Appendix E – USFWS Biological Assessment

Biological Assessment for US Fish and Wildlife Species

SC Highway 41 Corridor Improvements Project

Charleston and Berkeley County, South Carolina

May 2022

Acronyms

BA	biological assessment
BMP	best management practice
dB	decibel
ESA	Endangered Species Act
Hz	hertz
IPaC	Information for Planning and Consultation
LOD	limits of Project disturbance
MBTA	Migratory Bird Treaty Act
NLAA	May affect, not likely to adversely affect
NLEB	northern long-eared bat
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
RCW	red cockaded woodpecker
SC 41	SC Highway 41
SCDNR	South Carolina Department of Natural Resources
SCDOT	South Carolina Department of Transportation
USFWS	US Fish and Wildlife Service
US 17	US Highway 17

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1.0 Introduction

To accommodate an increase in traffic volume, Charleston County, the Town of Mount Pleasant, and the South Carolina Department of Transportation (SCDOT) are partnering to improve roadway capacity and ease traffic congestion along SC Highway 41 (SC 41; Project and proposed action). This biological assessment (BA), prepared on behalf of Charleston County, addresses the proposed action in compliance with Section 7(c) of the Endangered Species Act (ESA) of 1973 [16 United States Code 1536 (c)], as amended. Section 7 of the ESA requires that federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of critical habitat. This is achieved through consultation with the US Fish and Wildlife Service (USFWS) and/or the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries).

A Letter of Intent was distributed on July 13, 2017, to stakeholder agencies to notify them of the commencement of the Project. The Letter of Intent also provided general Project information and requested comments on environmental concerns. A BA was completed for the SC 41 Bridge Replacement over the Wando River, which occurs within the study area and is included as part of the SC 41 Bridge Environmental Assessment dated May 2010. However, no additional Project construction is scheduled to occur on SC 41 Wando River bridge. This BA evaluates the potential effects of the proposed Project on species that are federally protected by the ESA and managed under the jurisdiction of USFWS. A separate BA has been prepared for species under the jurisdiction of NOAA Fisheries.

1.1 Project Description

The primary purpose of the proposed action is to reduce traffic congestion within the SC 41 corridor to accommodate future traffic growth projections. The secondary purposes of the proposed Project are to enhance safety throughout the corridor, improve the transportation system and community connections, and provide bicycle and pedestrian accommodations, while minimizing community and environmental impacts. Charleston County proposes to improve SC 41 for a total of approximately 5.6 miles from North US Highway 17 (US 17) across the Wando River Bridge to Clements Ferry Road, in Charleston and Berkeley Counties, South Carolina (**Figures 1 and 2**). Improvements are also planned at the intersection of SC 41 and US 17, at a new tie-in road between SC 41 and Winnowing Way, and a 1.3-mile-long new roadway (Laurel Hill Parkway) between SC 41 and Park West Boulevard.

Along SC 41, the proposed typical section would include four travel lanes, curb-and-gutter with a planted median from US 17 to Joe Rouse Road and from Dunes West Boulevard to Clements Ferry Road, with a 5-foot-wide sidewalk on the west side and a 10-foot-wide multi-use path on the east side. On SC 41 between Joe Rouse Road and Dunes West Boulevard, the proposed typical section would include a three-lane, curb-and-gutter section with one travel lane in each direction, a center two-way left-turn lane, and a 5-foot-wide sidewalk on both sides. The proposed typical section along Laurel Hill Parkway would include two lanes with curb-and-gutter and a 10-foot-wide multi-use path on the east side.

The Project would cross Horlbeck and Mill Creeks, and the Wando River. This section of SC 41 is an arterial route that has experienced an increase in traffic and is currently exceeding capacity. The existing two-lane roadway would be widened to four lanes, with a center median and multi-use pathway. No construction work would occur within the Wando River because the existing bridge over the Wando River would accommodate the proposed lane widening. Field studies were conducted in a 696-acre study area (i.e., action area). The Project limits of disturbance (LOD) would be entirely confined to within the larger study area and would not exceed about 91 acres (**Appendix A: Project Mapset**).

