Vaccinium corymbosum*) in the understory. The herbaceous layer is dominated by a sparse cover of cinnamon fern (*Osmundastrum cinnamomeum*) and black gum seedlings.
- **Scrub-Shrub Wetlands.** This habitat type occurred along the ACE transmission line ROW and in disturbed areas. The shrub layer was dominated by eastern red cedar and multiflora rose. Herbaceous species consisted of grasses, Virginia creeper and poison ivy.
- **Herbaceous Wetlands.** This habitat type occurred throughout the Cardiff Study Area and consisted of freshwater and tidal wetland areas within the Cardiff Study Area.
 - Tidal areas were dominated by smooth cordgrass (*Spartina alterniflora*), glasswort (*Salicornia depressa*), seaside goldenrod (*Solidago sempervirens*), saltmeadow cordgrass (*Spartina patens*), sea lavender (*Limonium carolinianum*), and common reed.
 - Freshwater areas were dominated by reed canary grass (*Phalaris arundinacea*), broadleaf cattail (*Typha latifolia*), marsh-mallow (*Althaea officinalis*) and hairgrass (*Deschampsia cespitosa*)
- **Streams.** Cedar Branch, Maple Run, Mill Branch and an additional unnamed tributary are channelized swales that flow via culverts under a pedestrian bike path from north to south.
- **Rivers/Thorofare's.** The Inside Thorofare, the Beach Thorofare, and the Great Thorofare are within the Cardiff Study Area and are all interconnected and influenced by the Atlantic Ocean tidal fluctuations.
- **Ponded Areas.** Open water areas influenced by tidal fluctuations and man-made barriers.

Developed/Disturbed areas were the most abundant within the Cardiff Study Area (59.4%), and the only terrestrial habitat type observed at the O&M Facility Study Area (80%). The remainder of habitat types occurred along roadways, railroads, transmission line ROWs, as well as 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*) and other common avian species adapted to developed/disturbed habitat types. A pair of horseshoe crabs (*Limulidae* spp.) were observed on the bank of a tidal tributary along the railroad spur and electric transmission line. No reptile, amphibian or mammal species were observed. No federal- or state-listed threatened and endangered species were observed within the Cardiff Study Area during field studies. Each of these habitats' location and extent within the Cardiff Study Area is shown on the mapping presented in Appendix F.

4.2 Vernal Pool Survey Results

An evaluation based on the methodology presented in Section 3.1 and conducted in August 2022 determined one area within the Cardiff Study Area may satisfy the criteria to be classified as a vernal pool. However, during the field investigation, it was noted that the area is an excavation likely for the purpose of stormwater management (Photographs 28 through 30). The excavation was lined with a thick clay layer surrounded by significant soil disturbance. Further investigation will be conducted to determine if this area is a vernal pool. There are no areas of potential vernal pools within the O&M Study Area.

4.3 Observed Habitat Suitability for Federal and State-Listed Species

As described in Section 4.1, most of the habitat observed within the Cardiff and O&M Facility Study Areas are 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. 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. Table 4 summarizes the federal- and state-listed threatened and endangered species and provides an assessment if any critical habitat was observed within the Cardiff Study Area based on the requirements presented in Tables 1 and 3. No critical habitat is located within the O&M Facility Study Area.

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

Species	Common Name	Federal/State Status	Critical Habitat in Cardiff Study Area	Comments
<i>Myotis septentrionalis</i>	Northern Long-Eared Bat	Federal – Endangered State - Endangered	No	Individuals could utilize the Cardiff Study Area for foraging opportunities.
<i>Perimyotis subflavus</i>	Tricolored Bat	Federal – Proposed Endangered State - Endangered	No	Individuals could utilize the Cardiff Study Area for foraging opportunities.
<i>Laterallus jamaicensis ssp. jamaicensis</i>	Eastern Black Rail	Federal – Proposed Threatened	No	Tidal wetlands adjacent to Cardiff Study Area could support this species, but not within Cardiff Study Area.
<i>Charadrius melodus</i>	Piping Plover	Federal – Threatened	No	Habitat does not occur within or adjacent to the Cardiff Study Area.
<i>Calidris canutus rufa</i>	Red Knot	Federal – Threatened	No	Habitat does not occur within or adjacent to the Cardiff Study Area.
<i>Danaus plexippus</i>	Monarch Butterfly	Federal – Candidate	No	Individuals could utilize the Cardiff Study Area for breeding where milkweed occurs.

Species	Common Name	Federal/State Status	Critical Habitat in Cardiff Study Area	Comments
<i>Schwalbea americana</i>	American Chaffseed	Federal - Endangered	No	Habitat does not occur within or adjacent to the Cardiff Study Area (see Appendix D).
<i>Rhynchospora knieskernii</i>	Knieskern's Beaked-Rush	Federal – Threatened	No	Habitat does not occur within or adjacent to the Cardiff Study Area.
<i>Amaranthus pumilus</i>	Seabeach Amaranth	Federal – Threatened	No	Habitat does not occur within or adjacent to the Cardiff Study Area.
<i>Helonia bulltata</i>	Swamp Pink	Federal – Threatened	No	Habitat does not occur within or adjacent to the Cardiff Study Area (See Appendix E).
<i>Haliaeetus leucocephalus</i>	Bald Eagle	State – Endangered	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Strix varia</i>	Barred Owl	State – Threatened	Yes	Breeding Habitat occurs within Cardiff Study Area. Only large contiguous forest breeding habitat occurs around the Cardiff Substation, adjacent to the Cardiff Study Area.
<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron	State – Threatened	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Rynchops niger</i>	Black Skimmer	State – Endangered	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Bubulcus ibis</i>	Cattle Egret	State – Threatened	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Hydroprogne caspia</i>	Caspian Tern	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Sterna hirundo</i>	Common Tern	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Plegadis falcinellus</i>	Glossy Ibis	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Ardea herodias</i>	Great Blue Heron	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.

Species	Common Name	Federal/State Status	Critical Habitat in Cardiff Study Area	Comments
<i>Gelochelidon nilotica</i>	Gull-Billed Tern	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Sternula antillarum</i>	Least Tern	State – Endangered	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Egretta caerulea</i>	Little Blue Heron	State – Special Concern	No	Foraging habitat occurs within and adjacent to the Cardiff Study Area.
<i>Pandion haliaetus</i>	Osprey	State – Threatened	Potentially	Transmission structures associated with ACE transmission line provide opportunity for osprey to nest within the Cardiff Study Area. Nests were not observed within the Cardiff Study Area at the time of field investigations.
<i>Falco peregrinus</i>	Peregrine Falcon	State – Endangered	Potentially	The tall buildings of Atlantic City provide opportunity for nesting pairs within proximity to the Cardiff Study Area. No nests or nesting pairs were observed within the Cardiff Study Area at the time of field investigations.
<i>Egretta thula</i>	Snowy Egret	State – Special Concern	No	Foraging habitat occurs within and adjacent to Cardiff Study Area.
<i>Clemmys guttata</i>	Spotted Turtle	State – Special Concern	No	No areas of perennial freshwater wetlands were observed within the Cardiff Study Area.
<i>Egretta tricolor</i>	Tricolored Heron	State – Special Concern	No	Foraging habitat occurs within and adjacent to Cardiff Study Area.
<i>Helmitheros vermivorum</i>	Worm-Eating Warbler	State – Special Concern	No	Foraging habitat occurs within and adjacent to Cardiff Study Area.
<i>Nyctanassa violacea</i>	Yellow-Crowned Night-Heron	State – Threatened	No	Foraging habitat occurs within and adjacent to Cardiff Study Area. Three individuals were observed within and adjacent to the Cardiff Study Area foraging

Species	Common Name	Federal/State Status	Critical Habitat in Cardiff Study Area	Comments
				in the tidal creeks at the time of field investigations.

Although no critical habitat was identified within the Cardiff Study Area, many of these species (particularly avian species) could occur within the Cardiff Study Area as transient individuals for foraging opportunities or during migrations. The least tern, yellow-crowned night-heron, great blue heron, common tern, and osprey were all observed within and adjacent to the Cardiff Study Area and largely exhibit foraging behaviors.

4.4 Habitat Suitability for Migratory and Resident Wildlife Species

As previously described, the Cardiff and O&M Facility Study Areas are 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 Cardiff Study Area during their spring and autumn migration and use the forested and tidal wetland areas within the Cardiff Study Area. Species using habitats within the Cardiff Study Area would be temporary and for short durations. Migratory bird species could occur as transient individuals within the O&M Facility Study Area; however, this area exhibits a distinct lack of natural vegetation to support most wildlife species, including migrating bird species.

Resident wildlife species occur through the Cardiff and O&M Facility 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 a vernal pool survey in April 2020 and August 2022 and a habitat suitability assessment in June 2020, September 2021, June 2022, February 2023. Based on the vernal pool surveys, one area potentially satisfied the criteria of being classified as vernal pool habitat within the Cardiff Study Area; however, it appeared this area was associated with excavations for stormwater management facilities onsite. No potential vernal pools occur within the O&M Facility Study Area. The habitat suitability assessment identified nine habitat types within the Cardiff and O&M Facility Study Areas. The most abundant habitat type was developed/disturbed (59.4%) in the Cardiff and O&M Study Areas due to the location of these Study Areas within highway and railroad corridors and within the urban landscape of Atlantic City, City of Pleasantville and/or Egg Harbor Township. The remainder of the habitat types are considered marginal because of the edge effect being within or adjacent to existing linear development (e.g., highways, railroads, utility transmission lines, and pedestrian/bike lanes) and other commercial, residential, and industrial development. These habitats have been disturbed from previous development and is subject to ongoing disturbance in the form of high-traffic use of roads, railroads, 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; however, several state-listed species were observed foraging within or directly adjacent to the Cardiff Study Area. 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*) and other common avian species adapted to developed/disturbed habitat types. The barred owl is documented to use the forested areas surrounding the Cardiff Substation as nesting habitat. Continued discussions with the USFWS and NJDEP DFW will continue to occur to determine the need for any avoidance/mitigation measures. No state- or federal-listed threatened or endangered species or their habitat were observed within or proximate to the O&M Facility Study Area.

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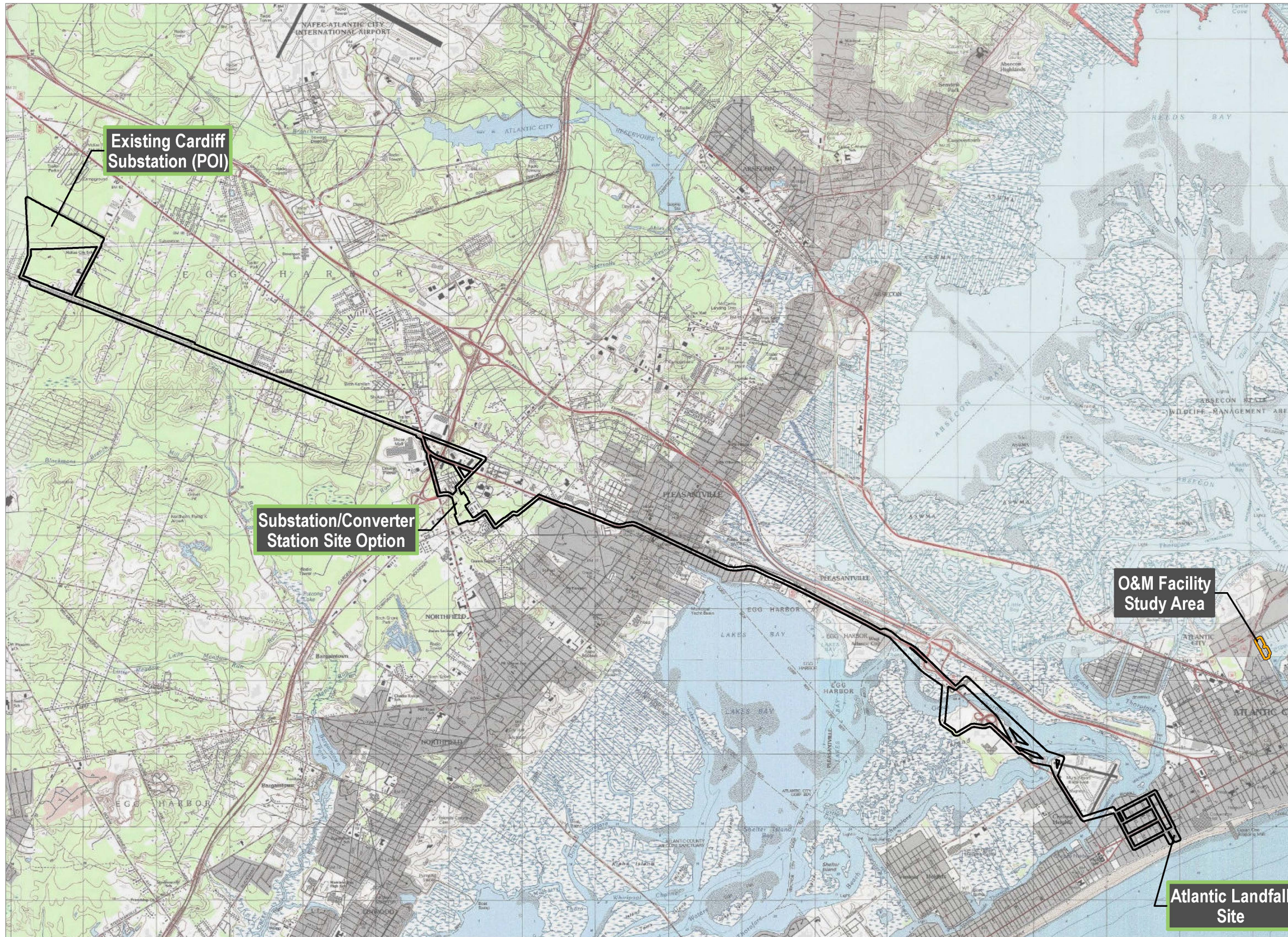
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Appendix A

Figures

Figure 1: Project Location Map

Figure 1. USGS Project Location Map

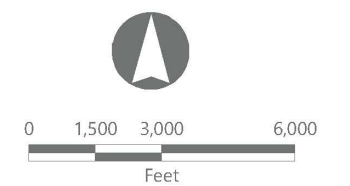


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

Study Area



Prepared December 12, 2023
Basemap: ESRI ArcGIS Online "USA Topo Maps" map service.

ATLANTIC SHORES offshore wind

EDR

Figure 2: Landscape Project Mapping

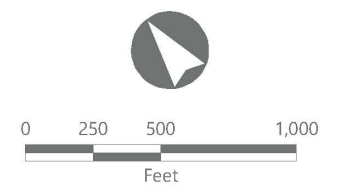


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New Jersey

Habitat Suitability Assessment Report

-  Rank 1 - Habitat Specific Requirements
-  Rank 2 - Special Concern
-  Rank 3 - State Threatened
-  Rank 4 - State Endangered
-  Rank 5 - Federally Listed
-  Study Area



Prepared December 12, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



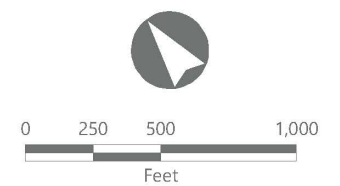
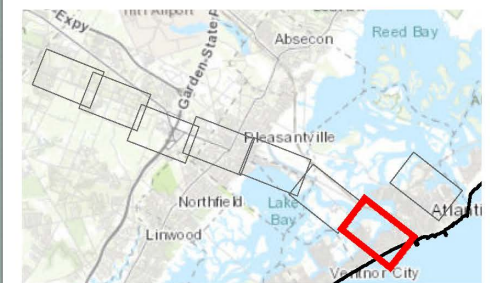


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Prepared November 22, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



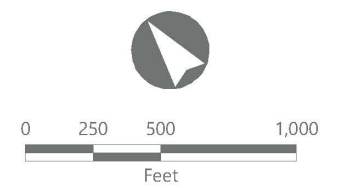
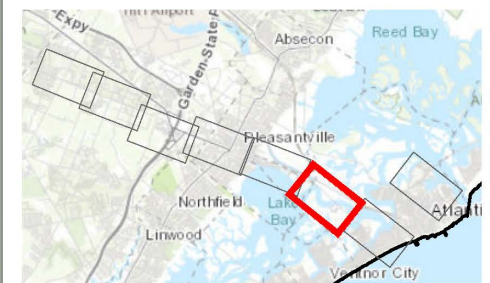


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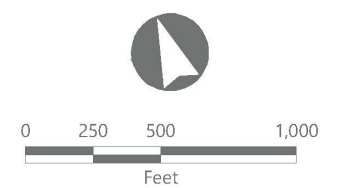
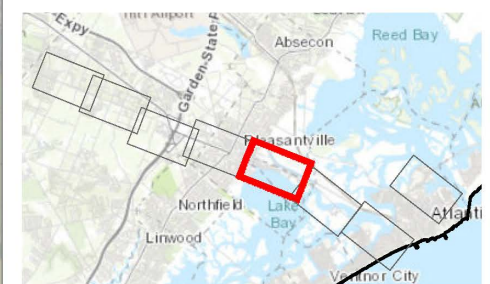


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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New Jersey

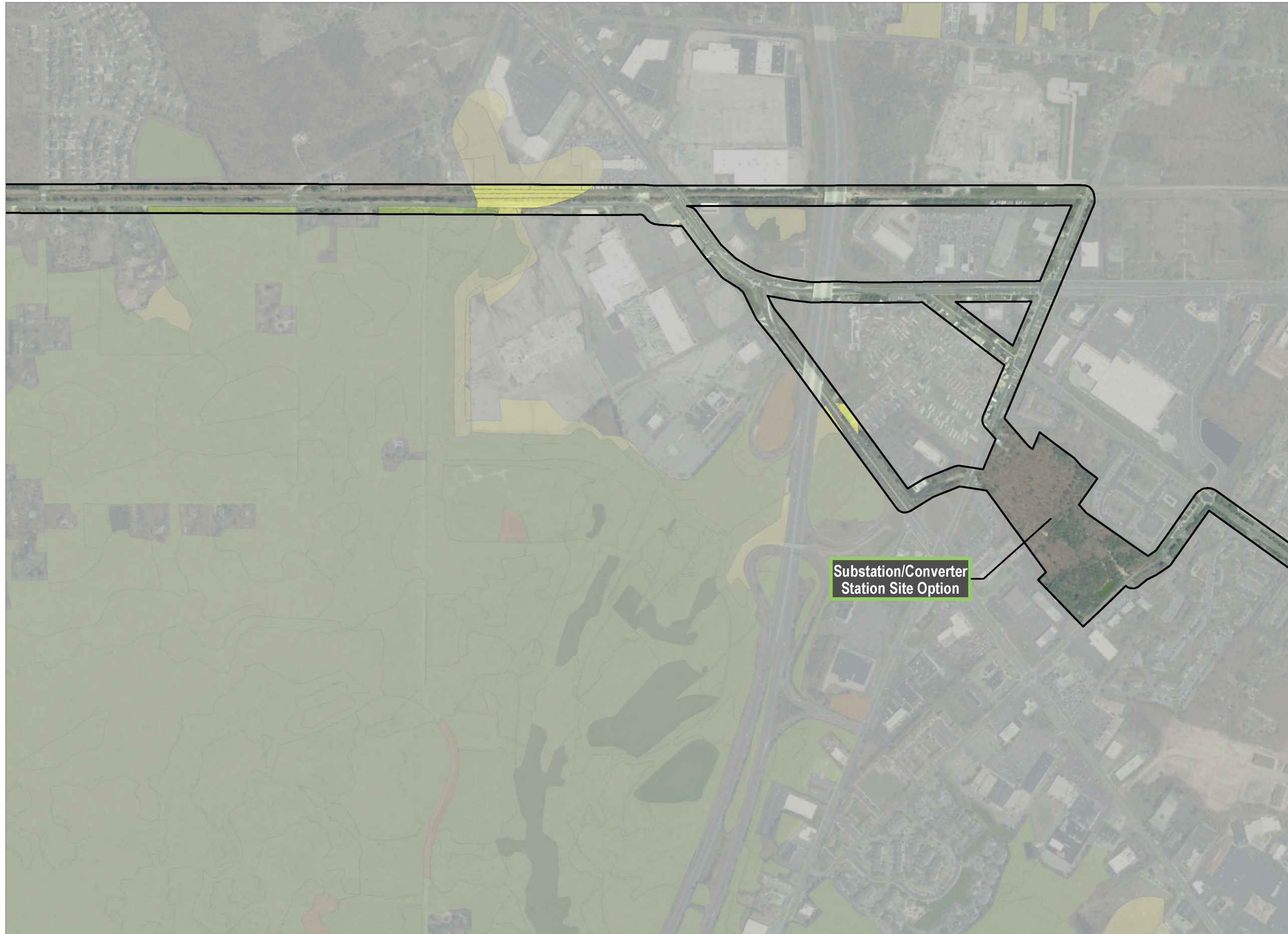
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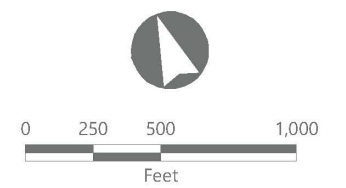
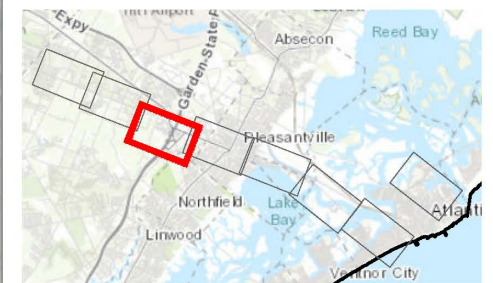