Figure 1. Project Location Overview

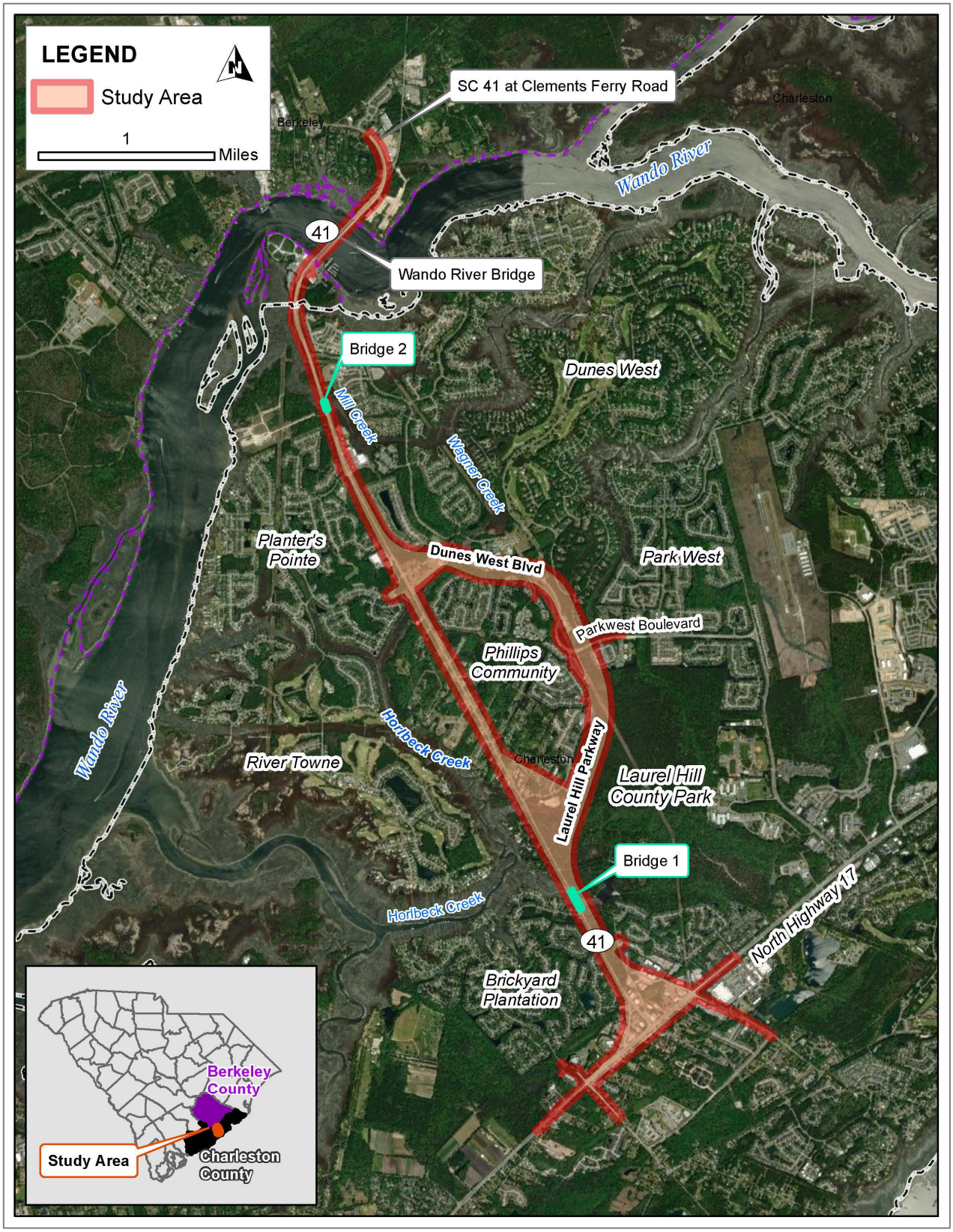

Figure 2. Project Location Detail

2.0 Environmental Baseline

2.1 Project Setting

The Project is in central Charleston County and southern Berkeley County in the Lower Coastal Plain of South Carolina. The Project would occur within the Cooper River watershed (Hydrologic Unit Code 03050201) and the Sea Islands/Coastal Marsh Level IV ecoregion. The land uses within the study area include incorporated areas, vacant/undeveloped areas, agriculture, estuarine and marine wetlands and deepwater, freshwater wetlands, residential, commercial, industrial, public/institutional, and parks/recreation/open space. Land use / land cover in the watershed includes 33.1 percent forested land, 22.6 percent forested wetland, 17.0 percent non-forested wetland, 16.8 percent urban land, 7.7 percent water, 2.4 percent agricultural land, and 0.4 percent barren land.

This area of Charleston and Berkeley Counties is experiencing significant growth, primarily due to planned commercial and residential developments. Commercial growth is primarily occurring in the Charleston County portion of the study area, whereas residential growth is occurring in Berkeley County north of the Wando River.

2.2 Coastal Habitats

The estuarine salt marshes in and near the study area occur in association with Horlbeck Creek, Mill Creek, and the Wando River. The salt marshes within the study area occur as a mosaic of high marsh dominated by sea oxeye (*Borrichia frutescens*) and black needlerush (*Juncus roemerieanus*), and fully inundated or low marsh dominated by smooth cordgrass (*Sporobolus alterniflora*) and mud flats. Common macrobenthic species in the salt marsh include fiddler crabs (*Uca pugnax*), ribbed mussels (*Geukensia demissa*), and periwinkle snails (*Littoria irrorata*).

Freshwater wetlands identified within the study area are characterized by a tree canopy consisting of laurel oak (*Quercus laurifolia*), sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), and slash pine (*Pinus elliotti*). The shrub strata consist primarily of dwarf palm (*Sabal minor*), wax myrtle (*Morella cerifera*), Chinese privet (*Ligustrum sinense*), and sweet gum. The herbaceous strata are composed of bladder sedge (*Carex intumescens*), royal fern (*Osmunda regalis*), netted chain fern (*Woodwardia areolata*), and slender spike grass (*Chasmanthium laxum*).

Upland habitats adjacent to the salt marsh primarily consist of the SC 41 roadway along with commercial and residential developments. Upland habitats associated with the undeveloped forests include a tree stratum consisting of water oak (*Quercus nigra*), loblolly pine (*Pinus taeda*), sweet gum, and red maple with a shrub stratum of wax myrtle and Chinese privet. The herbaceous/woody vine stratum in these habitats is primarily composed of yellow jasmine (*Gelsemium sempervirens*), common green briar (*Smilax rotundifoila*), muscadine (*Vitis rotundifolia*), and Japanese honeysuckle (*Lonicera japonica*).

3.0 ESA Listed Species

A list of federally protected species with the potential to occur within the study area or otherwise be impacted by the proposed action was obtained from the USFWS Information for Planning and Consultation (IPaC) website (USFWS 2022; **Appendix B-1** and **Table 3-1**). No USFWS-designated critical habitat for federally listed species occurs within the study area.

Sixteen federally listed threatened or endangered species and one candidate species were identified by the USFWS IPaC system as having the potential to occur in the study area (**Table 3-1**). The IPaC list includes three plants, one insect, six birds, and one bat. Six aquatic species were also identified on the list, including one marine mammal, one amphibian, and four sea turtles. As a result of site visits conducted in 2017 and 2019, suitable habitat was identified within the study area for the West Indian manatee (*Trichechus manatus*), northern long-eared bat (*Myotis septentrionalis*), frosted flatwoods salamander (*Ambystoma cingulatum*), eastern black rail (*Laterallus jamaicensis*), red-cockaded woodpecker (*Picoides borealis*), and wood stork (*Mycteria americana*). Detailed species descriptions and effects analyses for these six species are included in Sections 3.1 to 3.3 and Section 6.0, respectively.

Table 3-1. ESA Federally Listed Threatened and Endangered Species

Species Name	Federal ESA Status	Habitat Description	Suitable Habitat in Study Area
PLANTS			
American chaffseed *Schwalbea americana*	Endangered	Sandy, acidic, seasonally moist to dry soils; areas frequently mowed; open, moist pine flatwoods	No
Canby's dropwort *Oxypolis canbyi*	Endangered	Cypress ponds and sloughs, and wet savannas	No
Pondberry *Lindera melissifolia*	Endangered	Wetland sinks, ponds, and other depressions in coastal areas	No
INSECTS			
Monarch butterfly *Danaus plexippus*	Candidate	Habitat with milkweeds plants (*Asclepias* spp.), the primary food plant for larvae	No
MAMMALS			
Northern long-eared bat *Myotis septentrionalis*	Threatened	Hibernates in caves, mines, or tunnels during winter; roosts in tree bark and cavities in summer (April 1 through November 15)	Yes
West Indian manatee *Trichechus manatus*	Threatened	Slow-moving waters between 3 and 6 feet deep where they feed on marsh grasses, floating vegetation, and algae	Yes
AMPHIBIANS			
Frosted flatwoods salamander *Ambystoma cingulatum*	Threatened	Ephemeral freshwater wetland breeding/larval habitats; preferred habitat for post larval life stage of longleaf pine (*Pinus palustris*) and wiregrass flatwoods and savannas with poorly drained soils allowing for pooling during seasonal rains	Yes

Species Name	Federal ESA Status	Habitat Description	Suitable Habitat in Study Area
REPTILES			
Green Sea Turtle *Chelonia mydas*	Threatened	Open oceans and inland bodies of water; nesting habitat nearshore	No
Kemp's Ridley Sea Turtle *Lepidochelys kempii*	Endangered	Open oceans and inland bodies of water; nesting habitat nearshore	No
Leatherback Sea Turtle *Dermochelys coriacea*	Endangered	Open oceans and inland bodies of water; nesting habitat nearshore	No
Loggerhead Sea Turtle *Caretta caretta*	Threatened	Open oceans and inland bodies of water; nesting habitat nearshore	No
BIRDS			
Bachman's warbler *Vermivora bachmanii*	Endangered	Wet and low elevation, forested areas with permanent water; also, wet canebreaks and bamboo thickets	No
Eastern black rail *Laterallus jamaicensis*	Threatened	Salt and brackish marshes or freshwater wetlands with dense overhead cover (rushes, grasses, or sedges), moist to saturated soils, and shallow water less than 3 centimeters deep	Yes
Piping plover *Charadrius melodus*	Threatened	Ocean shores with sparse vegetation; in winter, coastal beaches, sandflats, and mudflats	No
Red knot *Calidris canutus rufa*	Threatened	Sandy beaches, salt marshes, lagoons, mudflats, estuaries, bays, mangroves	No
Red-cockaded woodpecker *Picoides borealis*	Endangered	Nest in mature (over 80 years) longleaf and southern pine forests; forage in stands over 30 years old	Yes (Foraging only)
Wood stork *Mycteria americana*	Threatened	Freshwater and estuarine wetlands, primarily nesting in cypress or mangroves	Yes

Source: USFWS 2022

American chaffseed (*Schwalbea americana*) preferred habitat requires acidic-sandy or peaty soils that are seasonally moist to dry. It is generally found in habitats described as open, moist pine flatwoods, fire-maintained savannas, transition areas between peaty wetlands and dry sandy soils, and other open grass-sedge areas. Because it is not tolerant of dark shades, the American chaffseed is usually found along the margins of forest or woodlands. Furthermore, American chaffseed is dependent on factors such as fire, mowing, or fluctuating water tables to maintain the crucial open to partly open conditions (Whitehead 2003). A focused site investigation was conducted within the study area between August 7 and August 11, 2017, and again on July 18, 2019. The surveys did not result in detections of the listed plant; therefore, the species would not occur in the study area or otherwise be impacted by the Project.

Canby's dropwort (*Oxypolis canbyi*) inhabits a variety of coastal plain communities with saturated soils, including pond cypress savannahs, the shallows and edges of cypress/pond pine ponds, sloughs, and wet pine savannas. (SCDNR 2020a). A field survey of the study area was conducted between August 7 and August 11, 2017, and again on August 22, 2019, but no plants were detected. Therefore, suitable habitat for Canby's dropwort was not recorded and is not believed to occur in the study area; therefore, the species would not be affected by the Project.

Pondberry (*Lindera melissifolia*) is known to occupy a variety of habitats, from freshwater bogs, fens, and forested wetlands to hardwood forests, as long as its hydrological requirements are met (SCDNR 2020b).

The plant species' range is primarily the Atlantic coastal plain from Florida to North Carolina and along the coastal plain from Alabama to Mississippi. South Carolina's documented populations occur in Beaufort, Berkeley, and Colleton Counties, South Carolina, along the margins of limestone sinks and shallow depressions (SCDNR 2020b; NatureServe 2021a). Field surveys in the study area on February 13 and 14, 2018, and again on April 8, 2019, did not detect the species; therefore, the species is not expected to occur in the study area or otherwise be impacted by the Project.

The monarch butterfly (*Danaus plexippus*) is a candidate species that could occur in the study area during migration but is not expected to be impacted by Project activities due to the lack of suitable breeding habitat. Sea turtles have shared jurisdiction between NOAA Fisheries and USFWS under the ESA, where NOAA Fisheries leads the conservation and recovery of sea turtles in the marine environment and USFWS leads the conservation and recovery of turtles on nesting beaches (NOAA Fisheries 2022). For the purposes of this BA, the effects determination is made based on USFWS jurisdiction of sea turtles. Although sea turtles could occur in the Wando River and associated tributaries, the study area does not contain suitable nesting beach habitat for sea turtles. An effects determination for sea turtles in the marine environment or in foraging habitat will be assessed in a separate BA submitted to NOAA Fisheries.

Bachman's warblers (*Vermivora bachmanii*) prefer breeding habitat consisting of low, wet, forested areas with some permanent water (Hamel 2020). The species is also adapted to wet canebreaks and bamboo thickets (86 FR 54298). In 1977, the Bachman's warbler was recognized as being on the verge of extinction. The Bachman's warbler was last detected in the southeast near Melbourne, Florida, in 1977, with the most recent U.S. siting occurring in Louisiana in August 1989. Based on the best available scientific information, the Bachman's warbler is believed to be extinct and therefore has been proposed for delisting from the ESA (86 FR 54298). Due to the warbler's likely extinction and lack of suitable nesting habitat in the study area, the species is not expected to occur or be impacted by Project activities.

Piping plovers (*Charadrius melodus*) prefer foraging habitat with beach dunes, intertidal flats, and tidal pool edges where their diet is composed of worms, fly larvae, beetles, and marine invertebrates. Piping plover suitable habitat is found in dynamic coastal areas that support intertidal beaches and flats and associated dune systems and flats above annual high tide (Elliott-Smith and Haig 2020). The study area does not contain suitable nesting or foraging habitat for the piping plover; therefore, the Project would have no effect on the species.

Red knots (*Calidris canutus rufa*) are principally marine shorebirds in the non-breeding season, when they feed on polychaete worms, small crabs, and marine mollusks, especially bivalves that they swallow whole and crush in their muscular gizzard. Red knots stop and feed during migration in Delaware Bay and along coastal Virginia. However, overwintering populations routinely inhabit sandy beaches and mud flats on the South Carolina coast (Baker et al. 2020). Regardless of the nearby overwintering habitat along the South Carolina coastline, no suitable habitat for the red knot occurs in the study area; therefore, no effects on the species would occur as a result of the Project.

3.1 Mammals

3.1.1 West Indian Manatee (*Trichechus manatus*)

The West Indian manatee (*Trichechus manatus*) was listed as endangered in 1967 but was reclassified as threatened in 2017, and critical habitat was designated in 1976. A recovery plan was developed in 1980 and updated in 1989 and 1996. The USFWS critical habitat for the West Indian manatee is limited to coastal regions of southern Georgia and Florida. No critical habitat occurs in the study area.

West Indian manatees are large herbivorous marine mammals reaching 10 to 13 feet in length and up to 1,000 pounds in weight. They are classified as sirenians, which are slow-moving, herbivorous mammals found in coastal habitats. Manatees are usually solitary but will occasionally occur in large groups or mating herds. Manatees are a marine species, although they are attracted to freshwater outlets. They prefer slow-moving waters between 3 and 6 feet deep where they feed on marsh grasses, floating vegetation, and algae. Manatees often inhabit areas with turbid and noisy conditions (FWC 2007). The most significant threat faced by manatees is death or serious injury from vessel collisions (USFWS 2003a; FWC 2007). Manatees cannot survive prolonged exposure to water temperatures below 18 degrees C (65 degrees F) (MMC 2022). The U.S populations appear to originate from Florida, but transient groups and individuals can be found in Alabama, Georgia, and South Carolina coastal waters during the summer months (NatureServe 2021b). The Wando River, located at the north end of the study area, contains suitable habitat for the West Indian manatee. However, no construction would occur within the Wando River during this Project; therefore, the Project may affect, but is not likely to adversely affect, the West Indian manatee.

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

The northern long-eared bat (NLEB) historically occupied the mountain region of three counties in northwestern South Carolina: Oconee, Pickens, and Greenville. The earliest summer record dates back to 1931 from Rocky Bottom in Pickens County (SCDNR 2020c). Mist net and harp trap sampling records from the late 1980s through the 1990s confirmed the presence of NLEB in the summer and fall throughout the mountains of South Carolina. Currently, few NLEB occur in the mountains since white-nose syndrome was confirmed in the state, which has resulted in a loss of about 70 percent of the NLEB's former hibernacula (SCDNR 2020c). Critical habitat has not been designated for this species.