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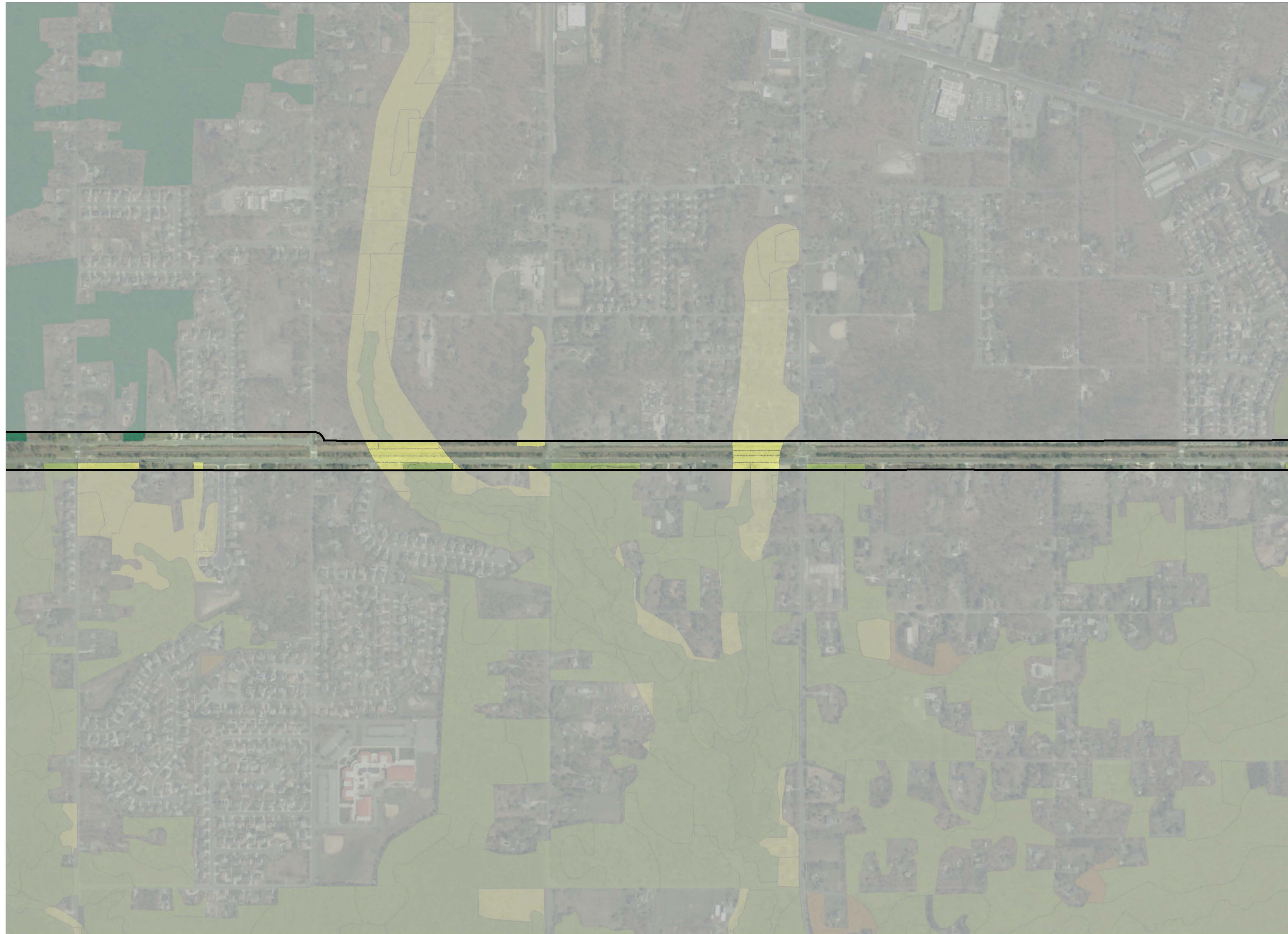
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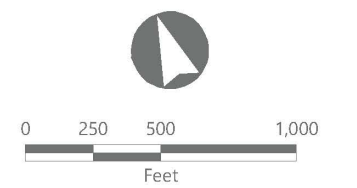
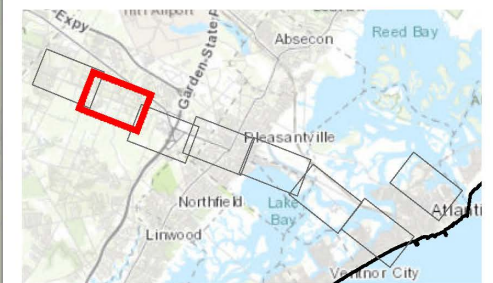


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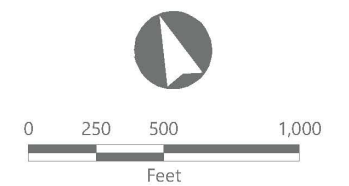
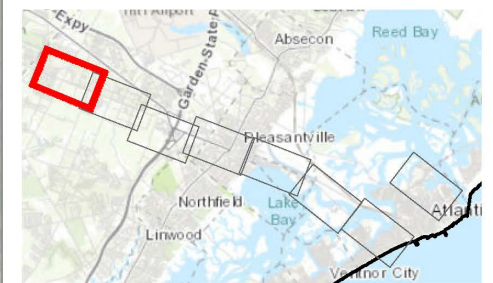


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Prepared November 22, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

Figure 3: Land Use/Land Cover

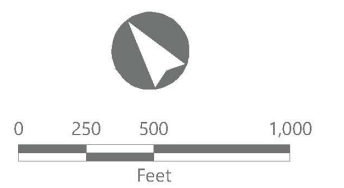


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

Study Area



Prepared December 12, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

EDR



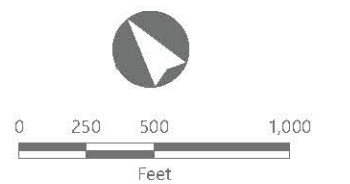
Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
Pleasantville, and Egg Harbor
Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

 Study Area

 AIRPORT FACILITIES	 RESIDENTIAL, HIGH DENSITY OR MULTIPLE DWELLING
 BEACHES	 SALINE MARSH (LOW MARSH)
 COMMERCIAL/SERVICES	 STADIUM, THEATERS, CULTURAL CENTERS AND ZOOS
 DISTURBED WETLANDS (MODIFIED)	 TIDAL RIVERS, INLAND BAYS, AND OTHER TIDAL WATERS
 MAJOR ROADWAY	 TRANSITIONAL AREAS
 MIXED URBAN OR BUILT-UP LAND	 TRANSPORTATION/COMMUNICATION/UTILITIES
 OTHER URBAN OR BUILT-UP LAND	 VEGETATED DUNE COMMUNITIES
 RECREATIONAL LAND	



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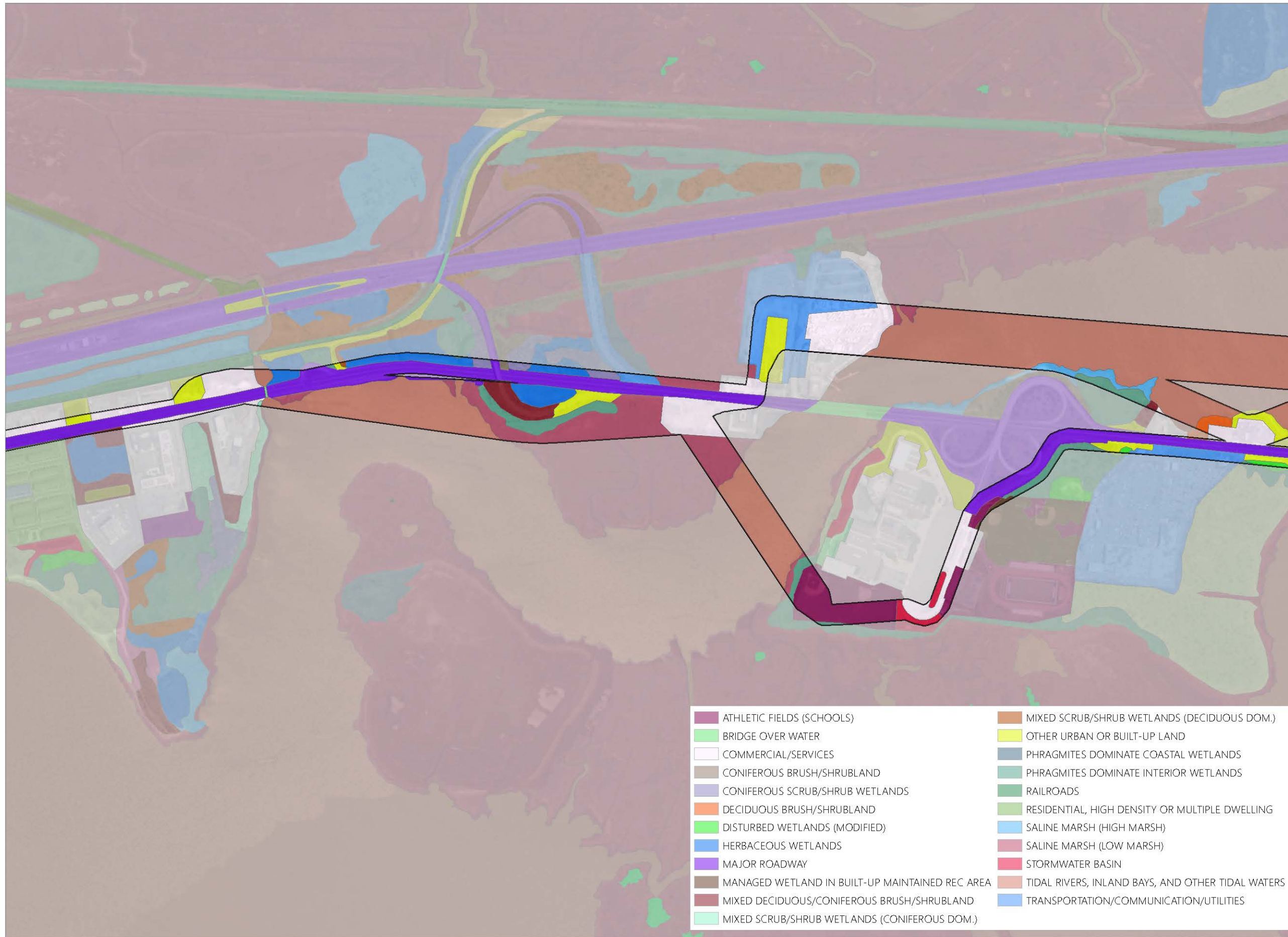
ATLANTIC SHORES
offshore wind

Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

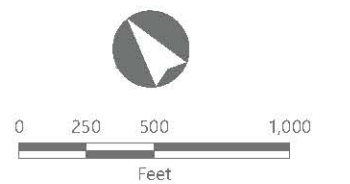
City of Atlantic City, City of
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New Jersey

Habitat Suitability Assessment Report

 Study Area

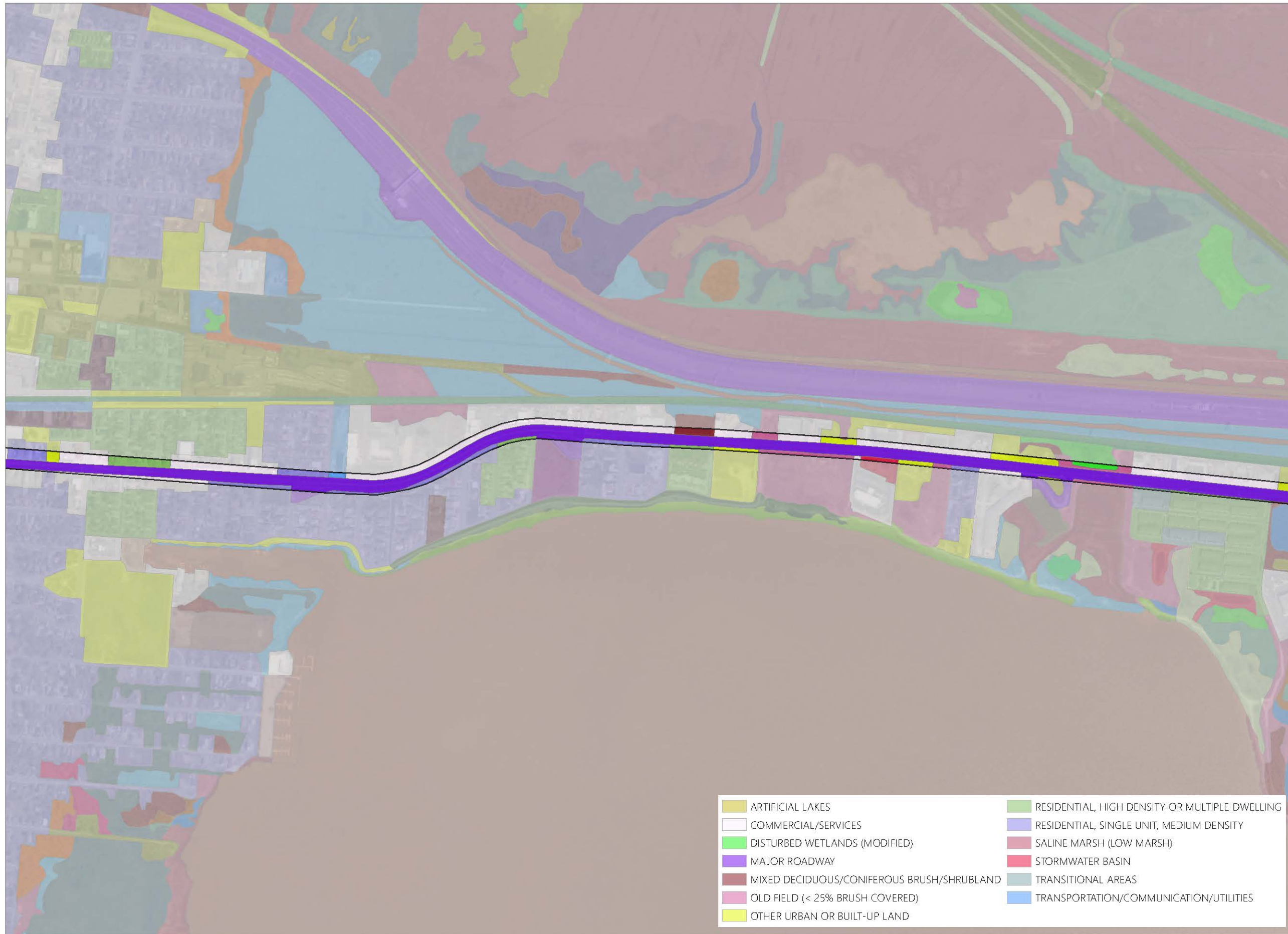


- | | |
|---|---|
| ATHLETIC FIELDS (SCHOOLS) | MIXED SCRUB/SHRUB WETLANDS (DECIDUOUS DOM.) |
| BRIDGE OVER WATER | OTHER URBAN OR BUILT-UP LAND |
| COMMERCIAL/SERVICES | PHRAGMITES DOMINATE COASTAL WETLANDS |
| CONIFEROUS BRUSH/SHRUBLAND | PHRAGMITES DOMINATE INTERIOR WETLANDS |
| CONIFEROUS SCRUB/SHRUB WETLANDS | RAILROADS |
| DECIDUOUS BRUSH/SHRUBLAND | RESIDENTIAL, HIGH DENSITY OR MULTIPLE DWELLING |
| DISTURBED WETLANDS (MODIFIED) | SALINE MARSH (HIGH MARSH) |
| HERBACEOUS WETLANDS | SALINE MARSH (LOW MARSH) |
| MAJOR ROADWAY | STORMWATER BASIN |
| MANAGED WETLAND IN BUILT-UP MAINTAINED REC AREA | TIDAL RIVERS, INLAND BAYS, AND OTHER TIDAL WATERS |
| MIXED DECIDUOUS/CONIFEROUS BRUSH/SHRUBLAND | TRANSPORTATION/COMMUNICATION/UTILITIES |
| MIXED SCRUB/SHRUB WETLANDS (CONIFEROUS DOM.) | |



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Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

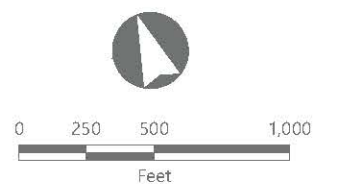


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

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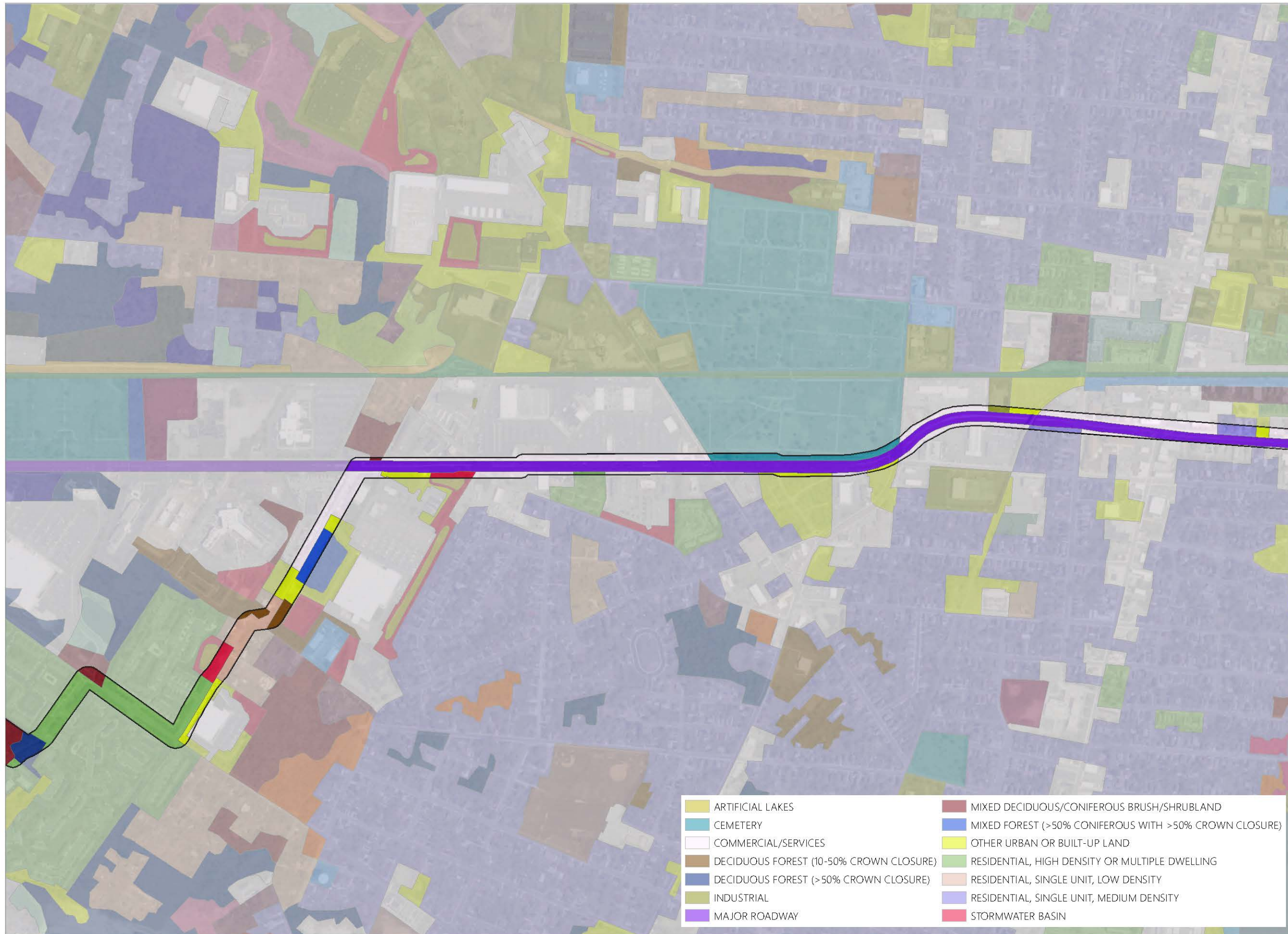
Habitat Suitability Assessment Report

Study Area



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ATLANTIC SHORES
offshore wind

















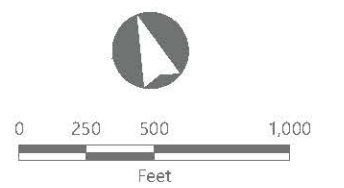
Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Habitat Suitability Assessment Report