During the winter months, the NLEB can be found hibernating in caves and mines. NLEB use various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer months (April 1 through November 15), NLEBs roost underneath bark, in cavities, or in crevices of both live trees and dead trees. Rarely, they have been found roosting in structures, like barns and sheds (SCDNR 2020c; SCDNR 2022a). Northern long-eared bats prefer mature, densely forested habitat with intermittent openings and seasonal pools for drinking water sources. Northern long-eared bats typically glean prey from the surface of vegetation but will also forage by aerial hawking (SC SWAP 2015). Five individuals were found in the Francis Marion National Forest (in Charleston and Berkeley Counties) in 2017, of which one of the five captured individuals was a lactating female (SCDNR 2017). No hibernacula or maternity trees are known to occur within or near the study area; however, potential day roosting habitat occurs in the study area, particularly within forested habitat along the proposed Laurel Hill Parkway.

The Project would minimize effects on NLEB by conducting tree clearing during the inactive season (November 15 and March 31). Based on the rare occurrence of NLEB in the state, particularly the coastal region, and best management practices (BMP) including a fall tree clearing schedule, the Project may affect, but is not likely to adversely affect, the NLEB.

3.2 Amphibians

3.2.1 Frosted Flatwoods Salamander (*Ambystoma cingulatum*)

The frosted flatwoods salamander was listed as a threatened species in 1999; however, a recovery plan has not been developed. USFWS critical habitat has been designated for the frosted flatwoods salamander but does not occur in the study area.

The frosted flatwoods salamander's range includes the lower southeastern coastal plain of the U.S. from South Carolina to north-central Florida and westward into southern Georgia. Populations have been identified in Berkeley, Charleston, and Jasper Counties, South Carolina (NatureServe 2021c). The frosted flatwoods salamander has been historically documented as occurring within a 2-mile buffer of the study area within the Francis Marion National Forest (SCDNR 2022a; **Appendix B-2**, SCDNR Species Report). Adults migrate to breeding waters (at distances up to 1.0 mile) on wet evenings with low barometric pressure between October and January. During the rest of the year, individuals do not move more than a couple yards from their underground burrows. Breeding habitats are usually ephemeral freshwater wetlands less than 20 inches deep dominated by pond cypress (*Taxodium ascendens*), black gum (*Nyssa sylvatica var. biflora*), and slash pine as well as red maple, loblolly bay (*Gordonia lasianthus*), sweetbay (*Magnolia virginiana*), and sweet gum. The preferred habitat for post-larvals includes longleaf pine (*Pinus palustris*) and wiregrass flatwoods and savannas with poorly drained soils allowing for pooling (NatureServe 2021c).

Suitable habitat is believed to occur adjacent to and potentially within the study area. A survey conducted within potential habitat in the study area on April 29, 2019 did not detect individuals or sign of the species. However, due to the presence of marginally suitable habitat and close proximity to known occurrences, there is a limited potential for the species to occur within the study area. Because impacts on wetlands are being avoided to the maximum extent possible, the Project may affect but is unlikely to adversely affect the frosted flatwoods salamander.

3.3 Birds

3.3.1 Eastern Black rail (*Laterallus jamaicensis*)

The eastern black rail was listed as a threatened species in 2020, and a recovery plan outline was released in early 2021, serving as an interim strategy guiding the conservation and recovery of the eastern black rail until a final recovery plan is completed.

The eastern black rail is a wetland-dependent bird requiring dense overhead cover, moist to saturated soils, and shallow water less than 3 centimeters deep. Black rails typically nest in salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation. Most breeding areas are vegetated by fine-stemmed emergent plants, rushes, grasses, or sedges. Habitat along the east coast is characterized by infrequent tidal inundation ("high" marsh) and dominated by cordgrass (*Spartina* spp.), pickleweed (*Salicornia* spp.), saltgrass (*Distichlis spicata*), black rush (*Juncus gerardi*), needlerush (*J. roemerianus*), or Olney bulrush (*Scirpus olneyi*). Non-breeding habitat is believed to be similar to breeding habitat (Eddleman et al. 2020).

In South Carolina, eastern black rails are primarily found in the outer coastal plain with scattered inland populations (USFWS 2014). Black rail nests are constructed in dense vegetation just a few inches above the ground surface (Harrison 1979). The black rail diet consists of aquatic plant seeds, insects, and isopods (Terres 1980). The species is known to occur in the South Carolina low country in late April to early July (Eddleman et al. 2020; USFWS. 2014). In South Carolina, there is only one confirmed nesting record from 1903 (SCDNR 2013).

Tidal marsh habitat exists within the study area associated with Horlbeck Creek, Mill Creek, and the Wando River. The tidal marshes in the study area are influenced by water levels fluctuating several feet between high and low tide. Black rail nesting habitat in the study area would be tightly restricted to the narrow high marsh transitional areas adjacent to uplands. The uplands in the study area consist primarily of residential development or forested uplands, of which neither represent suitable upland habitat.

Therefore, black rails are unlikely to nest within the study area due to restricted wetland habitat and a lack of suitable uplands.

While construction could result in the disturbance and temporary displacement of a foraging black rail; Project activities are not anticipated to result in adverse effects on individuals or nesting success due to a strategic construction schedule and impact mitigation techniques.

3.3.2 Red-Cockaded Woodpecker (*Picoides borealis*)

The red-cockaded woodpecker (RCW) was listed as an endangered species in 1970. USFWS issued a recovery plan for this species in 2003 but has not designated critical habitat for this species.

The RCW requires open stands of longleaf and/or loblolly pine at least 80 to 100 years of age for nesting (Jackson 2020). Suitable habitat requires intermittent, fire which controls scrub oaks and other hardwoods from becoming established. Similar to nesting habitat, the RCW shows a preference for mature pine forests for foraging but will use forested stands as young as 30 years of age. Unlike other woodpeckers, the RCW excavates nest and roost cavities in living pine trees of various species. RCWs lay their eggs between April and June in the excavated cavities, which may be used for decades by multiple generations. The RCW encircles the cavity with small holes to encourage the flow of tree sap, which is believed to protect it from snakes and other predators (USFWS 2003b).

The species' historic range extends from New Jersey to Texas and inland to Missouri, but its current range excludes New Jersey, Maryland, Missouri, and likely Tennessee. Populations have been identified in the Francis Marion National Forest in South Carolina, parts of which are located in both Charleston and Berkeley Counties (NatureServe 2021d). The South Carolina Department of Natural Resources (SCDNR) has documented the RCW in the Francis Marion National Forest within approximately 2 miles of study area (SCDNR 2022a; **Appendix B-2**, SCDNR Species Report). While the study area is not expected to support RCW nesting due to the lack of mature pine stands, foraging RCW individuals could occur within the study area throughout the year, particularly along the proposed Laurel Hill Parkway. Therefore, Project construction could result in the disturbance and temporary displacement of foraging individuals, but adverse effects on the species are not anticipated.

3.3.3 Wood Stork (*Mycteria americana*)

The wood stork was listed as an endangered species in 1984 and reclassified as threatened in 2014. The latest recovery plan was released in 1997. No critical habitat has been designated for this species.

Suitable habitats consist of cypress swamps, bottom-land hardwood forests, tidally influenced freshwater wetlands, narrow tidal creeks, and abandoned rice fields maintained for waterfowl, but the species also feeds in saltwater marshes (Ogden 1990). Wood storks feed more frequently in wetlands with a more open canopy (ponds and marshes) than in wetlands with a more closed canopy (swamps). Suitable wetland sizes range from small pools or drainage ditches (a few square meters) to greater than 500,000 square meters (Coulter et al. 2020). In estuarine environments, nesting and roosting sites may occur on islands surrounded by broad expanses of open water (Ogden 1990). Wood storks generally nest in colonies from February to April and lay eggs from March to late May. Hatchlings usually emerge from early May to mid-June and fledge in July or August.