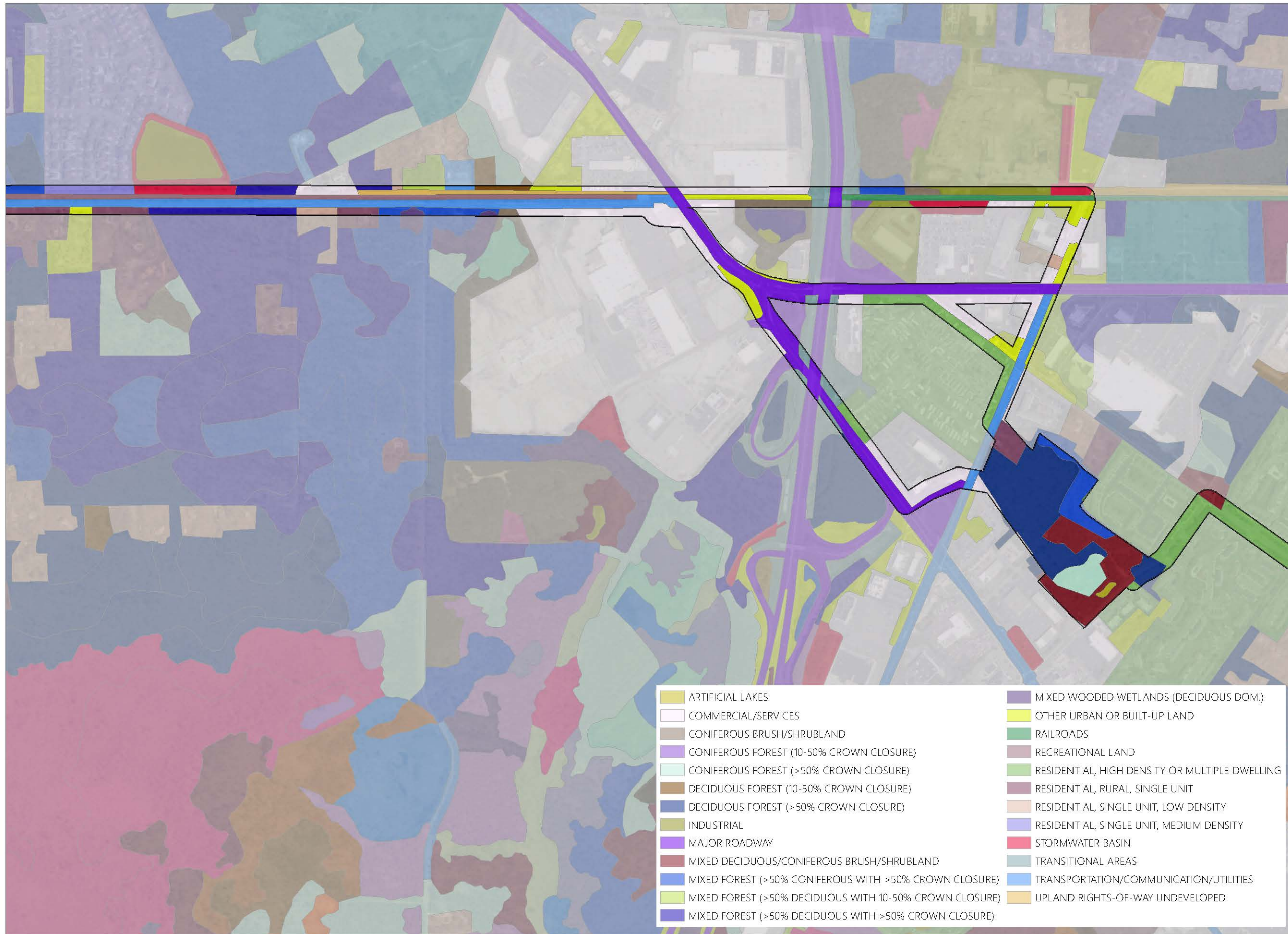
 Study Area

 ARTIFICIAL LAKES	 MIXED DECIDUOUS/CONIFEROUS BRUSH/SHRUBLAND
 CEMETERY	 MIXED FOREST (>50% CONIFEROUS WITH >50% CROWN CLOSURE)
 COMMERCIAL/SERVICES	 OTHER URBAN OR BUILT-UP LAND
 DECIDUOUS FOREST (10-50% CROWN CLOSURE)	 RESIDENTIAL, HIGH DENSITY OR MULTIPLE DWELLING
 DECIDUOUS FOREST (>50% CROWN CLOSURE)	 RESIDENTIAL, SINGLE UNIT, LOW DENSITY
 INDUSTRIAL	 RESIDENTIAL, SINGLE UNIT, MEDIUM DENSITY
 MAJOR ROADWAY	 STORMWATER BASIN



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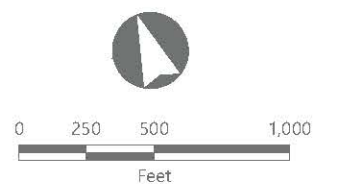


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

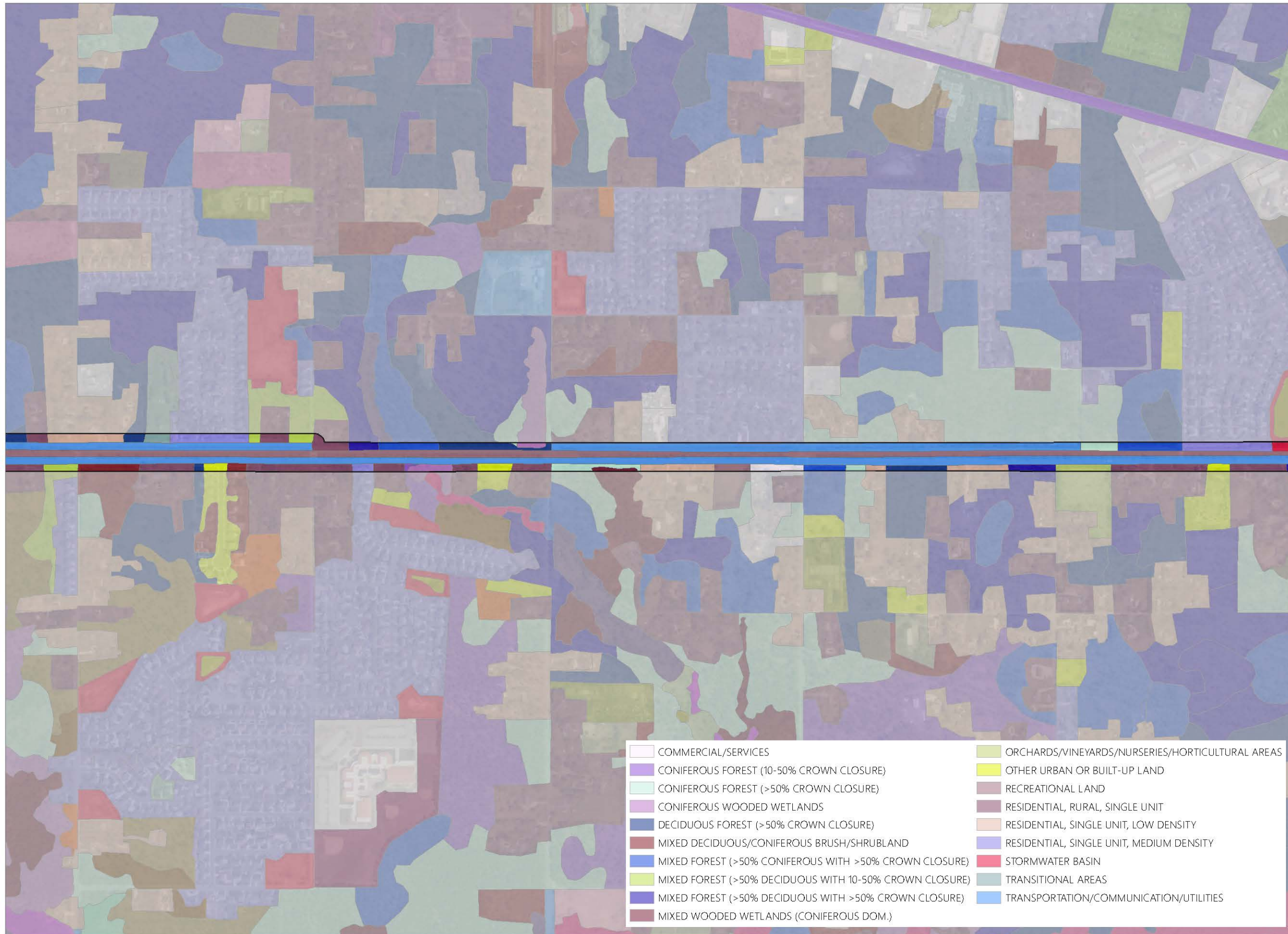
Habitat Suitability Assessment Report

Study Area



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ATLANTIC SHORES
offshore wind






















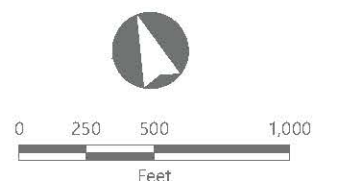
Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

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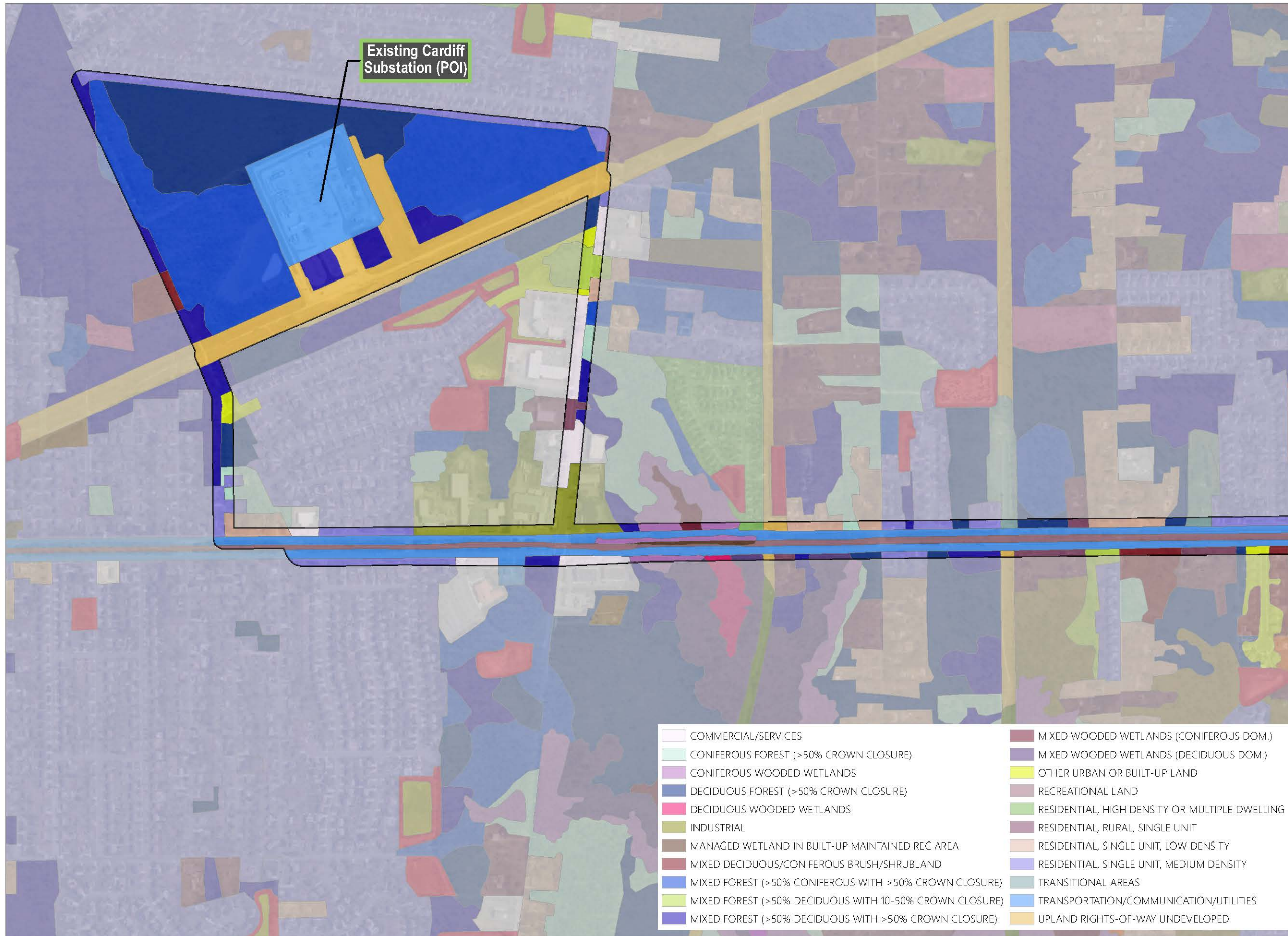
 Study Area

- | | |
|---|--|
|  COMMERCIAL/SERVICES |  ORCHARDS/VINEYARDS/NURSERIES/HORTICULTURAL AREAS |
|  CONIFEROUS FOREST (10-50% CROWN CLOSURE) |  OTHER URBAN OR BUILT-UP LAND |
|  CONIFEROUS FOREST (>50% CROWN CLOSURE) |  RECREATIONAL LAND |
|  CONIFEROUS WOODED WETLANDS |  RESIDENTIAL, RURAL, SINGLE UNIT |
|  DECIDUOUS FOREST (>50% CROWN CLOSURE) |  RESIDENTIAL, SINGLE UNIT, LOW DENSITY |
|  MIXED DECIDUOUS/CONIFEROUS BRUSH/SHRUBLAND |  RESIDENTIAL, SINGLE UNIT, MEDIUM DENSITY |
|  MIXED FOREST (>50% CONIFEROUS WITH >50% CROWN CLOSURE) |  STORMWATER BASIN |
|  MIXED FOREST (>50% DECIDUOUS WITH 10-50% CROWN CLOSURE) |  TRANSITIONAL AREAS |
|  MIXED FOREST (>50% DECIDUOUS WITH >50% CROWN CLOSURE) |  TRANSPORTATION/COMMUNICATION/UTILITIES |
|  MIXED WOODED WETLANDS (CONIFEROUS DOM.) | |



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



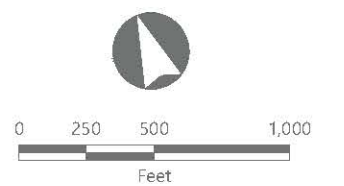


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

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Habitat Suitability Assessment Report

Study Area



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ATLANTIC SHORES
 offshore wind

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: 2023-0048626
Project Name: COP South Cardiff 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

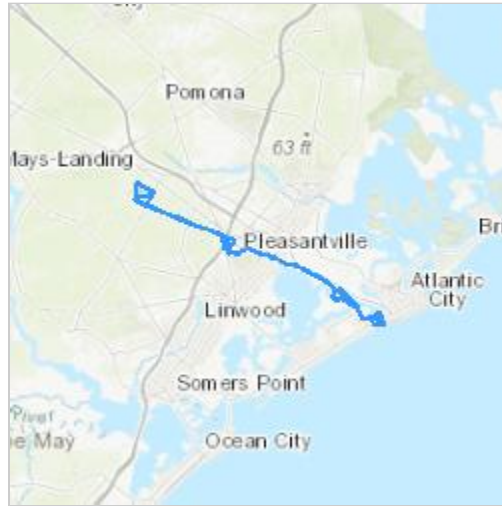
Galloway, NJ 08205

(609) 646-9310

PROJECT SUMMARY

Project Code: 2023-0048626
Project Name: COP South Cardiff Habitat Assessment Study Area
Project Type: Power Gen - Wind - Offshore
Project Description: 2023-02-23 Study Area update
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.3919371,-74.52935735552035,14z>



Counties: Atlantic County, New Jersey

ENDANGERED SPECIES ACT SPECIES

There is a total of 10 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 Fisheries¹, 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.

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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: https://ecos.fws.gov/ecp/species/9045	Threatened
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
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 final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

INSECTS

NAME	STATUS
<p>Monarch Butterfly <i>Danaus plexippus</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ 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: https://www.fws.gov/savethemonarch/FAQ-Section7.html). <p>Species profile: https://ecos.fws.gov/ecp/species/9743</p>	Candidate

FLOWERING PLANTS

NAME	STATUS
<p>American Chaffseed <i>Schwalbea americana</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/1286</p>	Endangered
<p>Knieskern's Beaked-rush <i>Rhynchospora knieskernii</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3280</p>	Threatened
<p>Seabeach Amaranth <i>Amaranthus pumilus</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/8549</p>	Threatened
<p>Swamp Pink <i>Helonias bullata</i></p> <p>Population:</p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/4333</p>	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.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

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](#).

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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. https://ecos.fws.gov/ecp/species/8935	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

NAME	BREEDING SEASON
<p>Black Scoter <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>Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234</p>	Breeds May 20 to Sep 15
<p>Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399</p>	Breeds May 15 to Oct 10
<p>Blue-winged Warbler <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>Bobolink <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>Brown Pelican <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>Canada Warbler <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>Cerulean Warbler <i>Dendroica cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974</p>	Breeds Apr 29 to Jul 20
<p>Chimney Swift <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>Common Eider <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
<p>Common Loon <i>gavia immer</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. https://ecos.fws.gov/ecp/species/4464</p>	Breeds Apr 15 to Oct 31

NAME	BREEDING SEASON
<p>Double-crested Cormorant <i>phalacrocorax auritus</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. https://ecos.fws.gov/ecp/species/3478</p>	Breeds Apr 20 to Aug 31
<p>Dovekie <i>Alle alle</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. https://ecos.fws.gov/ecp/species/6041</p>	Breeds elsewhere
<p>Eastern Whip-poor-will <i>Antrastomus vociferus</i> 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>Golden Eagle <i>Aquila chrysaetos</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. https://ecos.fws.gov/ecp/species/1680</p>	Breeds elsewhere
<p>Great Shearwater <i>Puffinus gravis</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>Gull-billed Tern <i>Gelochelidon nilotica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501</p>	Breeds May 1 to Jul 31
<p>Hudsonian Godwit <i>Limosa haemastica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Kentucky Warbler <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Apr 20 to Aug 20
<p>King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936</p>	Breeds May 1 to Sep 5
<p>Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679</p>	Breeds elsewhere

NAME	BREEDING SEASON
<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. https://ecos.fws.gov/ecp/species/3631</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. https://ecos.fws.gov/ecp/species/7238</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 Phalarope <i>Phalaropus fulicarius</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-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
Ring-billed Gull <i>Larus delawarensis</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 elsewhere
Royal Tern <i>Thalasseus maximus</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 Apr 15 to Aug 31
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Surf Scoter <i>Melanitta perspicillata</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 elsewhere
White-winged Scoter <i>Melanitta fusca</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 elsewhere
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
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.

No Data (—)

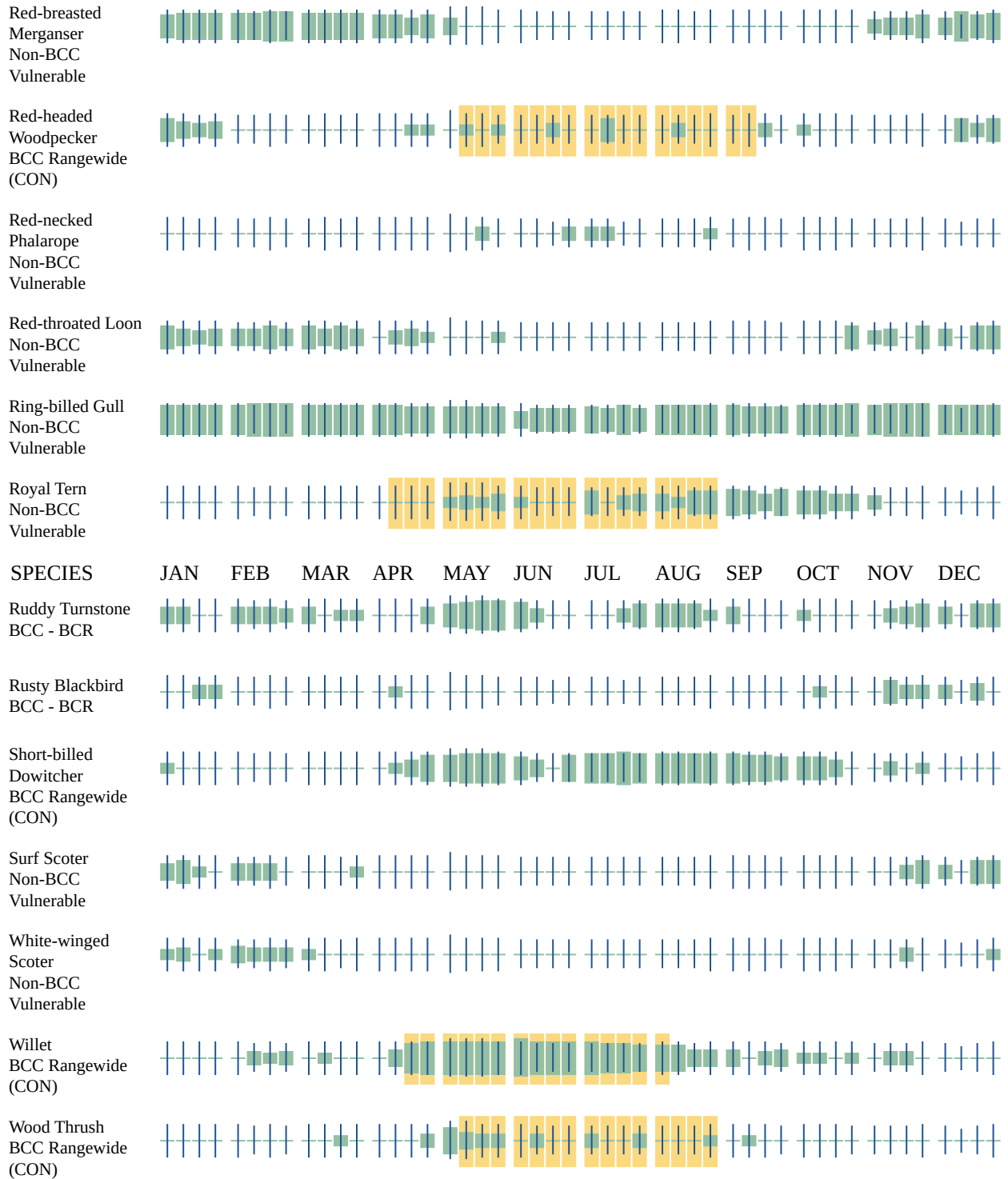
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort — no data

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



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).

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.

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.

IPAC USER CONTACT INFORMATION

Agency: Environmental Design & Research, Landscape Architecture, Engineering &
Environmental Services, D.P.C

Name: Jacqueline McMillen

Address: 34 Northeast Drive

Address Line 2: Sute 1B

City: Hershey

State: PA

Zip: 17033

Email: jmcmillen@edrdpc.com

Phone: 7172981059



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 Fax: (609) 646-0352

<http://www.fws.gov/northeast/njfieldoffice/Endangered/consultation.html>

In Reply Refer To:

December 06, 2021

Consultation Code: 05E2NJ00-2022-SLI-0365

Event Code: 05E2NJ00-2022-E-01000

Project Name: Atlantic Shores - Cardiff

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 that may occur in your proposed action area and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under Section 7(c) of the Endangered Species Act (ESA) 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.

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

Project Summary

Consultation Code: 05E2NJ00-2022-SLI-0365

Event Code: Some(05E2NJ00-2022-E-01000)

Project Name: Atlantic Shores - Cardiff

Project Type: DEVELOPMENT

Project Description: O&M Facility Location for the Atlantic Shores Project

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.376019400000004,-74.42896990044565,14z>



Counties: Atlantic County, New Jersey

Endangered Species Act Species

There is a total of 3 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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.

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 final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

Flowering Plants

NAME	STATUS
Seabeach Amaranth <i>Amaranthus pumilus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	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.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

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
Black Scoter <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.	Breeds elsewhere
Brown Pelican <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.	Breeds Jan 15 to Sep 30

NAME	BREEDING SEASON
<p>Common Eider <i>Somateria mollissima</i></p> <p>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
<p>Common Loon <i>gavia immer</i></p> <p>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> <p>https://ecos.fws.gov/ecp/species/4464</p>	Breeds Apr 15 to Oct 31
<p>Double-crested Cormorant <i>phalacrocorax auritus</i></p> <p>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> <p>https://ecos.fws.gov/ecp/species/3478</p>	Breeds Apr 20 to Aug 31
<p>Long-tailed Duck <i>Clangula hyemalis</i></p> <p>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> <p>https://ecos.fws.gov/ecp/species/7238</p>	Breeds elsewhere
<p>Red-breasted Merganser <i>Mergus serrator</i></p> <p>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></p> <p>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>Ring-billed Gull <i>Larus delawarensis</i></p> <p>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>Royal Tern <i>Thalasseus maximus</i></p> <p>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 31
<p>Surf Scoter <i>Melanitta perspicillata</i></p> <p>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
<p>White-winged Scoter <i>Melanitta fusca</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

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.

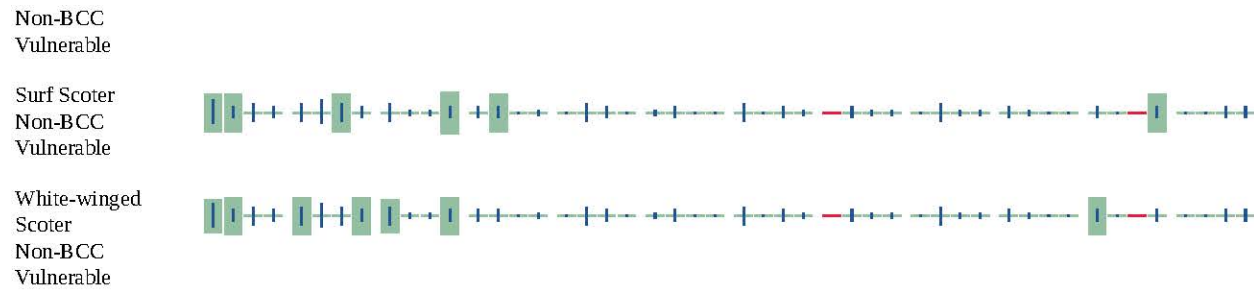
How is the probability of presence score calculated? The calculation is done in three steps:

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 (|)



Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.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 migratory birds potentially occurring 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 [AKN Phenology 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 to 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, migrating or present year-round in my project 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 refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). 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).

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.

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.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Mail Code 501-04
 Department of Environmental Protection
 New Jersey Forest Service
 Office of Natural Lands Management
 P.O. Box 420 Trenton, New Jersey 08625-0420
 Tel. (609) 984-1339 Fax. (609) 984-1427

Invoice

	Date	Invoice #
	12/7/2020	20596

Bill to: EDR 121 Midland Road Wrightstown, PA 18940	Make check payable to: DEP - Office of Natural Lands Management Forward with a copy of this statement to: Mail Code 501-04 Office of Natural Lands Management P.O. Box 420 Trenton, New Jersey 08625-0420
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Quantity (hrs.)	Description	Rate (per hr.)	Amount
1	Natural Heritage Database search for locational information of rare species and ecological communities. Project: 20-3907445-20596	\$ 70.00	\$ 70.00
Scott McBurney Project Name: Cardiff Onshore Cable Route and Substations		Total	\$ 70.00



State of New Jersey

MAIL CODE 501-04
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF PARKS & FORESTRY
NEW JERSEY FOREST SERVICE
OFFICE OF NATURAL LANDS MANAGEMENT
P.O. BOX 420
TRENTON, NJ 08625-0420
Tel. (609) 984-1339 Fax (609) 984-0427

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. McCABE
Commissioner

December 7, 2020

Scott McBurney
EDR
121 Midland Road
Wrightstown, PA 18940

Re: Cardiff Onshore Cable Route and Substations
Egg Harbor Township, Pleasantville and Atlantic Cities, Atlantic County

Dear Mr. McBurney:

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 topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. 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.

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

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

provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on, or in the immediate vicinity of, the project site.

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

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.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 http://www.state.nj.us/dep/parksandforests/natural/heritage/nhp_codes_2010.pdf.

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>.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

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. 20-3907445-20596

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

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

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

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Amphibia</i>								
	Pine Barrens Treefrog	Hyla andersonii	Breeding Sighting	3	NA	State Threatened	G4	S2
<i>Aves</i>								
	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
	Barred Owl	Strix varia	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Black Skimmer	Rynchops niger	Foraging	4	NA	State Endangered	G5	S1B,S1N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Gull-billed Tern	Gelochelidon nilotica	Foraging	2	NA	Special Concern	G5	S3B,S3N

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

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Gull-billed Tern	Gelochelidon nilotica	Nesting Colony	2	NA	Special Concern	G5	S3B,S3N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Osprey	Pandion haliaetus	Foraging	3	NA	State Threatened	G5	S2B,S4N
	Osprey	Pandion haliaetus	Nest	3	NA	State Threatened	G5	S2B,S4N
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Worm-eating Warbler	Helmitheros vermivorum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Yellow-crowned Night-heron	Nyctanassa violacea	Foraging	3	NA	State Threatened	G5	S2B,S2N
<i>Mammalia</i>								
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Threatened	NA	G1G2	S1
<i>Reptilia</i>								
	Spotted Turtle	Clemmys guttata	Occupied Habitat	2	NA	Special Concern	G5	S3

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	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	No	0 pages included

<p>Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
<i>Amphibia</i>								
	Pine Barrens Treefrog	Hyla andersonii	Breeding Sighting	3	NA	State Threatened	G4	S2
	Pine Barrens Treefrog	Hyla andersonii	Occupied Habitat	3	NA	State Threatened	G4	S2
<i>Aves</i>								
	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
	Barred Owl	Strix varia	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Black Skimmer	Rynchops niger	Foraging	4	NA	State Endangered	G5	S1B,S1N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Black-crowned Night-heron	Nycticorax nycticorax	Nesting Colony	3	NA	State Threatened	G5	S2B,S3N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Glossy Ibis	Plegadis falcinellus	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	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**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
	Gull-billed Tern	Gelochelidon nilotica	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Gull-billed Tern	Gelochelidon nilotica	Nesting Colony	2	NA	Special Concern	G5	S3B,S3N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	Egretta caerulea	Foraging	2	NA	Special Concern	G5	S3B,S3N
	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
	Peregrine Falcon	Falco peregrinus	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Snowy Egret	Egretta thula	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Snowy Egret	Egretta thula	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	Egretta tricolor	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Wood Thrush	Hylocichla mustelina	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
	Worm-eating Warbler	Helmitheros vermivorum	Breeding Sighting	2	NA	Special Concern	G5	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

<p>Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
<i>Mammalia</i>								
	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
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Threatened	NA	G1G2	S1
<i>Reptilia</i>								
	Atlantic Leatherback	Dermochelys coriacea	Occupied Habitat	5	Federally Listed Endangered	State Endangered	G2	S1
	Atlantic Loggerhead	Caretta caretta	Occupied Habitat	5	Federally Listed Threatened	State Endangered	G3	S1
	Spotted Turtle	Clemmys guttata	Occupied Habitat	2	NA	Special Concern	G5	S3

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

Vernal Pool Habitat Type

Vernal Pool Habitat ID

Potential vernal habitat area

254

Total number of records: 1

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

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Rare Plant Species Occurrences for Riparian Zone Width Determination (Flood Hazard Area Control Act Rule Application) - Within One Mile of the Project Site Based on Search of Natural Heritage Database	Yes	1 page(s) included
2. Natural Heritage Priority Sites for Riparian Zone Width Determination - Within One Mile of the Project Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	4 page(s) included
4. Vernal Pool Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	Yes	1 page(s) included

**Rare Plant Species Occurrences for Riparian Zone Width Determination
(Flood Hazard Area Control Act Rule Application)
Within One Mile of the Project Site
Based on Search of Natural Heritage Database**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Regional Status	Grank	Srank	Identified	Last Observed
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Vascular Plants

Eupatorium resinosum	Pine Barren Boneset		E	LP, HL	G3	S2	Y	1999-10-01
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Total number of records: 1

<p>Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Amphibia</i>								
	Marbled Salamander	Ambystoma opacum	Occupied Habitat	2	NA	Special Concern	G5	S3
	Marbled Salamander	Ambystoma opacum	Vernal Pool Breeding	2	NA	Special Concern	G5	S3
	Pine Barrens Treefrog	Hyla andersonii	Breeding Sighting	3	NA	State Threatened	G4	S2
	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>								
	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
	Barred Owl	Strix varia	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Black Skimmer	Rynchops niger	Foraging	4	NA	State Endangered	G5	S1B,S1N
	Black-crowned Night-heron	Nycticorax nycticorax	Foraging	3	NA	State Threatened	G5	S2B,S3N

**Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.3 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Black-crowned Night-heron	Nycticorax nycticorax	Nesting Colony	3	NA	State Threatened	G5	S2B,S3N
	Caspian Tern	Hydroprogne caspia	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Cattle Egret	Bubulcus ibis	Foraging	3	NA	State Threatened	G5	S2B,S3N
	Common Tern	Sterna hirundo	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Common Tern	Sterna hirundo	Nesting Colony	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
	Glossy Ibis	Plegadis falcinellus	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Gull-billed Tern	Gelochelidon nilotica	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Gull-billed Tern	Gelochelidon nilotica	Nesting Colony	2	NA	Special Concern	G5	S3B,S3N
	Least Tern	Sternula antillarum	Foraging	4	NA	State Endangered	G4	S1B,S1N

**Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.3 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Least Tern	<i>Sternula antillarum</i>	Nesting Colony	4	NA	State Endangered	G4	S1B,S1N
	Little Blue Heron	<i>Egretta caerulea</i>	Foraging	2	NA	Special Concern	G5	S3B,S3N
	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
	Peregrine Falcon	<i>Falco peregrinus</i>	Urban Nest	4	NA	State Endangered	G4	S1B,S3N
	Snowy Egret	<i>Egretta thula</i>	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Snowy Egret	<i>Egretta thula</i>	Nesting Colony	2	NA	Special Concern	G5	S3B,S4N
	Tricolored Heron	<i>Egretta tricolor</i>	Foraging	2	NA	Special Concern	G5	S3B,S3N
	Tricolored Heron	<i>Egretta tricolor</i>	Nesting Colony	2	NA	Special Concern	G5	S3B,S3N
	Wood Thrush	<i>Hylocichla mustelina</i>	Breeding Sighting	2	NA	Special Concern	G4	S3B,S4N
	Worm-eating Warbler	<i>Helminthos vermivorum</i>	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Yellow-crowned Night-heron	<i>Nyctanassa violacea</i>	Foraging	3	NA	State Threatened	G5	S2B,S2N

<p>Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
	Yellow-crowned Night-heron	Nyctanassa violacea	Nesting Colony	3	NA	State Threatened	G5	S2B,S2N
<i>Mammalia</i>								
	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
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Threatened	NA	G1G2	S1
<i>Reptilia</i>								
	Atlantic Leatherback	Dermochelys coriacea	Occupied Habitat	5	Federally Listed Endangered	State Endangered	G2	S1
	Atlantic Loggerhead	Caretta caretta	Occupied Habitat	5	Federally Listed Threatened	State Endangered	G3	S1
	Spotted Turtle	Clemmys guttata	Occupied Habitat	2	NA	Special Concern	G5	S3

**Vernal Pool Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.3**

Vernal Pool Habitat Type	Vernal Pool Habitat ID
Vernal habitat area	2665
Potential vernal habitat area	254
Potential vernal habitat area	275
Potential vernal habitat area	298
Total number of records:	4

**Other Animal Species for Riparian Zone Width Determination
 Within One Mile of the Project Site
 Based on Additional Species Tracked by
 Endangered and Nongame Species Program**

Scientific Name	Common Name	Federal Protection Status	State Protection Status	Grank	Srank
<i>Vertebrate Animals</i>					
Heterodon platirhinos	Eastern Hognose Snake			G5	S3
Malaclemys terrapin terrapin	Northern Diamondback Terrapin			G4T4Q	S3
Tursiops truncatus	Bottlenose Dolphin			G5	S3
Total number of records:	3				

New Jersey Landscape Regions Results

(Atlantic Coastal and Pinelands)

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
1	Forest	Coniferous Brush/Shrubland	Atlantic Coastal	No
1	Forest	Coniferous Forest (>50% Crown Closure)	Pinelands	No
1	Forest	Deciduous Brush/Shrubland	Atlantic Coastal	No
1	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	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	Pinelands	No
1	Forest	Mixed Forest (>50% Coniferous With >50% Crown Closure)	Pinelands	No
1	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Pinelands	No
1	Forest	Old Field (< 25% Brush Covered)	Atlantic Coastal	No
1	Urban	Airport Facilities	Atlantic Coastal	No
1	Urban	Commercial/Services	Atlantic Coastal	No
1	Urban	Commercial/Services	Pinelands	No
1	Urban	Industrial	Atlantic Coastal	No
1	Urban	Other Urban Or Built-Up Land	Atlantic Coastal	No
1	Urban	Other Urban Or Built-Up Land	Pinelands	No
1	Urban	Railroads	Atlantic Coastal	No
1	Urban	Recreational Land	Atlantic Coastal	No
1	Urban	Recreational Land	Pinelands	No
1	Urban	Residential, High Density Or Multiple Dwelling	Atlantic Coastal	No
1	Urban	Residential, Rural, Single Unit	Pinelands	No
1	Urban	Residential, Single Unit, Medium Density	Atlantic Coastal	No
1	Urban	Transportation/Communication/Utilities	Atlantic Coastal	No

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
1	Urban	Transportation/Communication/Utilities	Pinelands	No
1	Urban	Upland Rights-Of-Way Undeveloped	Pinelands	No
1	Wetlands	Coniferous Wooded Wetlands	Pinelands	No
3	Forest	Coniferous Forest (>50% Crown Closure)	Pinelands	No
3	Forest	Coniferous Forest (10-50% Crown Closure)	Pinelands	No
3	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	No
3	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Pinelands	No
3	Forest	Mixed Forest (>50% Deciduous With 10-50% Crown Closure)	Pinelands	No
3	Urban	Transportation/Communication/Utilities	Atlantic Coastal	No
3	Urban	Upland Rights-Of-Way Undeveloped	Pinelands	No
3	Wetlands	Coniferous Scrub/Shrub Wetlands	Atlantic Coastal	No
3	Wetlands	Coniferous Wooded Wetlands	Pinelands	No
3	Wetlands	Mixed Scrub/Shrub Wetlands (Deciduous Dom.)	Atlantic Coastal	No
3	Wetlands	Phragmites Dominate Interior Wetlands	Atlantic Coastal	No
4	Water	Bridge Over Water	Atlantic Coastal	No
4	Water	Tidal Rivers, Inland Bays, And Other Tidal Waters	Atlantic Coastal	Yes
4	Water	Tidal Rivers, Inland Bays, And Other Tidal Waters	Atlantic Coastal	No
4	Wetlands	Deciduous Scrub/Shrub Wetlands	Atlantic Coastal	No
4	Wetlands	Herbaceous Wetlands	Atlantic Coastal	No
4	Wetlands	Mixed Scrub/Shrub Wetlands (Deciduous Dom.)	Atlantic Coastal	No
4	Wetlands	Phragmites Dominate Coastal Wetlands	Atlantic Coastal	No
4	Wetlands	Phragmites Dominate Interior Wetlands	Atlantic Coastal	No
4	Wetlands	Saline Marsh (High Marsh)	Atlantic Coastal	No
4	Wetlands	Saline Marsh (Low Marsh)	Atlantic Coastal	No
5	Forest	Coniferous Forest (>50% Crown Closure)	Pinelands	Yes

Rank	Cover Type	Land Use	Region	Federally Listed Species Present
5	Forest	Deciduous Forest (>50% Crown Closure)	Pinelands	Yes
5	Forest	Mixed Forest (>50% Coniferous With >50% Crown Closure)	Pinelands	Yes
5	Forest	Mixed Forest (>50% Deciduous With >50% Crown Closure)	Pinelands	Yes
5	Urban	Upland Rights-Of-Way Undeveloped	Pinelands	Yes

Appendix C
Photo Documentation

Photograph 1

Proposed O&M Facility Location

Coordinates:

39.375528°, -74.429027°

Habitat Type:

Developed



Photograph 2

Urban Habitat in Atlantic City

Coordinates:

39.35266944°, -74.45039444°

Habitat Type:

Developed



Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 3

Urban Habitat in Atlantic City

Coordinates:
39.3537°, -74.45111944°

Habitat Type:
Developed



Photograph 4

Narrow Shrub and Herbaceous
Habitat bordering Pedestrian
Bike Path

Coordinates:
39.392575°, -74.52869444°

Habitat Type:
Developed

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 5

Herbaceous Meadow in
Abandoned Railroad Bed

Coordinates:
39.39445556°, -74.53472222°

Habitat Type:
Herbaceous Upland



Photograph 6

Mowed Meadow along
Abandoned Railroad Bed

Coordinates:
39.40064722°, -74.5549°

Habitat Type:
Herbaceous Upland

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 7

Upland Herbaceous Habitat
in Abandoned Railroad Bed,
Bordered by Trees and Shrubs.

Coordinates:
39.39100556°, -74.52333056°

Habitat Type:
Herbaceous Upland



Photograph 8

Wetland Bordered by Shrub
Habitat along Roadway

Coordinates:
39.37744444°, -74.48638056°

Habitat Type:
Herbaceous Wetland

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 9

Freshwater Herbaceous Wetland

Coordinates:
39.40438056°, -74.56677222°

Habitat Type:
Herbaceous Wetland



Photograph 10

Mixed Forest Stand along
Roadway

Coordinates:
39.42588056°, -74.61401389°

Habitat Type:
Mixed Forest

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 11

Mixed Forest Stand along
Roadway

Coordinates:
39.41922778°, -74.61544167°

Habitat Type:
Mixed Forest



Photograph 12

Deciduous Shrub and
Herbaceous Habitat Adjacent to
Cardiff Power Station

Coordinates:
39.404675°, -74.56800833°

Habitat Type:
Shrub Deciduous

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 13

Deciduous Shrub Habitat along
Utility ROW

Coordinates:
39.41371944°, -74.59740556°

Habitat Type:
Shrub Deciduous



Photograph 14

Deciduous Shrub Habitat along
Utility ROW between Forested
Area and Pedestrian Bike Path

Coordinates:
39.41000833°, -74.58545556°

Habitat Type:
Shrub Deciduous

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 15

Evergreen Shrub Habitat along
Abandoned Railroad Bed

Coordinates:

39.388175°, -74.51403889°

Habitat Type:

Shrub Evergreen



Photograph 16

Utility ROW Bordered by Shrub
Habitat

Coordinates:

39.38483889°, -74.5036°

Habitat Type:

Shrub Mixed

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 17

Mixed Shrub Habitat in Utility ROW along Pedestrian Bike Path

Coordinates:

39.40705°, -74.57574444°

Habitat Type:

Shrub Mixed



Photograph 18

Tidal Stream Habitat

Coordinates:

39.37793333°, -74.48718889°

Habitat Type:

Tidal Watercourse

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 19

Utility ROW Bordered by Tidal Wetlands

Coordinates:
39.38241944°, -74.49768056°

Habitat Type:
Tidal/Developed



Photograph 20

Utility ROW Bordered by Tidal Wetlands

Coordinates:
39.38214167°, -74.49688611°

Habitat Type:
Tidal/Developed

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 21

Tidal Herbaceous Wetland
Habitat between Roadway and
Thorofare

Coordinates:
39.37605278°, -74.48462778°

Habitat Type:
Tidal/Herbaceous



Photograph 22

Shrub Habitat Abutting
Freshwater Wetland Habitat

Coordinates:
39.41371111°, -74.59740556°

Habitat Type:
Tidal/Shrub

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 23

Substation/Converter Site
Option

Coordinates:
40.13354°, -74.12155°

Habitat Type:
Mixed Forest



Photograph 24

Substation/Converter Site
Option

Coordinates:
40.13716°, -74.13154°

Habitat Type:
Mixed Forest

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 25

Substation/Converter Site
Option

Coordinates:
39.43018°, -74.61112°

Habitat Type:
Developed/Agriculture



Photograph 26

Northern portion of Cardiff POI
Parcel facing South into mixed
forest

Coordinates:
39.432372°, -74.624939°

Habitat Type:
Mixed Forest

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 27

Eastern portion of Cardiff POI
Parcel west into mixed forest

Coordinates:
39.426406°, -74.613472°

Habitat Type:
Mixed Forest



Photograph 28

Potential Man-made Vernal Pool

Coordinates:
39.39249°, -74.5566°

Habitat Type:
Deciduous Forest

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report



Photograph 29

Unnatural Clay Soils in Man-made Vernal Pool Area

Coordinates:
39.38992°, -74.55659°

Habitat Type:
Deciduous Forest



Photograph 30

Embankment along Man-made Vernal Pool

Coordinates:
39.39271°, -74.55646°

Habitat Type:
Deciduous Forest

Atlantic Shores Offshore Wind – Cardiff Onshore Study Area

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

Appendix D

American Chaffseed Habitat Survey Memorandum



Memorandum

To: Atlantic Shores Offshore Wind, LLC
From: Environmental Design & Research
Date: March 8, 2023
Reference: American Chaffseed Habitat Assessment - Cardiff
EDR Project No: 20043

Environmental Design & Research conducted a targeted habitat suitability survey for American chaffseed (*Schwalbea americana* L.) within the Cardiff Onshore Interconnection Cable Route proximate to the Atlantic City Electric Cardiff Substation located in Egg Harbor Township, Atlantic County, New Jersey. This area is mapped as potential habitat for this species by the United States Fish and Wildlife Service (USFWS). The purpose of this survey was to document the existing conditions and evaluate these conditions for the potential habitat suitability for American chaffseed. This memorandum provides a description of the species, typical habitat, a summary of the conditions observed, and photograph documentation.