The wood stork's historic breeding range is from South Carolina and Florida to Mexico, Central America, Cuba, and Northern Argentina. Today's North American populations are increasing in South Carolina primarily due to migration from Florida as a result of decreasing habitat. SCDNR manages a wood stork monitoring program aimed at improving habitats and encouraging year-round residents as opposed to the transient populations that traditionally returned to Florida for breeding. The wood stork was

reclassified to threatened in 2014 when an average of 6,000 nesting pairs were recorded and more than 1.5 chicks per year reached fledgling age over a 3-year period (79 FR 37078; Rodgers et al. 2008). Continuing threats for the wood stork include loss of wetland habitat, water management, predation, and human disturbance.

Limited suitable foraging habitat for the wood stork occurs within and adjacent to the study area. Suitable habitat occurs along Mill Creek, Horlbeck Creek, and along the Wando River (**Appendix C**, Photographs 5, 14, and 15). A few areas contain bottomland hardwood forests with a semi-open canopy and water up to 12 inches deep. These areas are suitable for foraging but not breeding, and no roosts or rookeries were observed during the survey or are known to occur within the study area. Therefore, foraging wood storks could be temporarily displaced by construction, but the Project is unlikely to adversely affect the species.

4.0 Migratory Birds

4.1 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) (16 USC § 703-711) makes it is unlawful to pursue, hunt, kill, capture, possess, or otherwise attempt to take protected migratory birds, their parts, nests, or eggs. The migratory bird species protected by the MBTA are listed in 50 CFR 10.13. The USFWS have statutory authority and responsibility for enforcing the MBTA (16 U.S.C. 703–712). Any activity which results in the take of migratory birds is prohibited unless authorized by the USFWS.

Notable birds with the potential to occur within the study area are listed in **Table 4-1** and which are protected under the MBTA or listed as a USFWS Bird of Conservation Concern (USFWS 2022). Publicly available information, including the SCDNR bald eagle nest tracking system (SCDNR 2022b) and the eBird website (eBird 2022) was used to determine if the migratory birds listed in **Table 4-1** have been observed within or near the study area within the past five years.

Table 4-1. Protected Migratory Birds with a Potential to Occur within the Study Area

Common Name	Scientific Name	Breeding Season[1]	Observed in or near Project Area? Yes [Y], No [N]
American Kestrel	*Falco sparverius paulus*	Apr 1 – Aug 31	Y
American Oystercatcher	*Haematopus palliatus*	April 15 – August 31	Y
Bachman's Sparrow	*Aimophila aestivalis*	May 1 – September 30	Y
Bald Eagle	*Haliaeetus leucocephalus*	September 1 – July 31	Y
Black Skimmer	*Rynchops niger*	May 20 – September 15	Y
Gull-billed Tern	*Gelochelidon nilotica*	May 1 – July 31	Y
King Rail	*Rallus elegans*	May 1 – September 5	N
Prairie Warbler	*Dendroica discolor*	May 1 – July 31	Y
Prothonotary Warbler	*Protonotaria citrea*	April 1 – July 31	Y
Red-headed Woodpecker	*Melanerpes erythrocephalus*	May 10 – September 10	N
Ruddy Turnstone	*Arenaria interpres morinella*	Breeds elsewhere	Y

Common Name	Scientific Name	Breeding Season[1]	Observed in or near Project Area? Yes [Y], No [N]
Short-billed Dowitcher	*Limnodromus griseus*	Breeds elsewhere	Y
Swallow-tailed Kite	*Elanoides forficatus*	March 10 – June 30	Y
Willet	*Tringa semipalmata*	April 20 – August 5	Y
Wilson's Plover	*Charadrius wilsonia*	April 1 – August 20	N
Wood Thrush	*Hylocichla mustelina*	May 10 – August 31	Y

[1]Breeding season is an estimate within which the bird breeds across its entire range.

4.2 Bald Eagle

Bald eagles were listed as endangered under the ESA in 1978. The species was removed in 2007 as a result of sufficient population recovery. Bald eagles are now protected under the MBTA and Bald and Golden Eagle Protection Act. Bald eagles are also state listed as threatened in South Carolina (SCDNR 2022b).

Bald eagles are year-round residents of the South Carolina coast (Cornell Lab 2019). They typically nest within about 2 miles of water bodies including rivers, lakes, impoundments, bays, and other coastal areas with abundant fish and/or waterfowl populations (Buehler 2020). Nests typically occur in large, tall trees capable of supporting four-to-six-foot-wide nests. Nesting sites are typically chosen in areas with limited disturbance. Nesting generally occurs between September and May in the southeastern states. Chicks fledge from the nest by 12 weeks but often remain in the same territory for an additional 6 weeks as they are still dependent upon adults for food (Buehler 2020).

There is no designated critical habitat for the bald eagle. A review of a bald eagle nesting site database (SCDNR 2022b) determined the nearest recorded nest is located approximately 1 mile west of the study area across the Wando River at 32.914078, -79.845417 (SC EO ID 1111). No bald eagles were observed during field surveys as occurring within the study area, but the nearby bald eagle nest is believed to be occupied in 2022. Furthermore, a large stick nest occurs near the intersection of Harpers Ferry Way and SC 41 on a transmission line tower directly adjacent to the roadway which could support raptor nesting.

Although nesting in the study area is unlikely, bald eagles are expected to hunt or scavenge within the study area and/or surrounding vicinity along the Wando River. Therefore, consideration before and during construction would be given to avoiding potential impacts on bald eagles and other raptor species.

5.0 Environmental Impacts

Several types of impacts on species could occur as a result of the proposed action, including permanent or temporary effects associated with direct or indirect impacts. Permanent effects could occur from the Project's impacts on habitat. Temporary effects are expected to be mostly limited to the Project construction phase (e.g., pile driving, turbidity), but could also be impacted after construction (e.g., lighting). Project impacts and associated effects are detailed in **Table 5-1**.

Table 5-1. Summary of Potential Effects on Federally Protected Species

Impact	Permanent Effects		Temporary Effects	
	Direct	Indirect	Direct	Indirect
Habitat Resources	Habitat reduction	No effects	Edge disturbance of suitable habitat	No effects
Harm	Injury to roosting, nesting, or foraging individuals	Displacement from LOD	No effects	Displacement from edge habitat of LOD or study area
Noise	No effects	Auditory effects (pile driving)	No effects	Behavior changes (pile driving)
Turbidity	No effects	No effects	Reduced visibility for feeding, leading to potential displacement of individuals	Increased predation risk, leading to potential displacement of individuals
Lighting	No effects	Behavior changes	No effects	No effects

5.1 Habitat Resources

Habitat resources could be affected as a result of impacts on suitable habitat (uplands and wetlands). Approximately 16.1 acres of upland forests and 3.3 acres of forested wetlands would be impacted as a result of the Project disturbances. Another 2.4 acres of estuarine emergent wetlands would be permanently impacted due to fill from construction or impacts from bridges (**Table 5-32**). Temporary impacts on habitat resources would also include vegetation removal associated with BMP installation, such as silt fencing for sediment and erosion control, not exceeding 0.1 acre. BMPs would be placed in uplands to the maximum extent practicable. Minor permanent habitat loss would occur, totaling no more than 150 square feet during the installation of 475 H-piles during the bridge installation.