Species Description

American chaffseed is a federally and state endangered hemi-parasitic herb that has a hairy appearance with reddish-purple flowers and leaves that are alternate, estipulate and ascend in an overlapping spiral (USFWS, 2023). It photosynthesizes as well as acquires photosynthates via modified roots that connect to the vascular system of host plants, such as narrowleaf silkgrass (*Pityopsis graminifolia*) (USFWS, 2023).

Suitable Habitat

Preferred habitat is areas that experience frequent fires, removing the understory to allow the seeds direct access to the soil. Generally American chaffseed prefers open grass-sedge systems in moist acidic sandy loams or sandy peat loams that are maintained by mowing, fire, or fluctuating water tables (USFWS 2023).

Habitat in Project Area

Habitat observed west of the Cardiff Substation, which is located within a high-voltage transmission line right-of-way owned and operated by Atlantic City Electric, (see attached photographs and photo location map) consists of scrub-shrub oak of the Cardiff Substation and likely on a several year vegetation management cycle that can include mowing, brush hogging and herbicide treatment mowed. The area is dominated by oak saplings interspersed with pine saplings which provide dense cover in an excessively drained sandy, acidic soil. Due to the close proximity to residential neighborhoods, the transmission line corridor and Cardiff Substation, these forested areas are not part of a controlled environment subjected to periodic controlled fires nor is it likely that they experience frequent natural fires which is needed to maintain habitat suitability and promote seed germination.

To the east of the substation, the transmission line corridor consists of regularly mowed areas that are used for vehicle parking and/or equipment storage and laydown. The area is characterized by a community of sparse grasses on an excessively drained sandy soil. Similar to the areas west of the substation, these areas

also are not subject to periodic fire. While these areas could potentially be suitable for American chaffseed the current and ongoing mowing would prevent American chaffseed from completing its lifecycle if it was present, and the dense cover of grasses provides little open space for seeds to germinate.



Photograph 1. Representative photo of the current habitat along access road and right-of-way consisting of oak sapling scrub-shrub habitat west of the Cardiff Substation



Photograph 2. Representative photograph of the current habitat along the transmission corridor consisting of pine and oak forest



Photograph 3. Representative photograph of the current habitat east side of the Cardiff Substation along English Creek Avenue consisting of mowed lawn to the east of the Substation



Photograph 4. Representative photograph of the current environment along the transmission corridor consisting of oak sapling scrub-shrub habitat

Resources

United States Fish and Wildlife Service (USFWS). 2023. American Chaffseed. Available at:
<https://www.fws.gov/species/american-chaffseed-schwalbea-americana>. (Accessed February 2023).

Figure 1. American Chaffseed Photograph Location

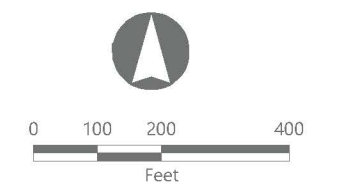
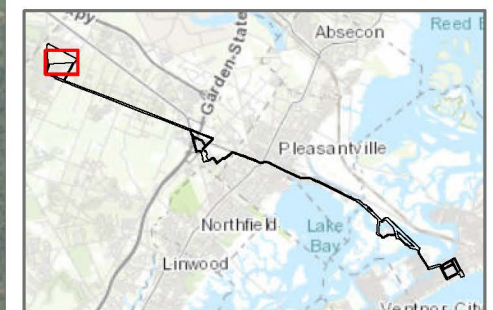


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
Pleasantville, and Egg Harbor
Township, Atlantic County,
New Jersey

Species Memo

- ↑ Photograph Location
- ▭ Study Area



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



Appendix E

Swamp Pink Habitat Survey Memorandum



Memorandum

To: Atlantic Shores Offshore Wind, LLC
From: Environmental Design and Research
Date: March 8, 2023
Reference: Swamp Pink Habitat Assessment - Cardiff
EDR Project No: 20043

Environmental Design & Research conducted a targeted habitat suitability survey for swamp pink (*Helonias bullata*) within the Cardiff Onshore Interconnection Cable Route along West Jersey Avenue in Egg Harbor Township, Atlantic County, New Jersey. This area is mapped as potential habitat for this species by the United States Fish and 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

Potential habitat identified within the Project Area along West Jersey Avenue consisted of primarily upland deciduous forest with pockets of evergreen forest. Where wetlands did occur, they were dominated by phragmites (*Phragmites australis*). Hydrology is influenced by precipitation flow and subject to flooding (see photographs).

As a result, none of the areas observed provide suitable habitat for swamp pink. Wetland areas exhibited open canopies, and hydrology is heavily altered by a culvert and subject to flooding from surrounding developed areas. Areas that are forested do not contain suitable hydric soils or hydrology to support swamp pink.



Photograph 1. Wetland area dominated by phragmites



Photograph 2. Pool of water created by wetland and culvert



Photograph 3. Representative photograph of upland evergreen forested area



Photograph 4. Representative photograph of upland deciduous forested area

Resources

United States Fish and Wildlife Service (USFWS). 2023. Swamp Pink. Available at:
<https://www.fws.gov/species/swamp-pink-helonias-bullata>. (Accessed February 2023).

United States Fish and 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

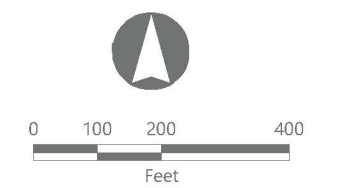


Atlantic Shores South Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

Species Memo

- ↑ Photograph Location
- ▭ Study Area

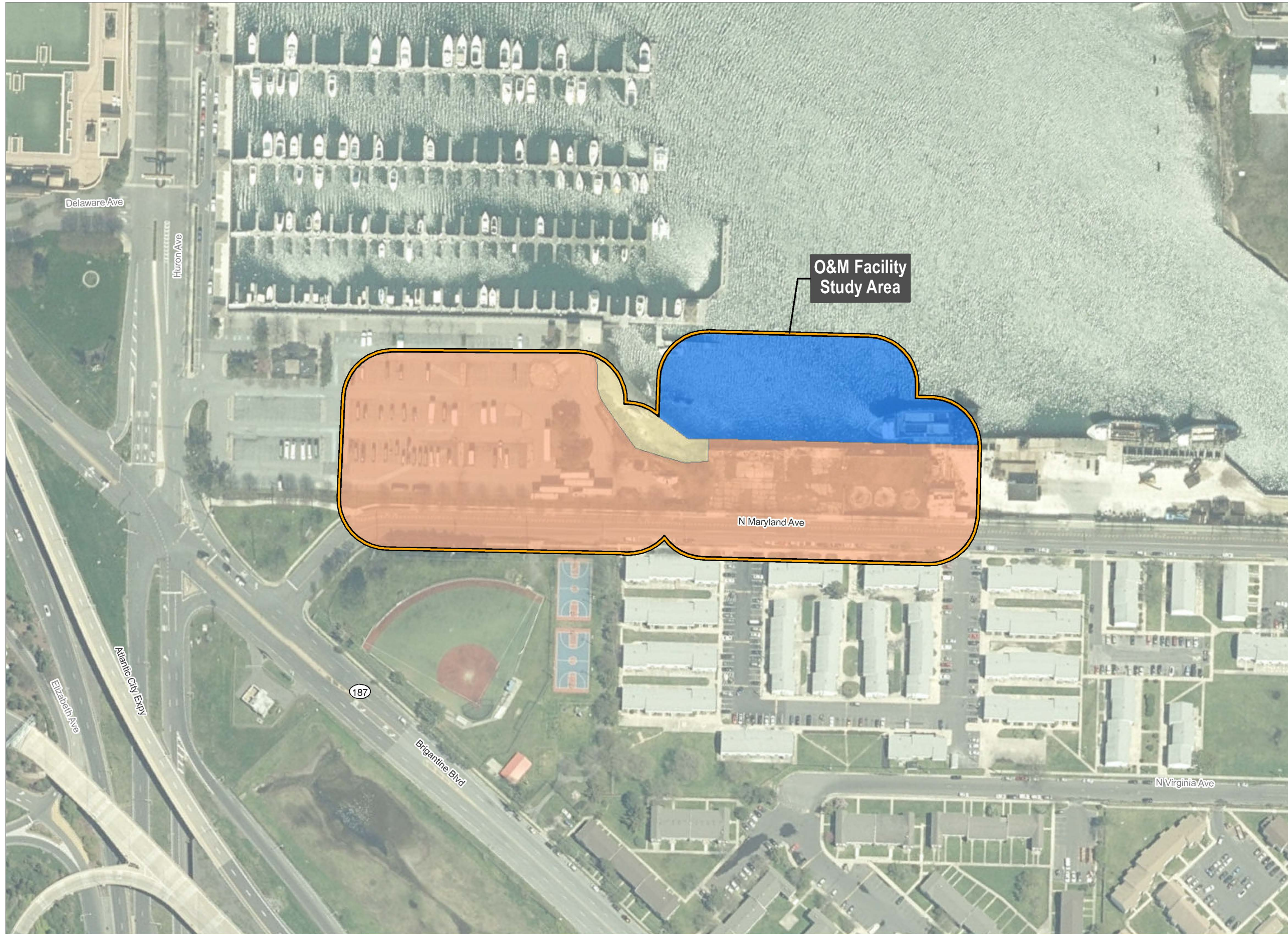


Prepared March 8, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



Appendix F

Habitat Assessment Mapping

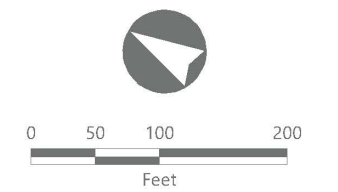


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

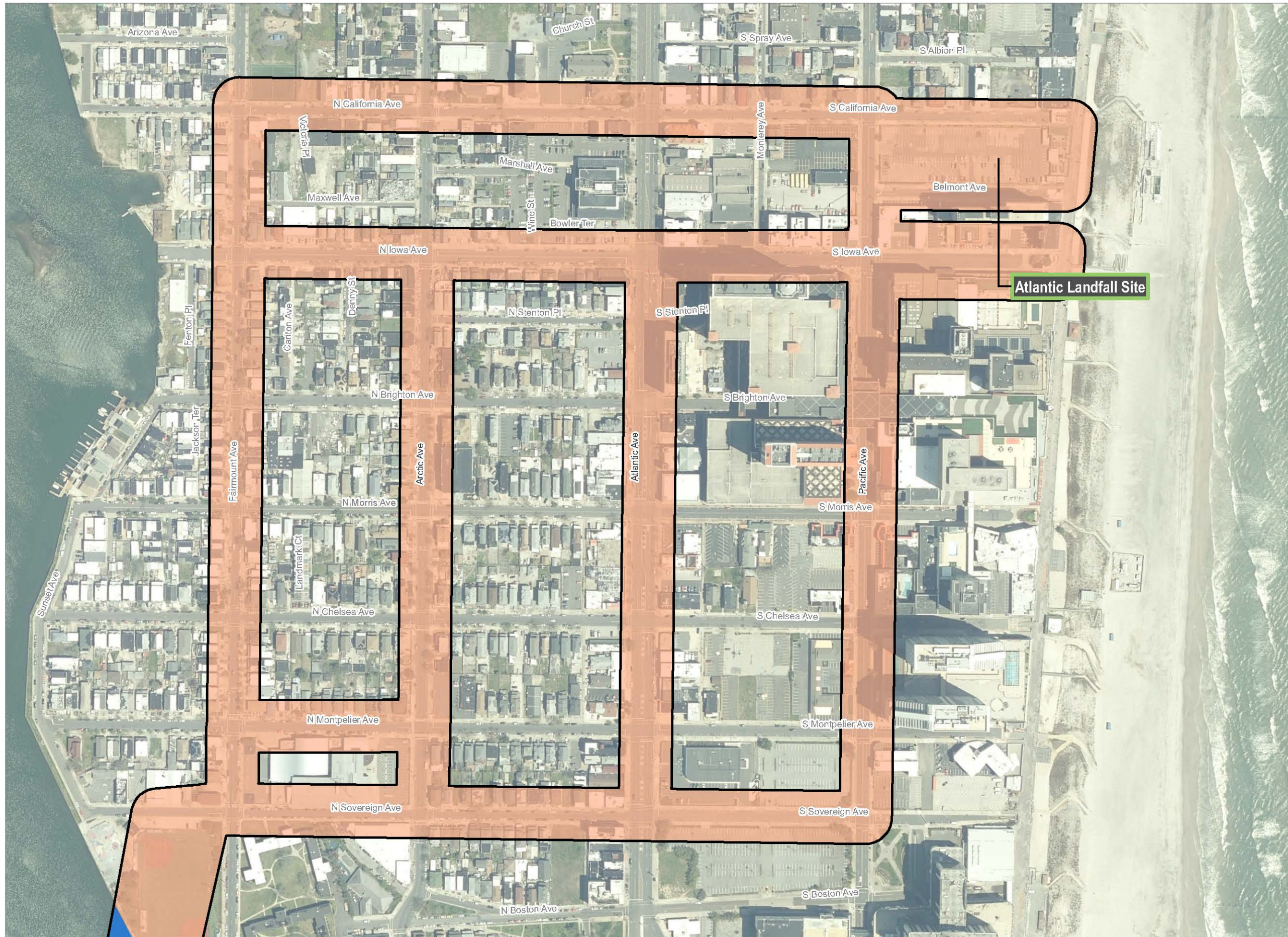
Habitat Suitability Assessment Report

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



Prepared December 12, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

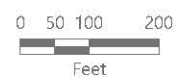
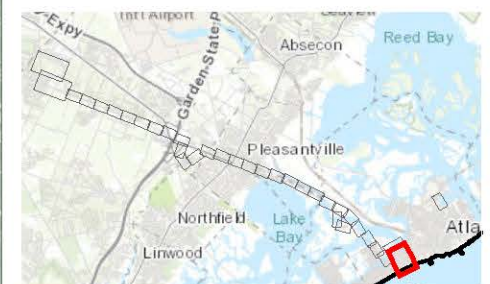


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

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



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

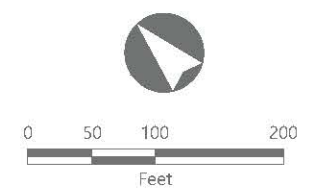


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

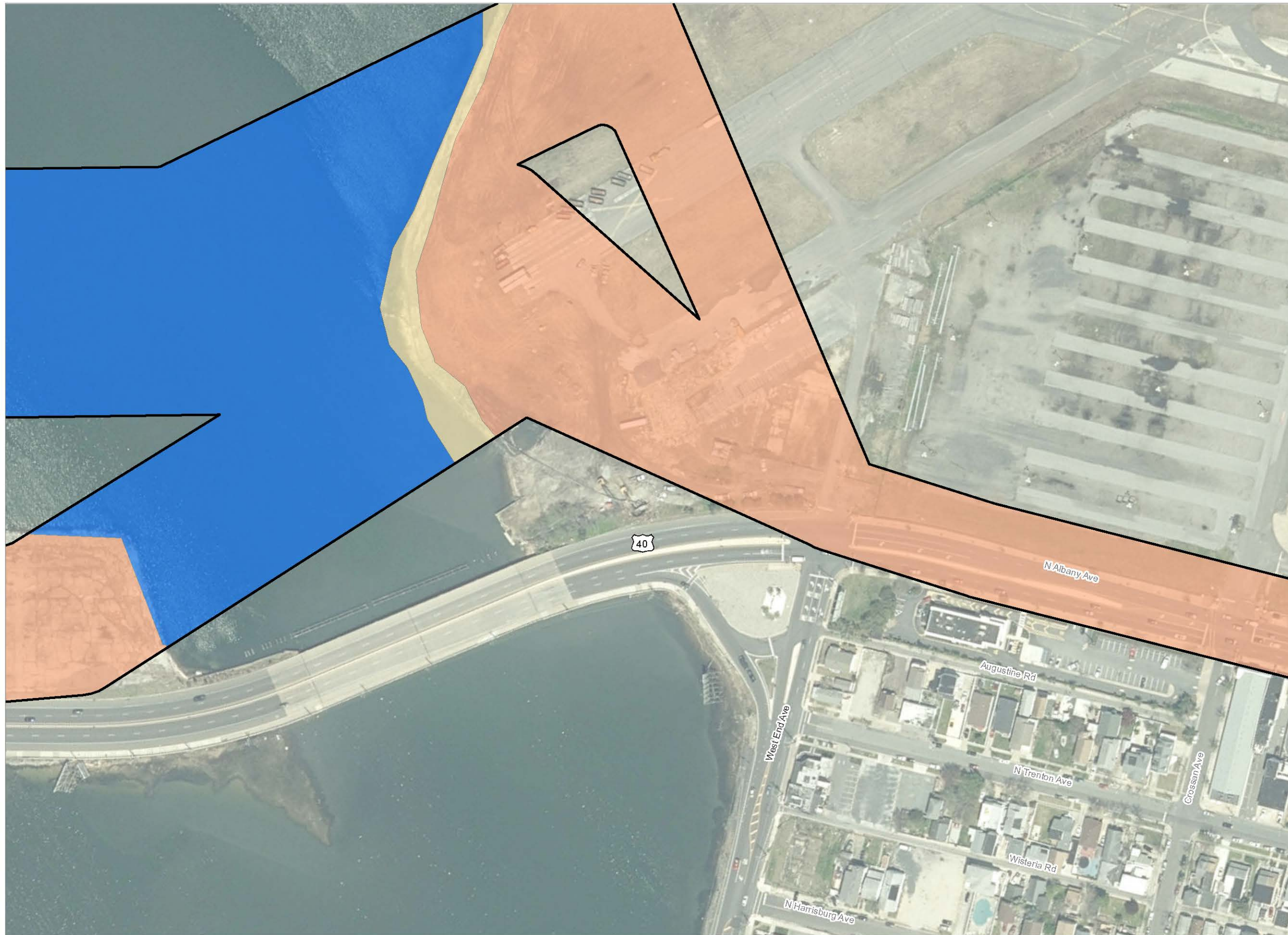
Habitat Suitability Assessment Report

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



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

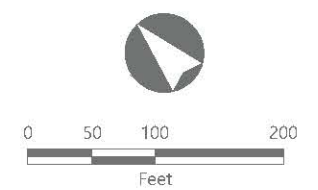
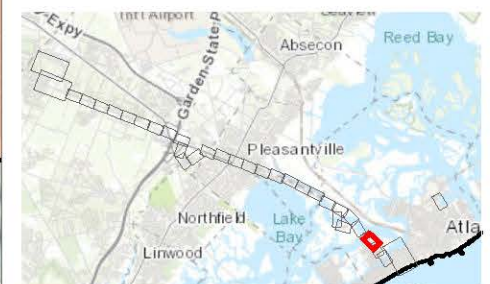


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
Pleasantville, and Egg Harbor
Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

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



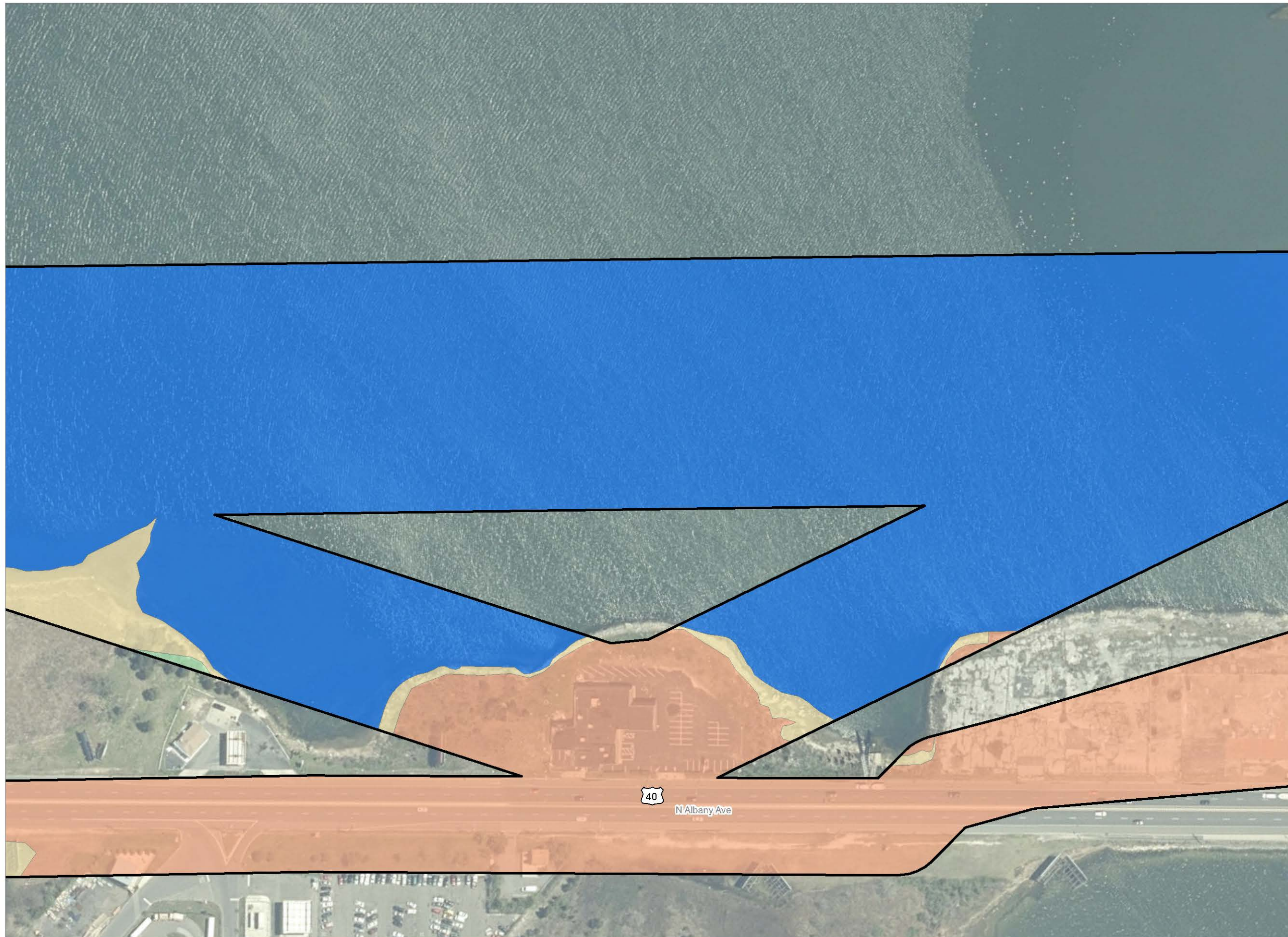
Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



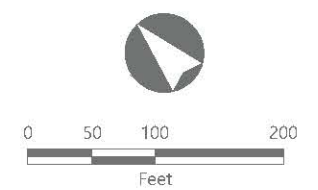
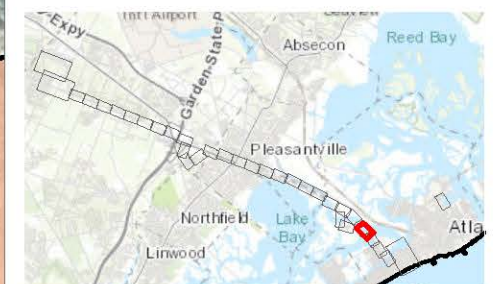
Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

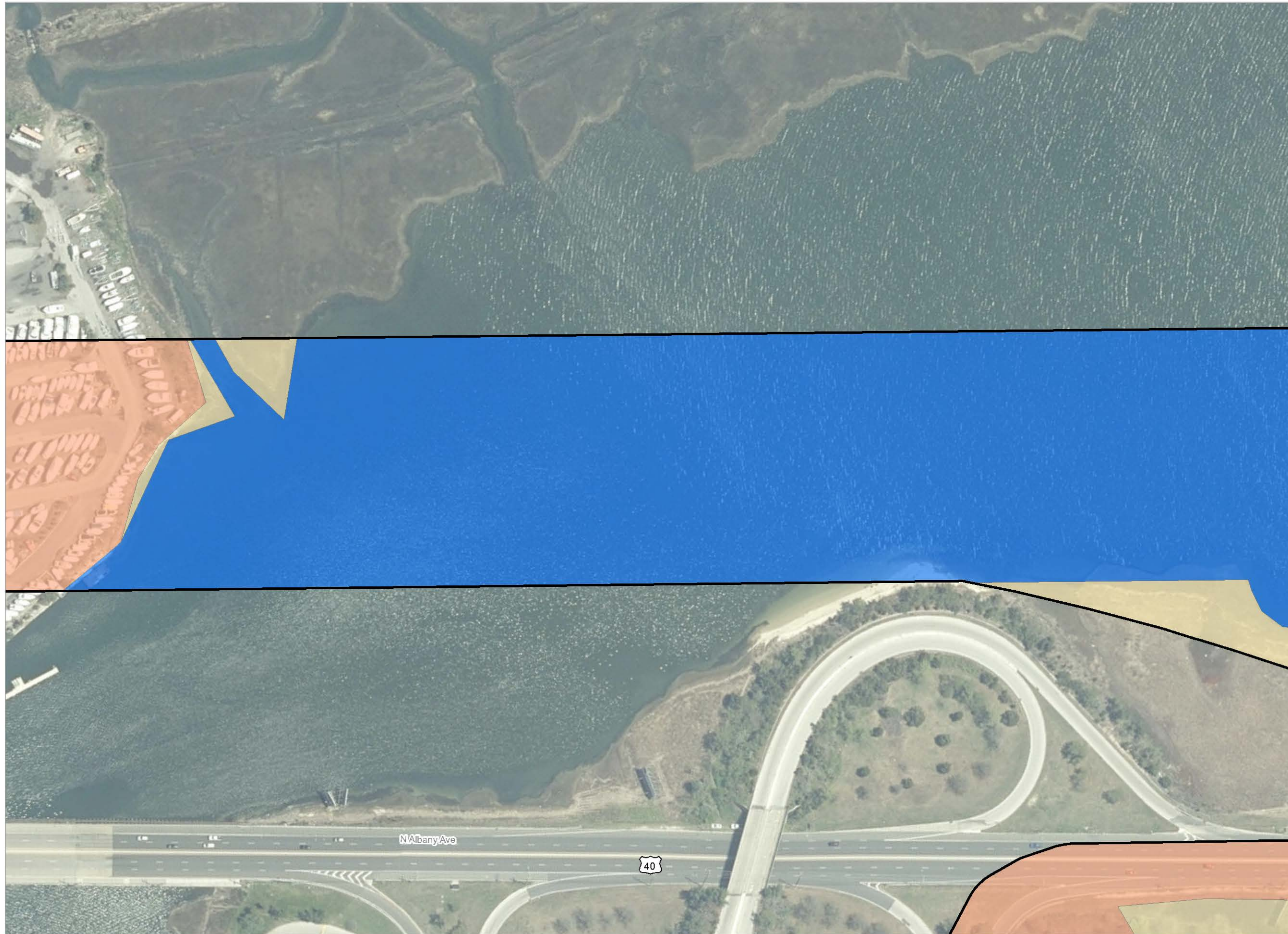


- Habitat Assessment
- Developed/Disturbed
 - Herbaceous Wetland
 - Scrub/Shrub
 - Water
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

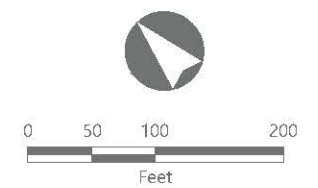
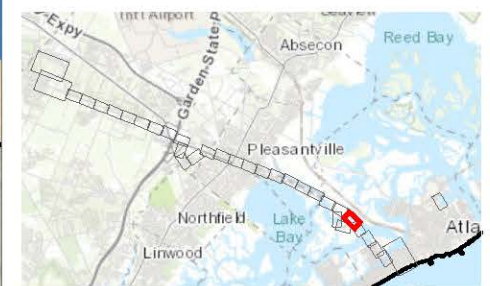


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

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



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

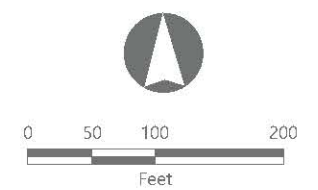


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

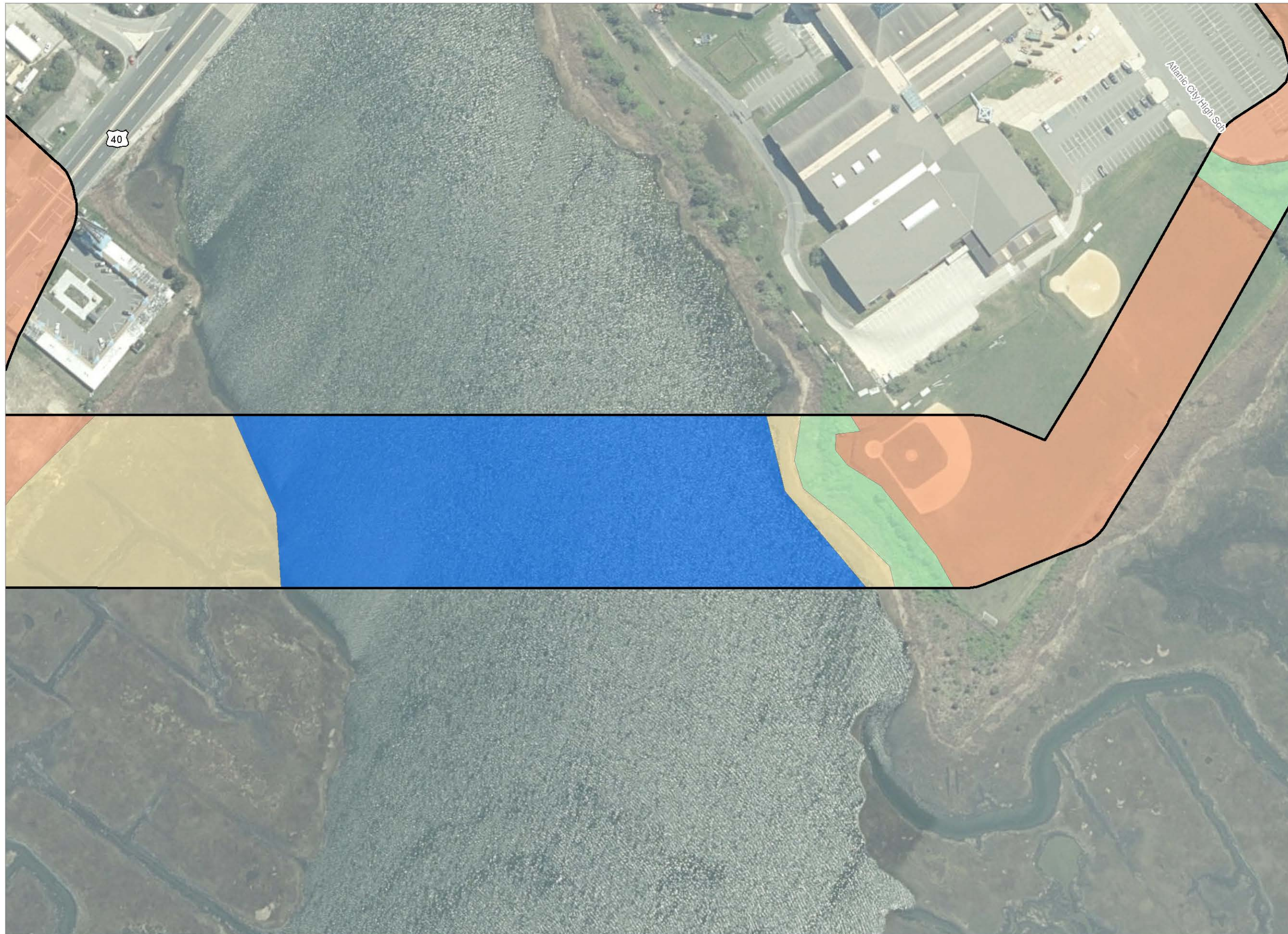
Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Herbaceous Wetland
 - Scrub/Shrub
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

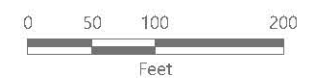
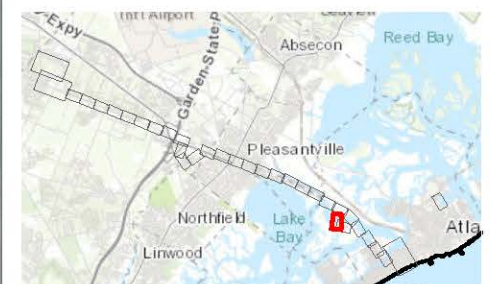


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
Pleasantville, and Egg Harbor
Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Herbaceous Wetland
 - Scrub/Shrub
 - Water
 - Study Area



Prepared November 21, 2023
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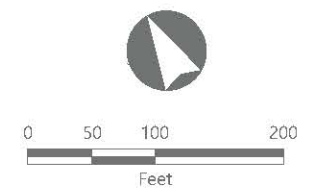


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

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



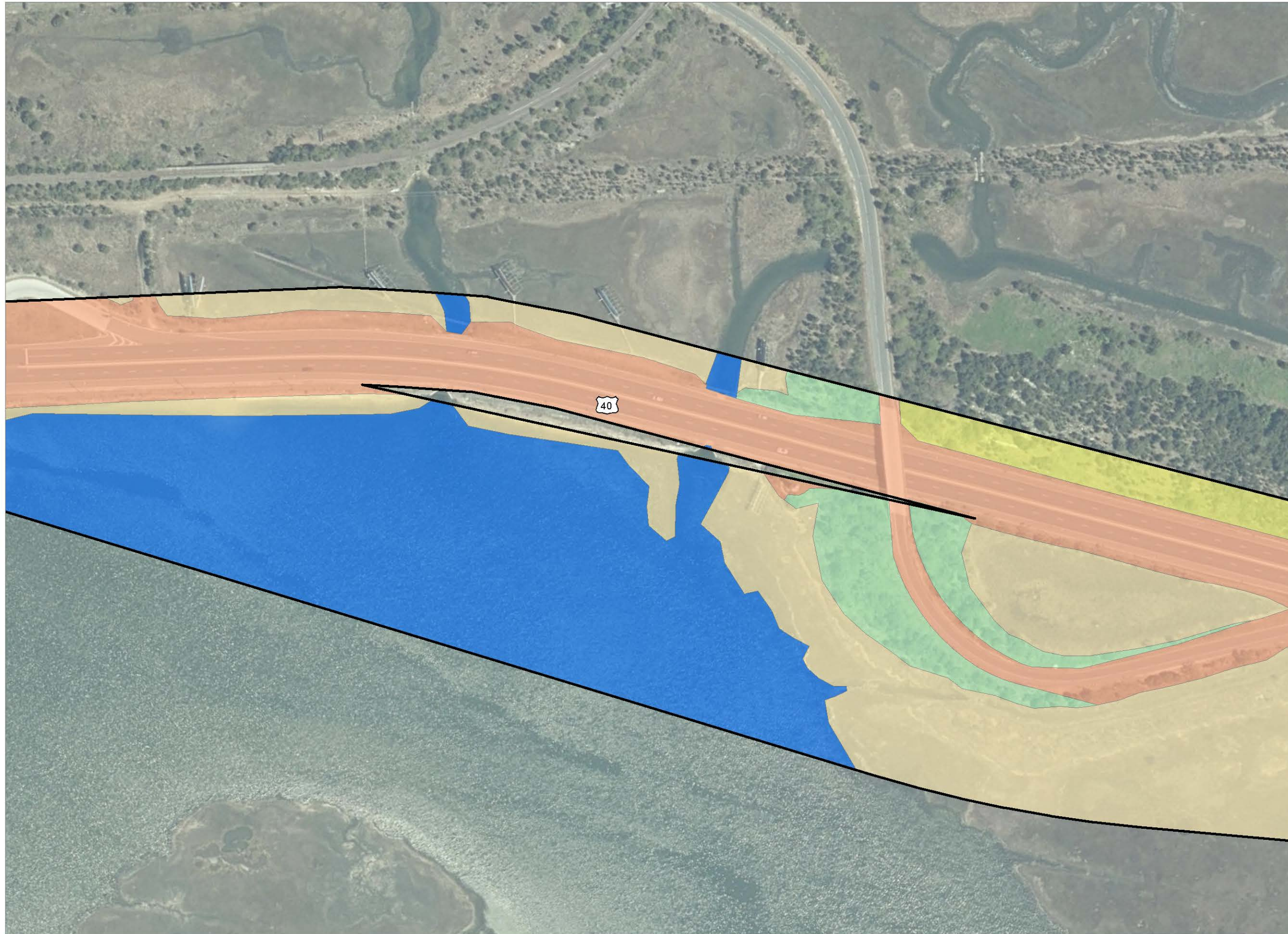
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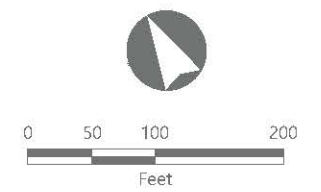
Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

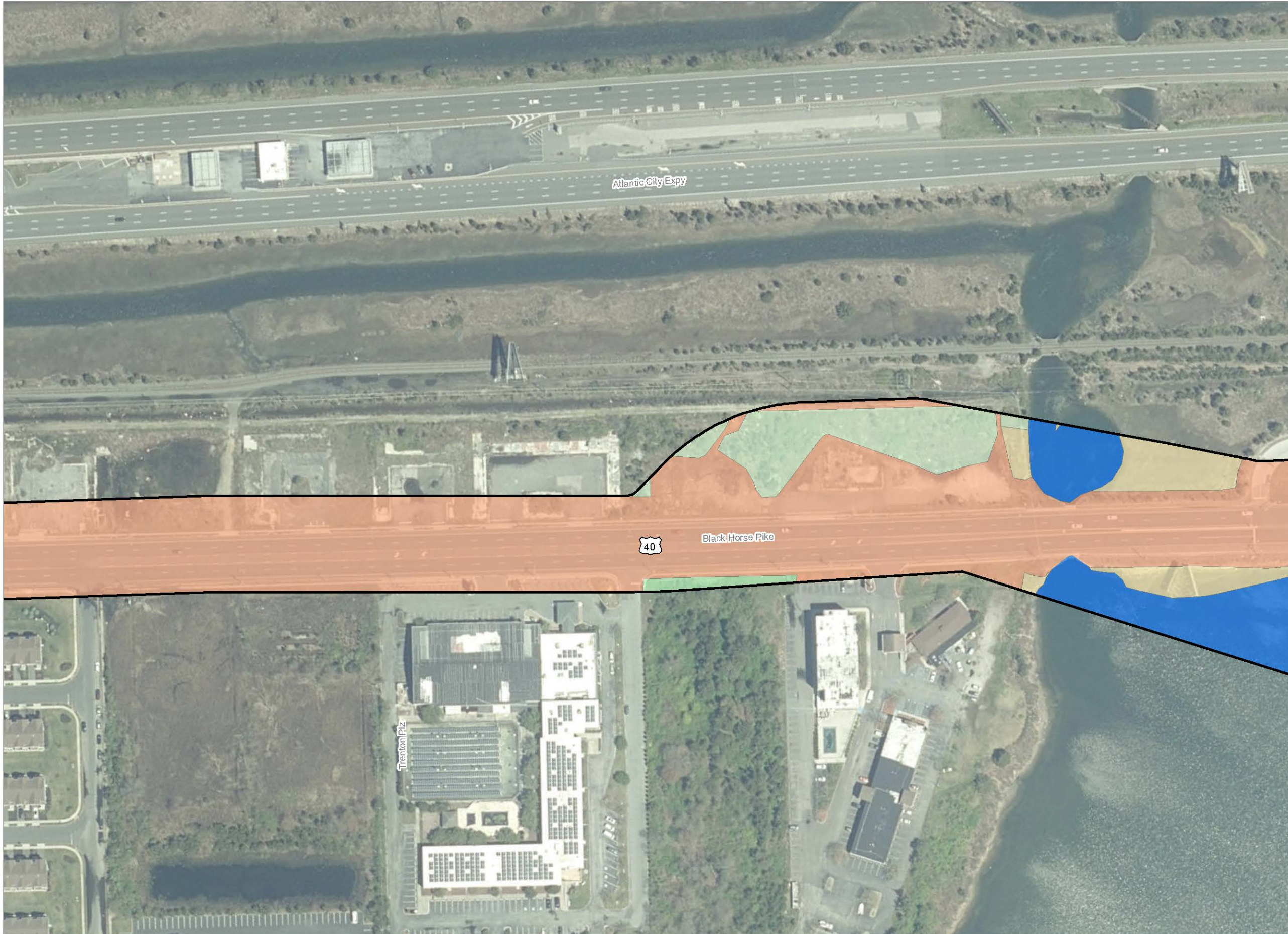


- Habitat Assessment
- Developed/Disturbed
 - Forest-Mixed
 - Herbaceous Wetland
 - Scrub/Shrub
 - Water
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



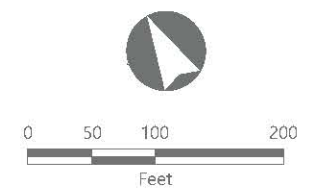


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Herbaceous Wetland
 - Scrub/Shrub
 - Shrub-Evergreen
 - Water
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

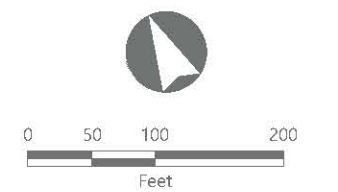


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

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



Prepared November 21, 2023
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ATLANTIC SHORES
offshore wind