Table 5-2. Acreage of Aquatic Habitat Resources in the Study Area and LOD*

Habitat Type	Study Area (acres)	Project LOD (acres)
Unconsolidated Bottom	12.6	2.9
Tidal Wetlands / Marsh	42.6	2.4
Non-Tidal Wetlands	61.6	3.2
Tidal Creek	2.8	0.2
Intertidal Non-Vegetated Flat	1.33	0.03

*Based on desktop habitat delineation and site-specific delineation of wetlands

5.2 Harm

The construction process has a low potential to cause permanent harm (mortality) or temporary harm (injury/stress) to animals within the study area. Permanent harm could include impacts related to nest disturbances or direct impacts on slow-moving species during the clearing of vegetation or other habitat disturbances. Indirect disturbances could result on species in the study area that could be forced to alter their behavior to avoid areas with Project activities.

5.3 Noise

Noise from pile driving has the potential to cause permanent or temporary impacts on species in the area. Construction noise would create impulsive or non-impulsive sounds, defined as follows:

- Impulsive sounds are transient, brief (less than 1 second), and typically consist of high peak pressure with rapid rise time and rapid decline (ANSI 1986; NIOSH 1998; ANSI 2005). Examples of impulsive sounds include air guns or impact pile drivers.
- Non-impulsive sounds can be brief or prolonged, and continuous or intermittent, but typically do not have a high peak pressure with rapid rise time (ANSI 1995; NIOSH 1998). Examples of non-impulsive activities relevant to the Project include vibratory pile drivers.

Noise levels are generally higher if impact pile driving is used as compared to vibratory hammer driving or extraction. Impact pile driving creates an impulsive sound, while vibratory hammers generate a continuous, low-level noise that is generally considered non-impulsive. For this Project, steel H-piles would be installed with impact pile hammers (**Table 5-3**), for which it is estimated that the average sound pressure level from pile installation would be 172 decibels (dB) at peak sound pressure levels (dB peak), 160 dB root-mean-squared, and 147 dB sound exposure level (CalTrans 2015). However, due to the dense emergent vegetation along Horlbeck Creek, these sound levels would attenuate significantly faster versus within open water. Furthermore, these estimates are for underwater sound measurements and therefore out-of-water sound produced during low tide would have a significantly reduced effect on aquatic species in the study area.

Bridge 1 is a 640-foot-long flat slab bridge proposed across the southern tributary of Horlbeck Creek. This bridge would require between 197,030 and 878,560 strikes for 17- by 14-inch H-pile bents. Assuming 0.5 hour per pile installation, approximately 76 hours of active pile driving would be required to install 323 piles. Bridge 2 is a 280-foot-long flat slab bridge proposed across Mill Creek near the intersection of SC 41 and Dunes West Boulevard. This bridge would require between 92,720 and 413,440 strikes for 8- by 14-inch H-pile bents. Assuming 0.5 hour per pile installation, approximately 76 hours of active pile driving would be required to install 152 piles.

Table 5-3. Project H-Pile Specifics (Strikes and Pile Numbers)

Bridge Site	Map Label	Bridge Length	Total # of Piles	Average # of Strikes / Pile	Total # of Strikes
Horlbeck Creek Tributary	Bridge 1	640 feet	323	1,665	537,795
Mill Creek	Bridge 2	280 feet	152	1,665	253,080

In-water pile driving for both bridges would be performed within the emergent estuarine wetlands and associated tidal creek. Because this wetland and associated tidal creeks are intermittently inundated, it can be assumed that about half of the time required for pile driving would occur during low tide, when the

tidal creek and adjacent wetlands do not contain water. If an aquatic species occurs in the study area during pile driving, the species has the potential for permanent auditory effects. However, temporary behavioral changes of individuals are more likely when considering the dense emergent wetlands and relatively shallow water (approximately 3 to 6 feet at high tide) associated with the high marsh that would buffer noise versus open water.

While Project noise is expected to primarily impact aquatic species, it could also affect terrestrial species. The noise associated with pile driving could result in effects on terrestrial species, including potential auditory impacts. The effects on terrestrial species are most likely to be limited to behavioral changes induced by pile driving noise and related Project disturbances.

5.4 Turbidity

Elevated turbidity levels may occur during the installation of the sheet piles or wetland filling. Turbidity can result in lower visual ability for foraging and can increase risk of predation due to reduced sight for predator avoidance. Alternatively, predation risks may also be temporarily decreased if turbidity disrupts hunting by visual predators. These effects are not expected to be significant or long-term. Appropriate BMP measures would be implemented to minimize effects of construction runoff and other sources of turbidity in surface waters with the Study area.

5.5 Lighting

The project would adhere to the roadway lighting requirements defined in the American Association of State Highway and Transportation Officials' Roadway Lighting Design Guide (AASHTO 2005). Permanent downward-facing and shielded roadway lighting would be installed intermittently along the SC 41 roadway length. Temporary lighting could also be used for night work during construction.

Project lighting has the potential to cause temporary disorientation and/or habitat aversion by terrestrial species. However, no impacts on aquatic species are expected due to the limited aquatic features and shielded lighting proposed for the Project. Therefore, while some temporary and minor effects could occur on terrestrial species, no adverse effects are expected to occur on any federal listed species as a result of Project lighting.

6.0 Effects Analysis

6.1 West Indian Manatee

6.1.1 Habitat Resources

West Indian manatee may be present in tidal creeks within the study area or the Wando River during warmer months of the year and may use the area for foraging. The estimated permanent impacts on estuarine emergent wetlands in the study area are limited to about 2.4 acres; however, given the expanse of marsh wetlands along the Wando River or otherwise near the study area, it is unlikely that this relatively minor habitat loss would result in significant effects on the West Indian manatee. Furthermore, suitable habitat for the manatee occurs only at the proposed location for Bridge 1.

6.1.2 Harm

Should the West Indian manatee occur within the study area during construction, there is a potential that Project activities could result in indirect effects and potential harm. Strikes to manatees can cause injury or mortality. However, the potential for direct impacts on manatees by accidental strikes, entrapment, or related effects on individuals is unlikely to occur because small, narrow tidal creeks have limited ability to provide suitable habitat. Indirect Project impacts (e.g., noise) are more likely than direct effects; however, the impacts from noise are not expected to result in adverse effects.

6.1.3 Noise

The hearing range for the West Indian manatee has been disputed in recent studies but is thought to be in the mid-frequency range. Therefore, West Indian manatees are included with the mid-frequency cetaceans, including dolphins, toothed whales, beaked whales, and bottlenose whales. This marine mammal group has a generalized hearing range of 150 hertz (Hz) to 160,000 Hz and a temporary threshold shift onset of 178 dB sound exposure level. Prolonged exposure to loud levels of intermittent or continuous noise above this frequency range could result in direct physical harm (i.e., auditory injury) or temporary behavioral changes (NOAA Fisheries 2018). Impact piling driving could occur in tidal waters, but sound produced from impact pulses is generally below 500 Hz or 147 dB sound exposure level (CalTrans 2015). Vibratory pile driving in water could produce low frequencies of 20 to 40 Hz, which is below the hearing range for manatees and therefore would not cause auditory damage.