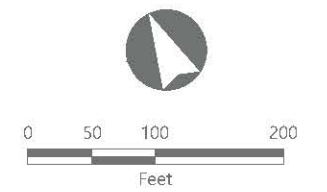


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

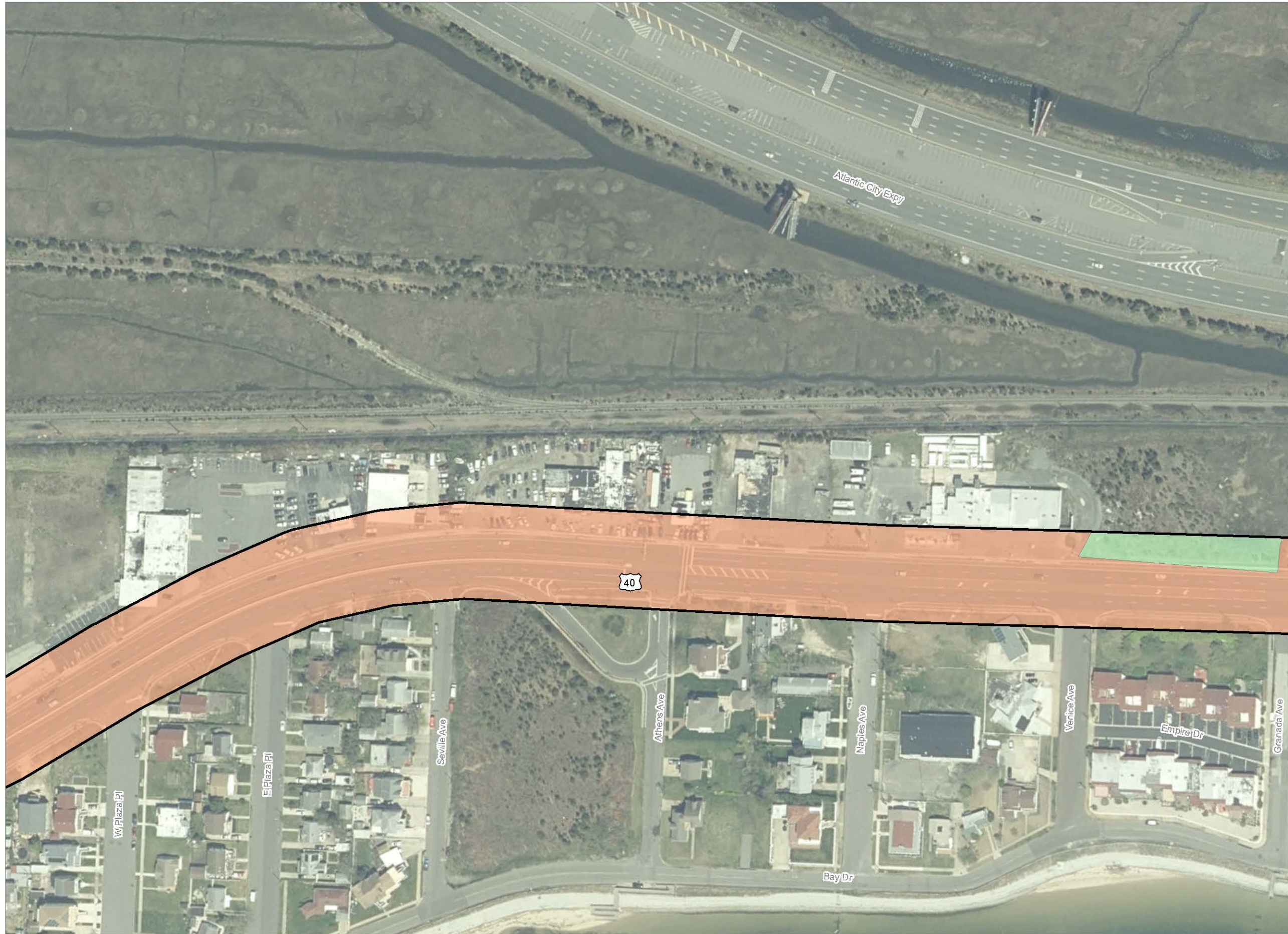
Habitat Suitability Assessment Report

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



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



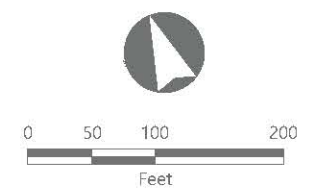


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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New Jersey

Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Scrub/Shrub
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



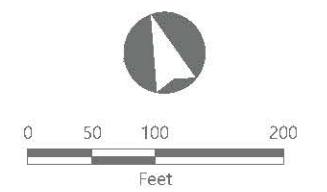


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

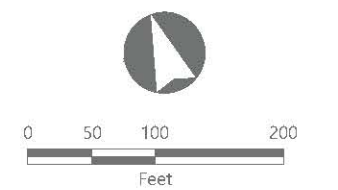


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Township, Atlantic County,
New Jersey

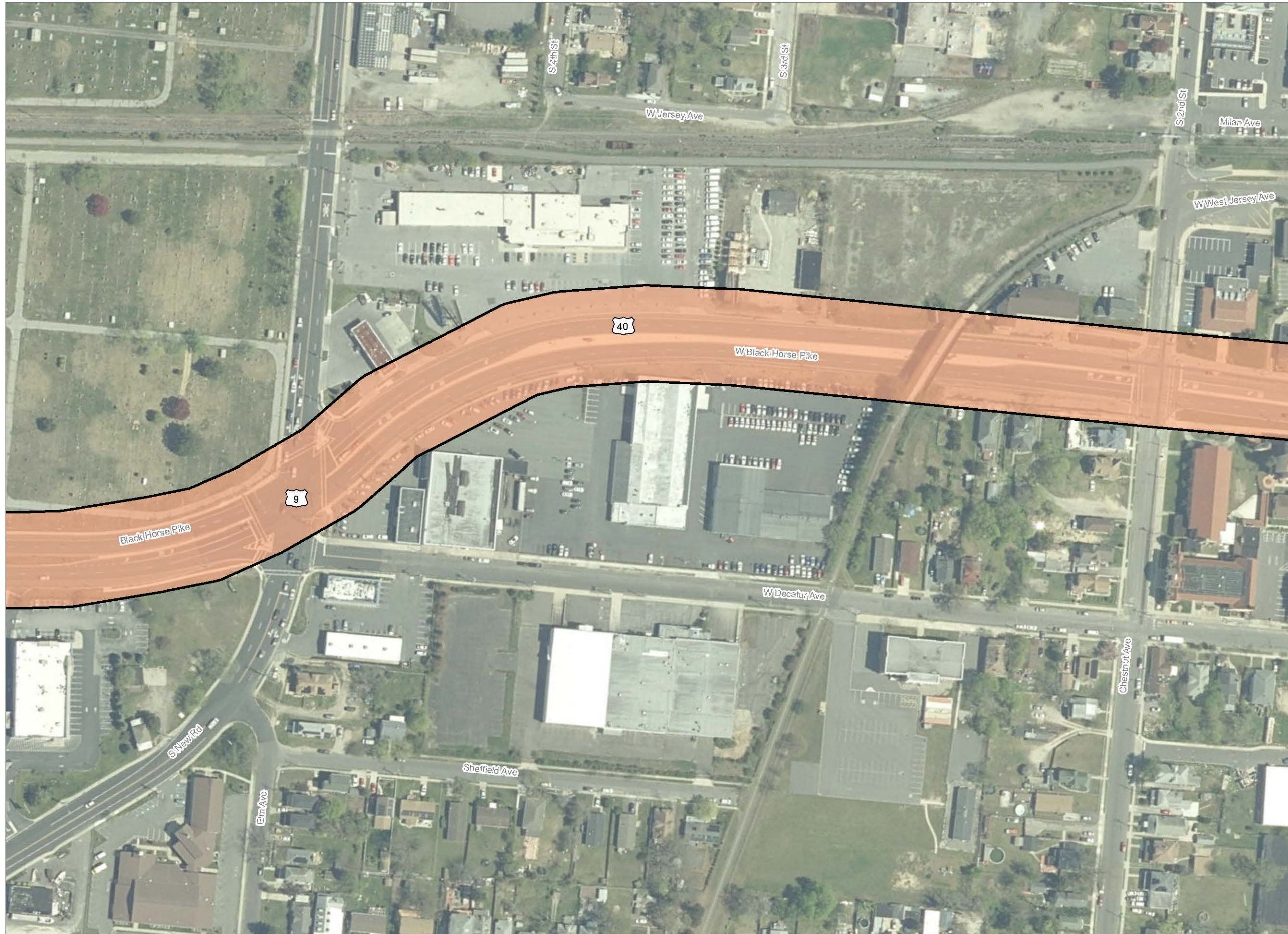
Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery

ATLANTIC SHORES
offshore wind

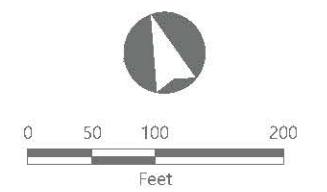


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
Pleasantville, and Egg Harbor
Township, Atlantic County,
New Jersey

Habitat Suitability Assessment Report

- Habitat Assessment
- Developed/Disturbed
 - Study Area



Prepared November 21, 2023
Basemap: NJ Office of GIS 2020 Natural Color Imagery



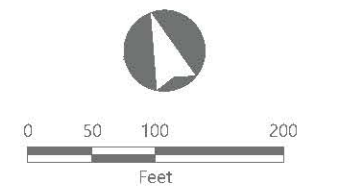


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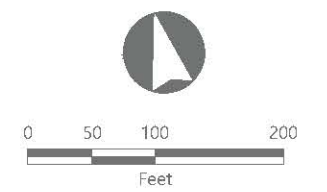


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

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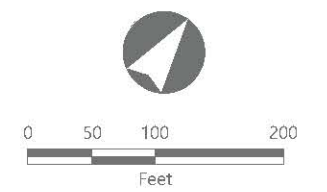
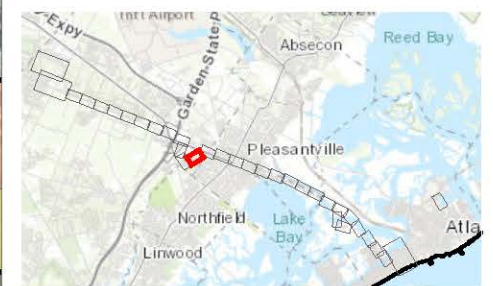


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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Habitat Suitability Assessment Report

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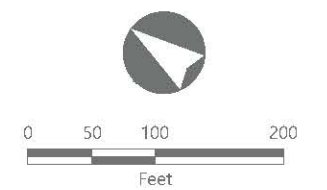
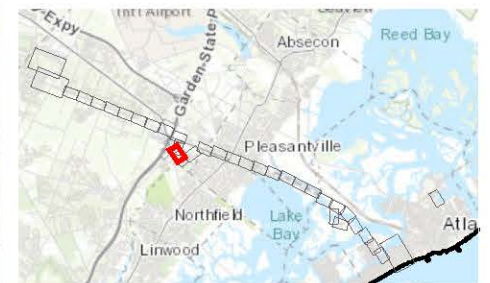


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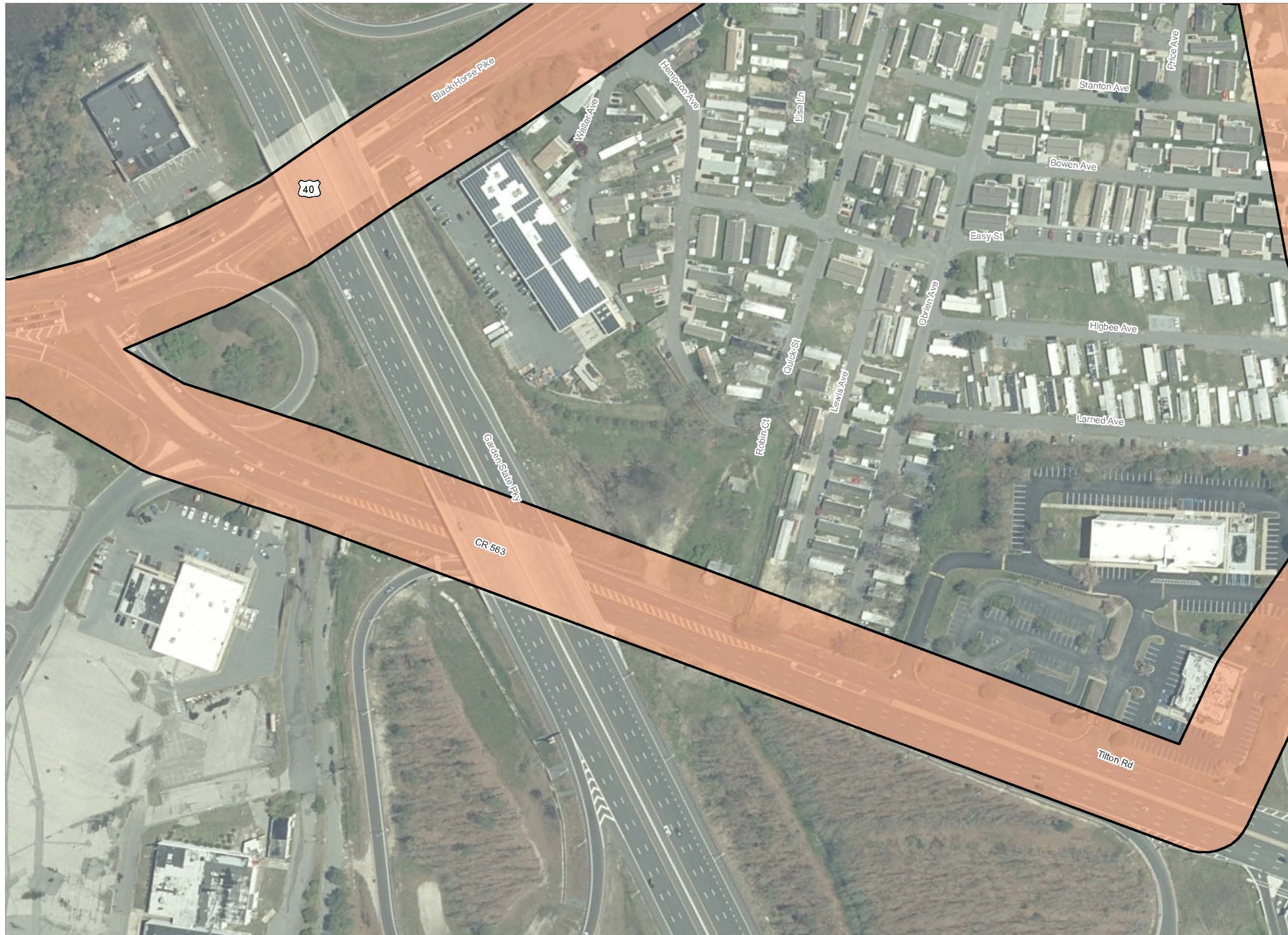
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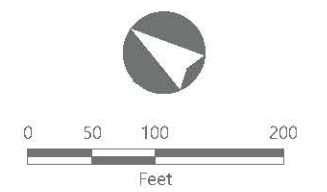
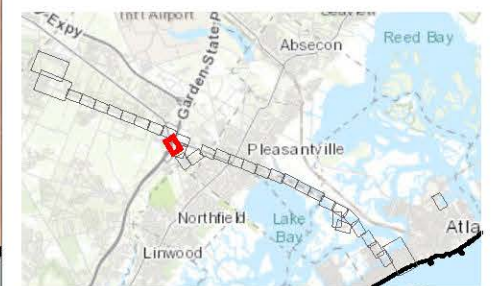


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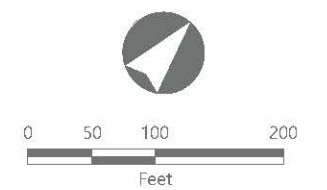
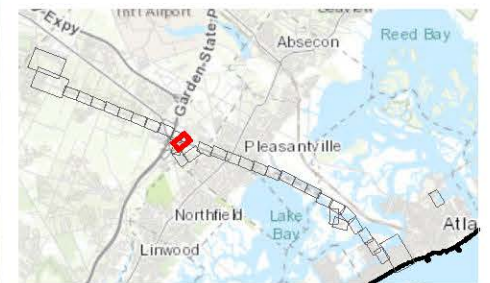


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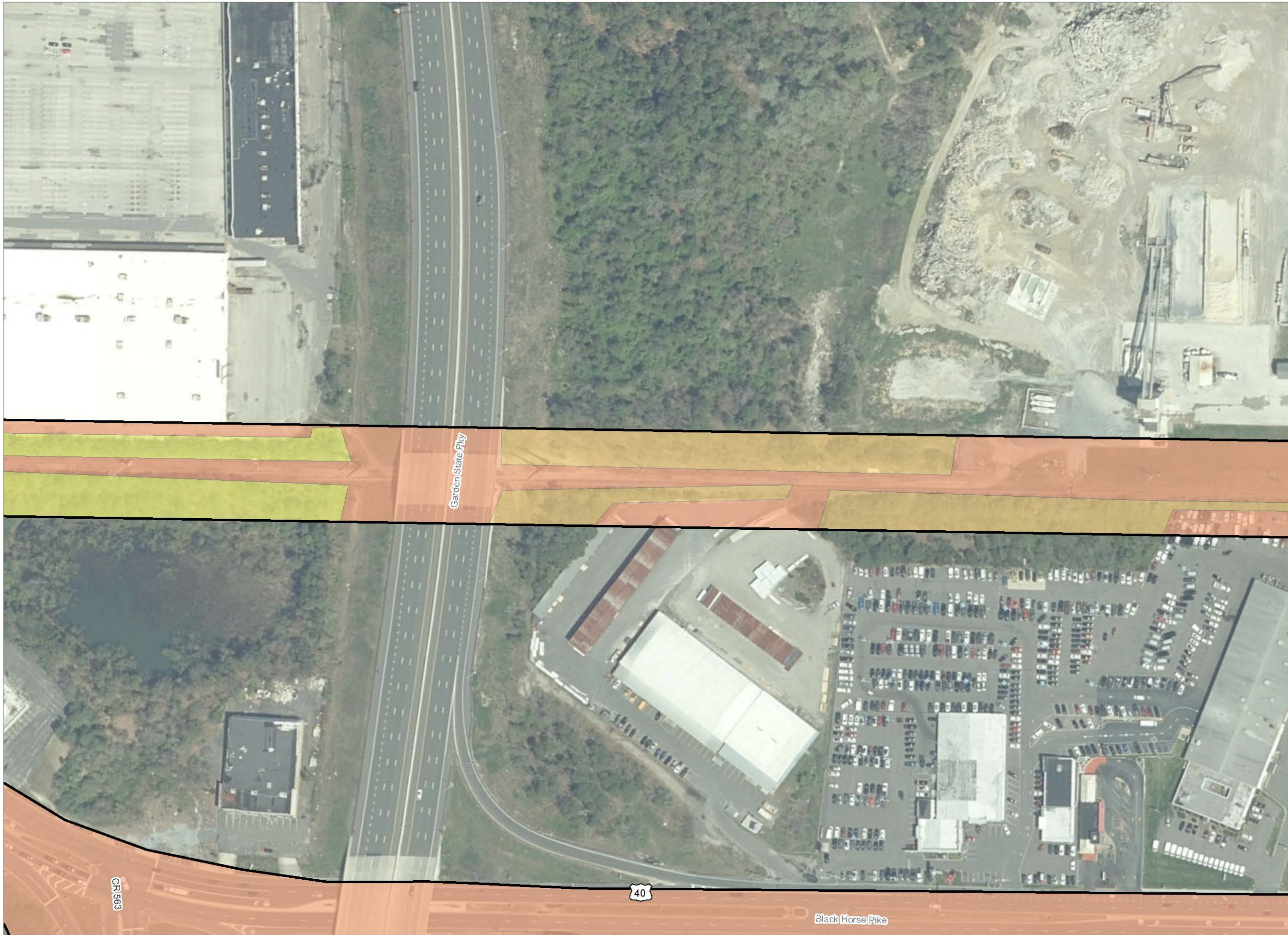
Habitat Suitability Assessment Report

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 - Study Area



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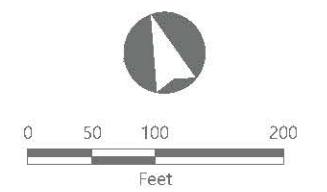


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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EDR

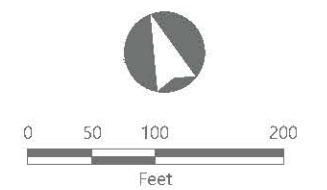


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of
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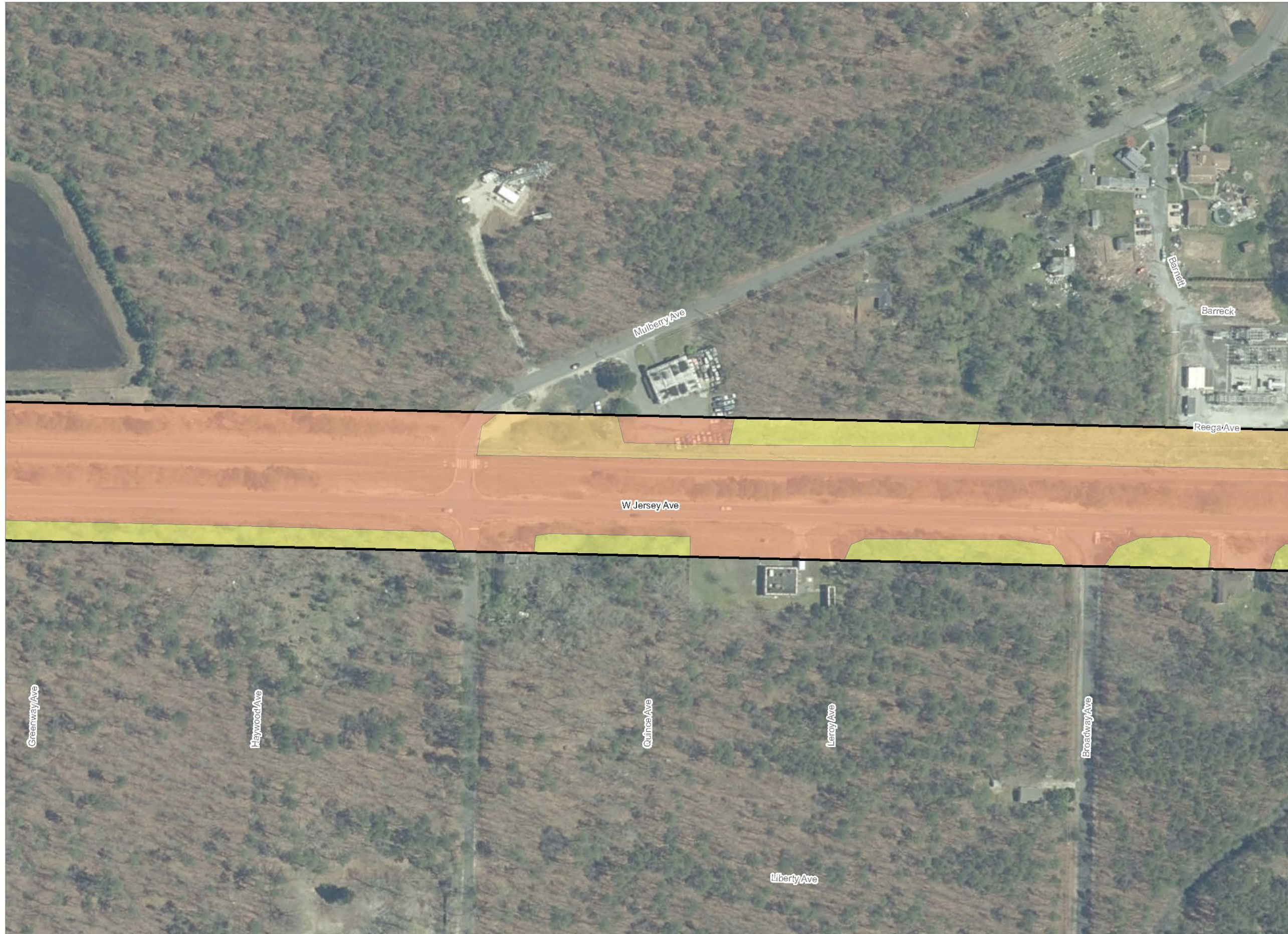
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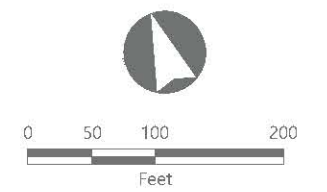
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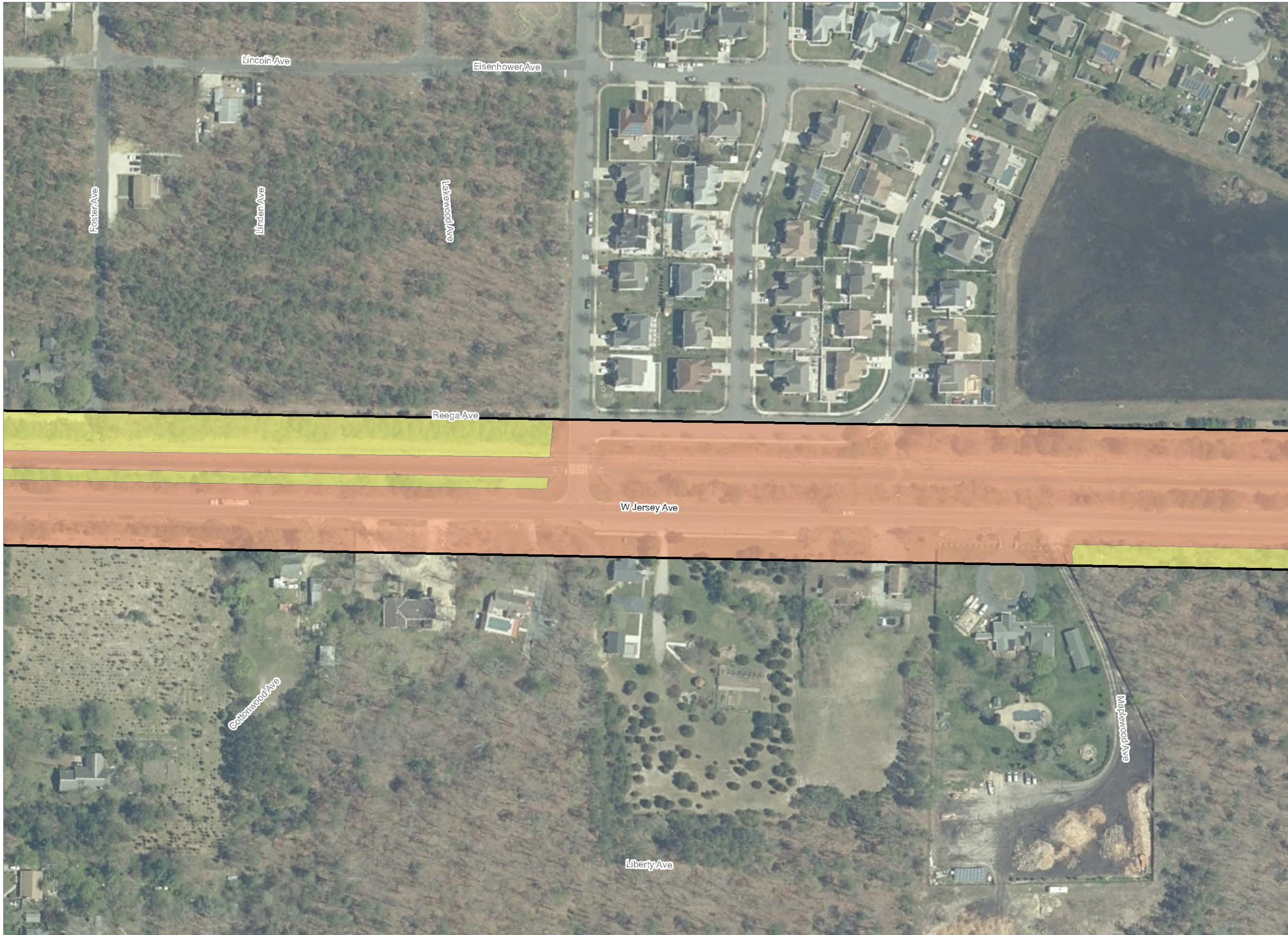


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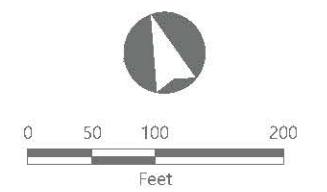


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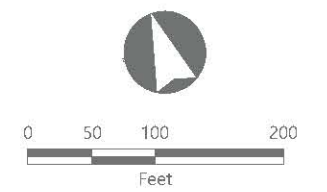


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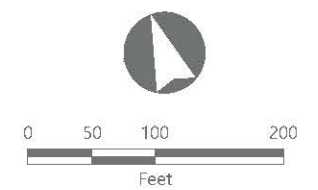


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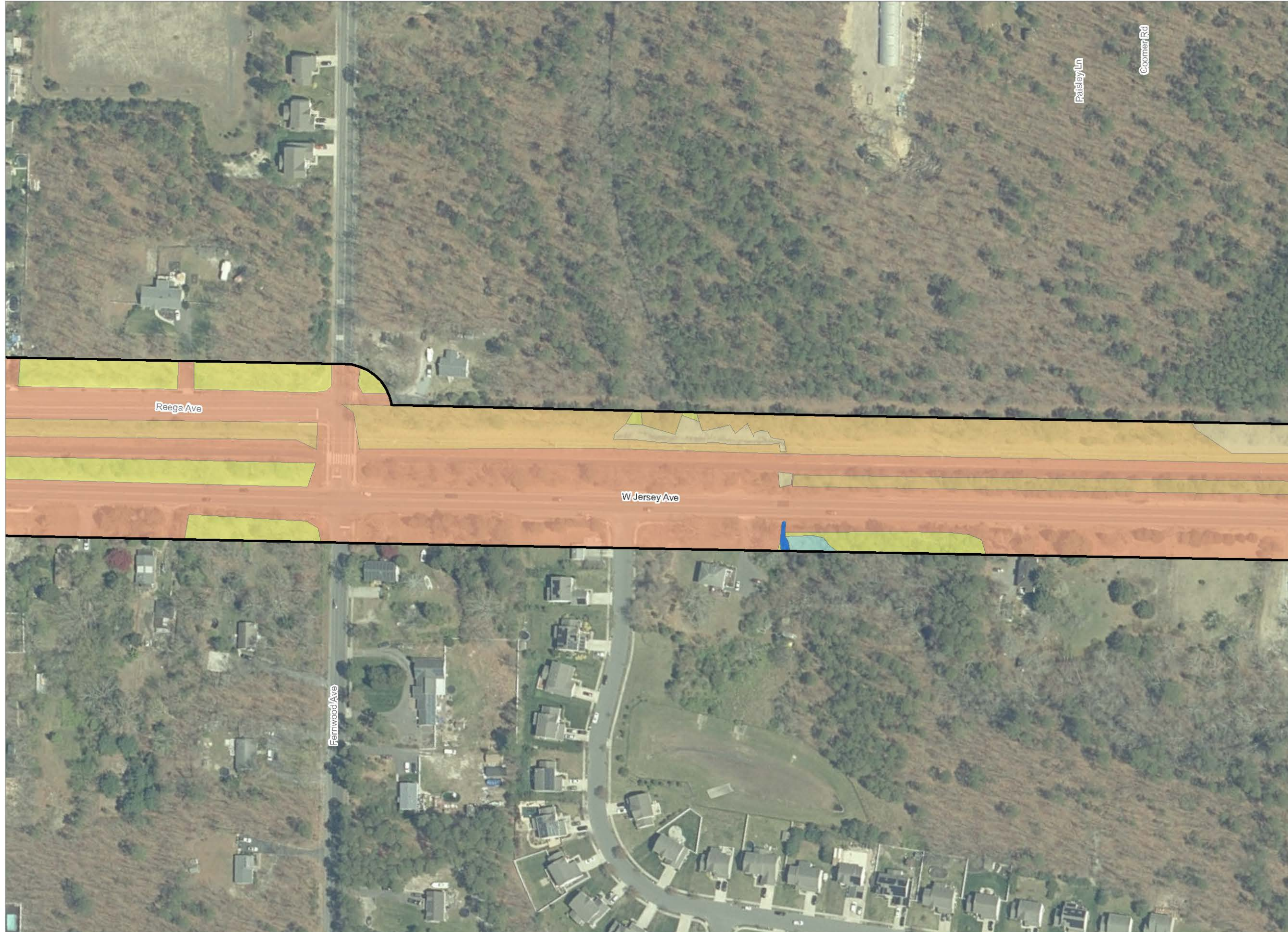
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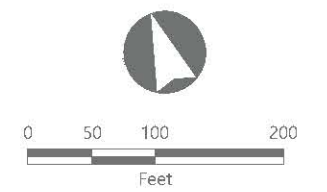
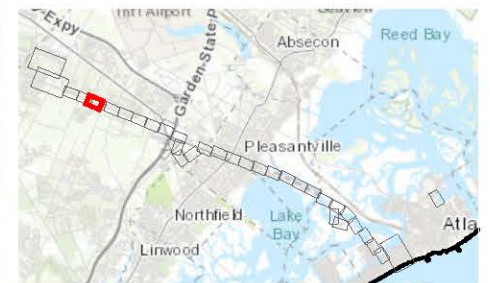


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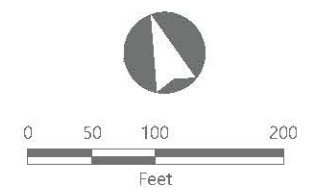
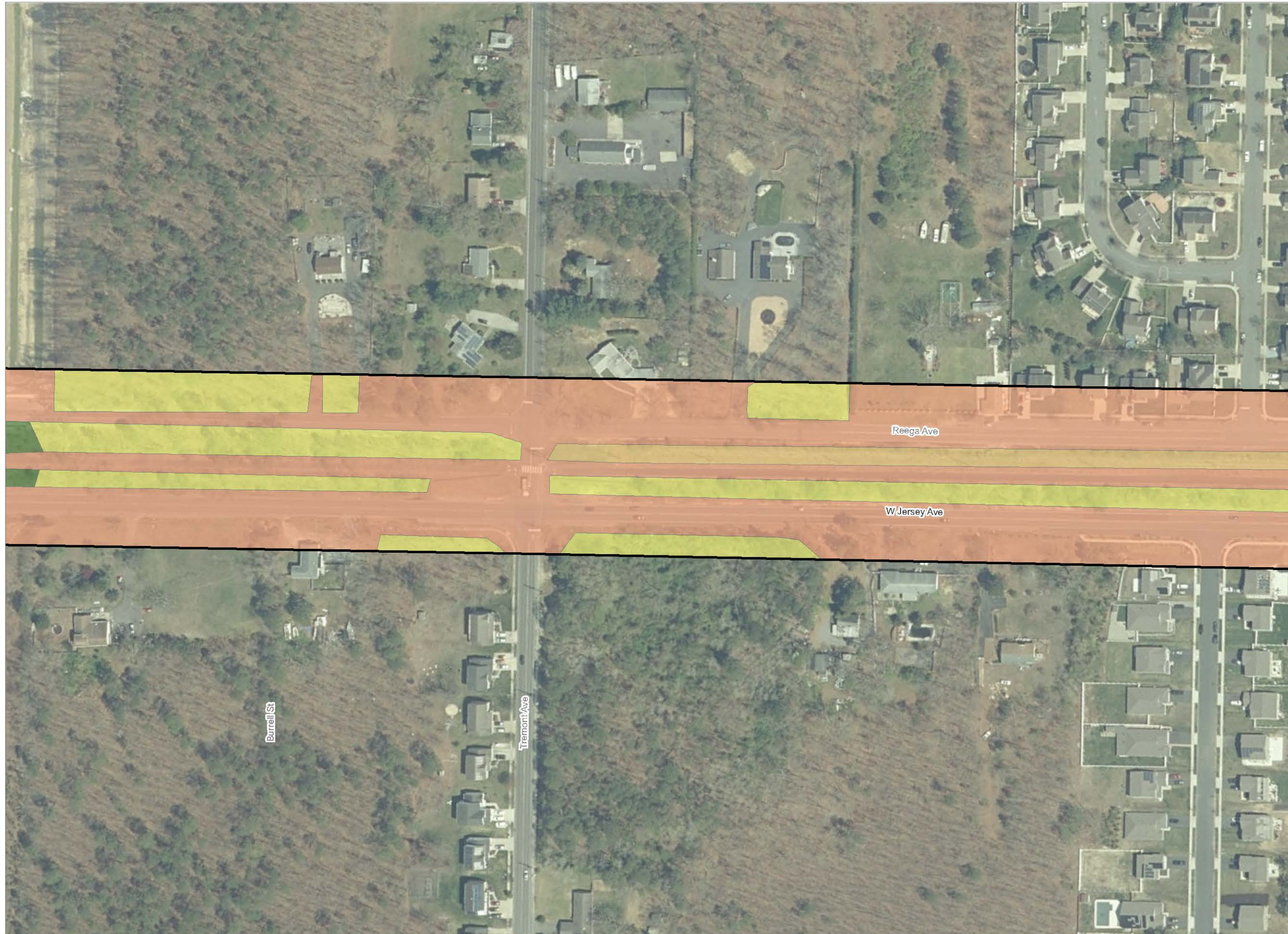
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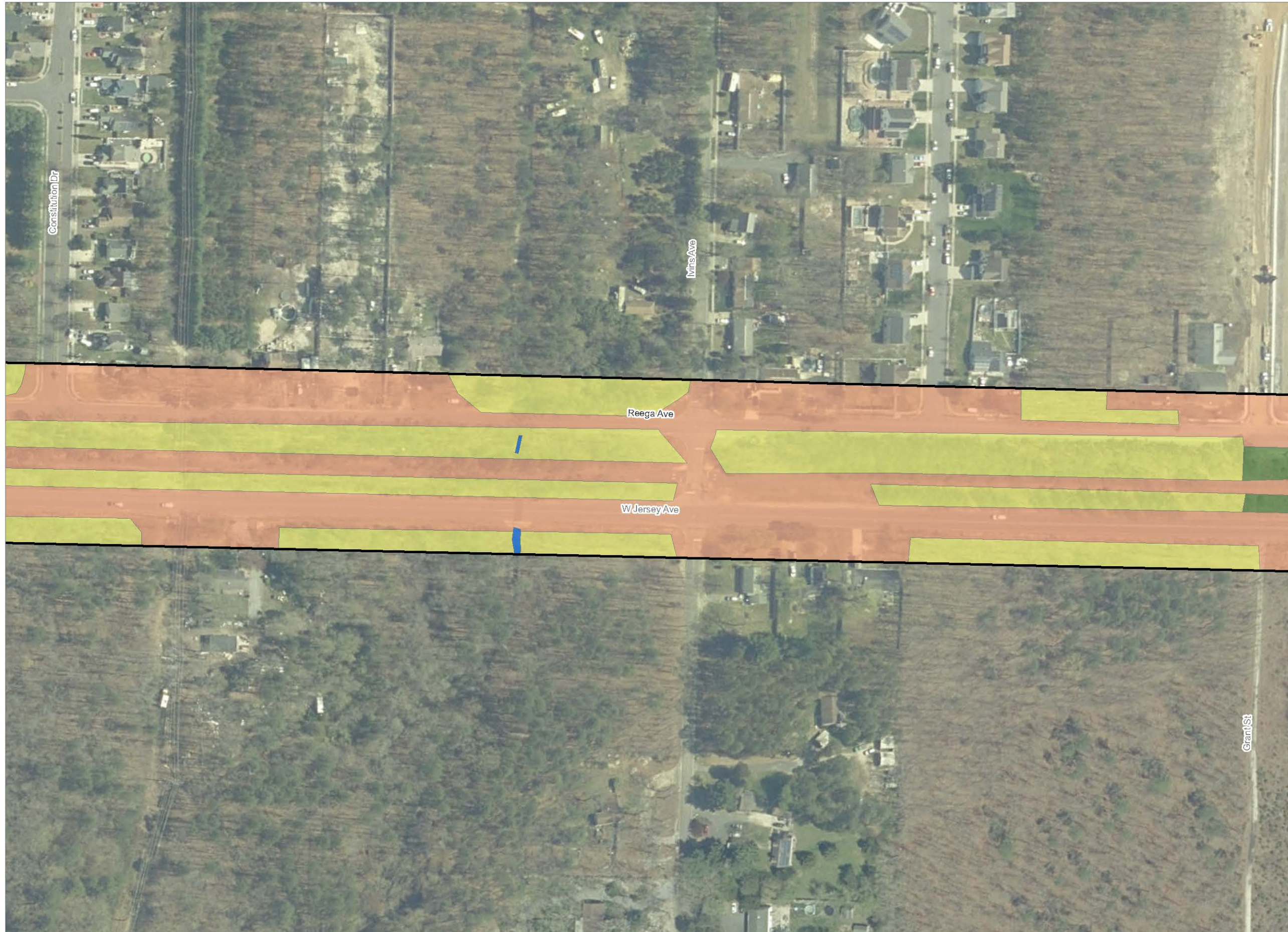
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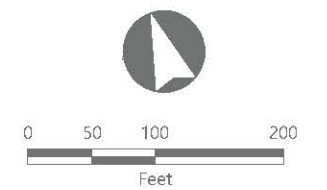


Atlantic Shores Offshore Wind – Cardiff and O&M Facility Study Areas

City of Atlantic City, City of Pleasantville, and Egg Harbor Township, Atlantic County, New Jersey

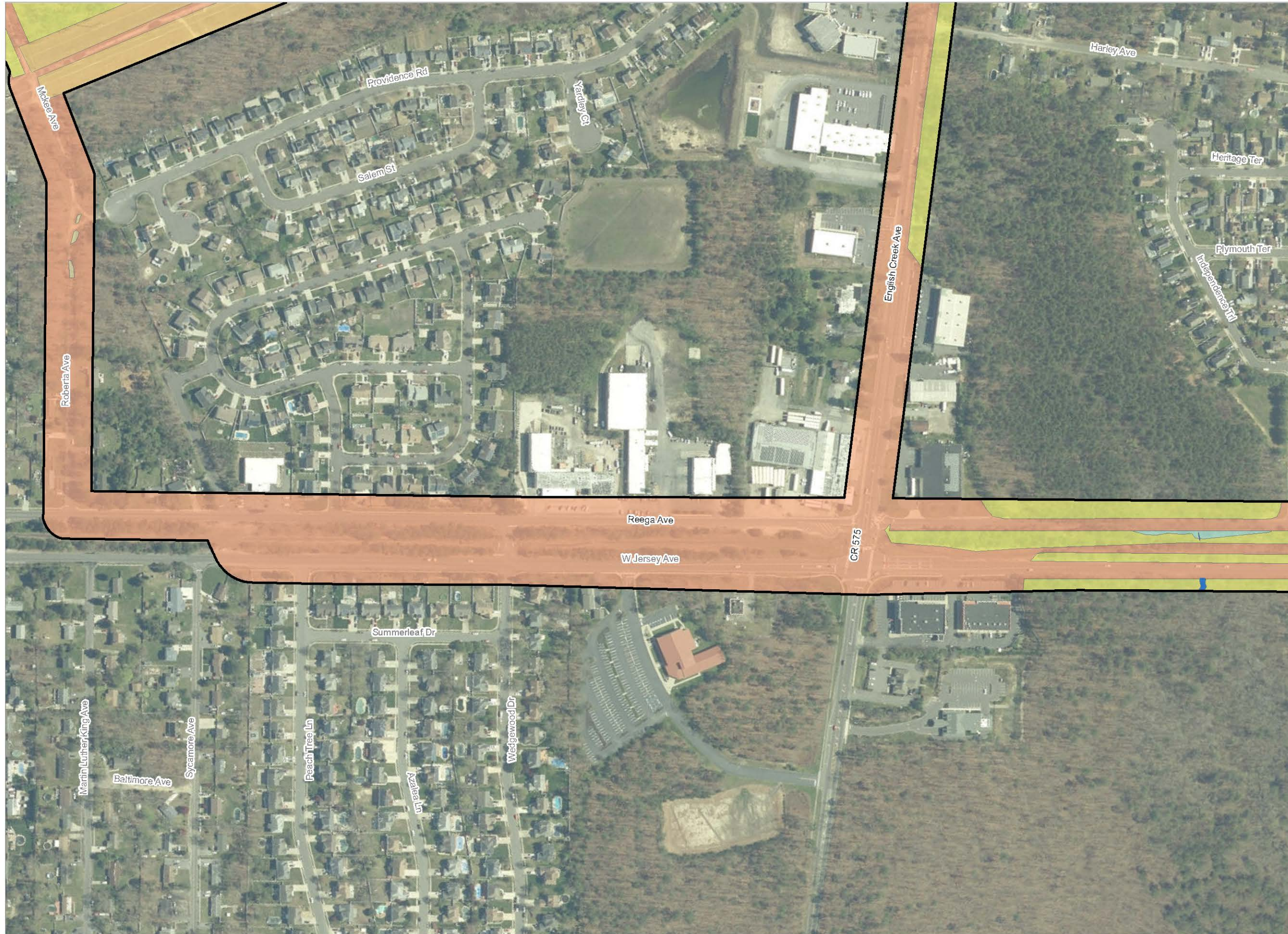
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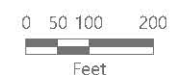


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0 50 100 200
Feet

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