Due to the unlikely presence of manatees in the study area combined with the limited in-water pile driving, manatees would not be exposed to prolonged construction noises that could result in permanent damage or other adverse effects. Furthermore, the area of tidal creeks in the study area is relatively small (2.8 acres) and would not support a sustained manatee presence due to tidal patterns. In the rare event that a manatee occurs in or near the study area, the presence of the individual(s) is expected to be rare and transient. Therefore, it is unlikely that construction sound pressure would result in adverse effects on manatees.

6.1.4 Turbidity

Like for other aquatic animals, an increase in turbidity can cause disruptions in visual ability for the West Indian manatee, which can affect foraging, predator avoidance, and movement. Manatees are expected to avoid areas of increased turbidity or degraded conditions. Turbidity would be minimized during construction by the installation and maintenance of sediment and erosion control measures (e.g., silt fences). Increases in turbidity are expected to dissipate over a matter of hours and would not permanently

degrade water quality conditions or manatees' ability to forage. Therefore, impacts involving reduced visibility would be limited and restricted to the immediate area of construction.

6.1.5 Lighting

Artificial lighting has the potential to cause disorientation of marine mammals such as the West Indian manatee and aversion to otherwise suitable habitat. SC 41 currently has limited roadway lighting, so additional downward-facing lighting would be installed during construction; however, additional lighting is not expected to impact manatees based on the limited aquatic habitat along Horlbeck Creek that could support manatee foraging within the study area.

6.2 Northern Long-Eared Bat

6.2.1 Habitat Resources

Impacts on forested areas could result in inadvertent effects on the NLEB, which relies on forest habitat for pupping and roosting. Impacts on forested habitat resources would be avoided and minimized to the extent possible; however, permanent impacts are expected to occur totaling about 16.1 acres of upland forests and 3.3 acres of forested wetlands. The Project would result in the permanent removal of about 19.4 acres of forested habitat that could support NLEB roosting. While suitable forested habitat for NLEB would be impacted by the Project, there is a relative abundance of suitable forested habitat about 2 miles north of the Project in the Francis Marion National Forest. Although suitable habitat for the NLEB occurs in the study area, no overwintering hibernacula (i.e., caves and mines) occur in the study area or would be impacted as a result of the Project. However, the suitability of roosting and pupping habitat in the study area is marginal (**Appendix C**, Photographs 8 and 10), and the Project may involve clearing during presence windows for NLEB. Therefore, the project may affect, but is not likely to adversely affect the NLEB as a result of clearing activities.

6.2.2 Harm

Should the NLEB occur within the study area during construction, there is a potential that Project activities could result in direct and indirect disturbances. Behavioral changes in response to disturbances would generally include avoidance reactions, alarm/startle responses, and other stress-related behavioral changes. Roosting or pregnant NLEBs would be especially vulnerable to adverse effects from tree clearing. NLEBs are particularly vulnerable to disturbances associated with tree clearing during the summer months (April 1 through November 15). During this time, NLEBs roost underneath bark, in cavities, or in crevices of both live trees and dead trees. Breeding NLEB typically form maternity roosting colonies in the same type of habitat during early summer. Therefore, clearing trees during the spring and summer months risks flushing more vulnerable bats from roosts or potentially the death of individuals. Field surveys for NLEB may be needed to determine their presence, which may help guide when tree clearing activities should occur.

6.2.3 Noise

Loud construction noise would occur intermittently and over relatively short timeframes. Construction-related noise could result in temporary disturbance and related behavioral changes in NLEBs. Specifically, noise from pile driving or construction vehicles could cause bats to temporarily relocate to adjacent areas of similar habitat. However, most construction noise would not be substantially louder than ongoing background noise from existing vehicle traffic along and associated with SC 41. Therefore, with

the implementation of the proper conservation measures, it is unlikely that construction noise alone would result in adverse effects on the NLEB.

6.2.4 Turbidity

Effects on water quality would be minimized throughout construction and during storm events by the installation and maintenance of control measures (e.g., silt fences). The effects on water quality would not impact the NLEB because turbidity increases would be temporary, and the species does not directly depend on a high water quality for survival.

6.2.5 Lighting

Additional downward-facing lighting would be installed during construction. The new lighting could attract insects and subsequently bats to the study area which could feed on the insect prey. However, the NLEB prefers to forage within the interior of forest versus woodland-edge habitats. Therefore, the project may affect but is not expected to be adversely impact the NLEB as a result of additional artificial lighting.

6.3 Frosted Flatwoods Salamander

6.3.1 Habitat Resources

The frosted flatwoods salamander could inhabit wetlands or adjacent pine uplands in the study area. Impacts on marsh wetlands and upland forests could indirectly impact habitat resources suitable for the salamander. Impacts on wetland habitat resources would be avoided and minimized. However, permanent impacts are expected to total about 5.6 acres of wetlands, of which about 3.2 acres are non-tidal wetlands.

The nearest known occupied habitat occurs about 2 miles north of the study area in the Francis Marion National Forest (**Appendix B-2**, SCDNR Species Report). The habitat in the study area is of marginal quality due to the lack of the preferred longleaf pine and wiregrass flatwoods and savannas (**Appendix C**). However, nearby habitat in Laurel Hill County Park could support the species. Regardless, it is unlikely that the relatively minor disturbances on marginal habitat would result in adverse effects on the species' local viability.

6.3.2 Harm

In the event that the frosted flatwoods salamander occurs within the study area during construction, there is a potential that Project activities could result in direct and indirect disturbances. Due to the species' restricted home range and slow mobility, disturbances are expected to cause behavioral changes of individuals resulting in shelter-in-place or burrowing responses. Because the species has a limited ability to evade disturbances, individuals are vulnerable to direct impacts during soil disturbance and vegetation removal. However, because the suitability of habitat in the study area is marginal, salamanders are unlikely to occur. Furthermore, the Project is being designed to minimize or avoid disturbances on freshwater wetlands (**Appendix A**, Figure A-2, and **Appendix C**, Photographs 10 and 11). The proposed action is therefore unlikely to result in adverse effects or indirect harm on the flatwoods salamander.

6.3.3 Noise

Project noise would result from ongoing construction and over short timeframes (i.e., pile driving). Construction-related noise could result in temporary disturbance and behavioral changes in frosted flatwoods salamanders, including shelter responses in adults. Louder noises, such as those produced

from pile driving, could result in temporary disorientation or potential permanent effects on salamanders should individuals be exposed. However, pile driving would be restricted to the tidal wetlands at the two proposed bridge locations. These locations do not contain suitable habitat for the salamander; therefore, the frosted flatwoods salamander is not expected to occur near loud construction noises and would not be adversely impacted by Project noise.

6.3.4 Turbidity

A temporary increase in turbidity is not expected to result in disruptions in the frosted flatwoods salamander's ability to forage, breed, or otherwise inhabit aquatic environments in the study area. This is because salamanders do not rely heavily on their eyesight to detect prey. Furthermore, the flatwoods salamander is primarily nocturnal and emerges from subterranean burrows only to feed during periods of heavy rains when turbidity is naturally higher (Nickle 2017). Project effects on turbidity would be minimized during construction by the installation and maintenance of control measures (e.g., silt fences). For these reasons, increased turbidity is not expected to result in adverse effects on the flatwoods salamander.

6.3.5 Lighting

Artificial lighting has the potential to cause disorientation or aversion to otherwise suitable habitat. Additional downward-facing lighting would be installed during construction. The new lighting would be shielded and thus would only illuminate the roadway surface and narrow sections of the maintained upland roadside or proposed sidewalks. No suitable aquatic habitat for the frosted flatwoods salamander would be affected from artificial lighting; therefore, no adverse effects on the species are anticipated to occur as a result of the new lighting.

6.4 Eastern Black Rail

6.4.1 Habitat Resources

Tidal marshes and freshwater wetlands occur in the study area that could provide marginal-quality habitat for the eastern black rail. The Project would permanently impact a total of about 5.6 acres of wetlands, of which 2.4 acres are tidal marsh (mostly herbaceous) and 3.2 acres are freshwater non-tidal wetlands (forested and herbaceous). More than half of the aquatic features in the study area are forested freshwater wetlands, which represent low or unsuitable habitat for black rails. Suitable tidal marsh habitat in the study area occurs along Horlbeck Creek, Mill Creek, and potentially the Wando River (**Appendix C**, Photographs 5, 6, 13, and 14). However, the tidal marshes along Horlbeck Creek and Mill Creek are relatively narrow and border either residential development or forested uplands, which are unsuitable for black rails. Suitable habitat in the study area is expected to be primarily restricted to the transitional areas between the high marsh habitat and the adjacent uplands. Only during low tide would the full tidal marsh in the study area be accessible for foraging. Due to the tidal inundation depth change (several feet) and limited suitable upland habitat, the tidal marshes in the study area are unlikely to support nesting.

The eastern black rail is not expected to routinely occupy the study area due to the limited availability of suitable high marsh habitat, restricted and low-quality upland habitat, and a relative abundance of higher quality salt marsh habitat in the surrounding area. Therefore, the relatively limited impacts from the proposed action on the marginal-quality habitat in the study area are not expected to result in adverse effects on the eastern black rail.

6.4.2 Harm

Should the eastern black rail occur within the study area during construction, there is a potential that Project activities could result in indirect disturbances and behavioral changes. Behavioral changes in response to disturbances could include alarm/startle responses, temporary displacement, interrupted feeding patterns, and other stress-related behavioral changes.

In general, adult black rails could modify their behavior to avoid areas with Project activities. However, nests are particularly vulnerable to disturbances due to the immobility and dependence of young and eggs on nesting sites. Black rail nesting habitat in the study area would be tightly restricted to the narrow high marsh transitional areas adjacent to uplands. The uplands in the study area consist primarily of residential development or forested uplands, neither of which represent suitable upland habitat. Black rails are therefore unlikely to nest within the study area due to restricted wetland habitat and a lack of suitable uplands. As an added precaution, preconstruction surveys for nesting birds would be performed during the nesting season ahead of construction activities. A construction avoidance buffer would be established around confirmed active nests to avoid impacts on nesting success. Therefore, other than the potential for temporary displacement of foraging individuals, the eastern black rail is not expected to be adversely impacted or otherwise harmed.

6.4.3 Noise

Project noise would result from ongoing construction and over short timeframes (i.e., pile driving). Construction-related noise could result in temporary disturbance and related behavioral changes in foraging eastern black rails. Noise from pile driving or loud construction equipment could result in black rails being temporarily displaced into adjacent habitat of equal or higher quality. However, most construction noise would not be substantially louder than ongoing background noise from existing vehicle traffic along and associated with SC 41. Therefore, construction noise alone is not expected to result in adverse effects on the eastern black rail.

6.4.4 Turbidity

An increase in turbidity and water quality could result in minor disruptions in the eastern black rail's ability to forage in aquatic environments. However, the effects on water quality would be minimized throughout construction and during storm events by the installation and maintenance of control measures (e.g., silt fences). Increased turbidity is expected to be minor, localized, and temporary; therefore, turbidity may affect, but is not likely to adversely affect, the eastern black rail.

6.4.5 Lighting

Artificial lighting has the potential to cause aversion to otherwise suitable habitat. Additional overhead roadway lighting is proposed for installation along SC 41. This lighting would be shielded and thus would illuminate the roadway surface and narrow sections of the road shoulder and sidewalk(s). Habitat directly adjacent to the proposed bridges or otherwise near wetlands could be artificially illuminated by the temporary lighting during construction or permanent overhead roadway lighting. Regardless, the effects from artificial lighting are expected to be limited or negligible because the lighting would not artificially illuminate habitat. Therefore, the impacts from artificial lighting are expected to have no effects on the eastern black rail.

6.5 Red-Cockaded Woodpecker

6.5.1 Habitat Resources

Impacts on forested areas could result in indirect effects on the RCW, which relies on forest habitat for nesting and foraging. Impacts on forested habitat would be avoided and minimized to the extent possible; however, permanent impacts would occur on approximately 19.4 acres of forested areas, consisting of 16.1 acres of upland forests and 3.3 acres of forested wetlands. The majority of the uplands in the study area are dominated by pine stands averaging about 30 years of age. Due to the presence of young pine forests, the study area could support RCW foraging but would not support nesting due to the lack of mature pine forests (**Appendix C**, Photographs 8–11). While some forested habitat would be impacted by the Project, there is a relative abundance of habitat of equal or higher quality located about 2 miles north of the Project within the Francis Marion National Forest.

The RCW is not expected to routinely occupy the study area due to the marginal quality of foraging habitat, lack of nesting habitat, and a relative abundance of higher quality habitat for both foraging and nesting nearby. Therefore, the impacts from the proposed action on marginal-quality suitable habitat is not expected to result in adverse effects on habitat usage patterns or reduction in species' viability.

6.5.2 Harm

Should RCW occur within the study area during construction, there is a potential that Project activities could result in indirect disturbances and behavioral changes. Behavioral changes in response to disturbances would include avoidance reactions, alarm/startle responses, and other stress-related behavioral changes. Disturbed foraging individuals could be temporarily displaced and avoid active construction areas, thereby minimizing the potential for direct effects.

RCW individuals would likely modify their behavior to avoid areas with active construction or temporary disturbances. Active nests are particularly vulnerable to disturbances due to the immobility and dependence of young and eggs on nesting sites. However, suitable nesting habitat for the RCW does not occur in the study area. Therefore, while the RCW could forage in the study area, the species is not expected to nest in the area due to a lack of the required mature pine forests. As an added precaution, preconstruction surveys for nesting birds would be performed ahead of Project activities, particularly vegetation removal, to minimize the potential for effects on nesting birds. A construction avoidance buffer would be established around confirmed active nests to avoid impacts on nesting success. Therefore, other than the potential for temporary displacement of foraging individuals, the RCW is not expected to be adversely impacted or otherwise harmed.

6.5.3 Noise

Project noise would result from ongoing construction and over short timeframes (i.e., pile driving). Construction-related noise could result in temporary disturbance and related behavioral changes in foraging RCW. Noise from pile driving or construction equipment could result in RCW individuals being temporarily displaced into adjacent habitat of equal or higher quality. However, most construction noise would not be substantially louder than ongoing background noise from existing vehicle traffic along and associated with SC 41. Therefore, construction noise alone is not expected to result in adverse effects on the RCW.

6.5.4 Turbidity

An increase in turbidity is not expected to result in disruptions in the RCW's ability to forage in aquatic environments. This is because the diet of RCW primarily consists of insects with a minor component from various plant seeds and fruits (Jackson 2020). Due to the RCW diet and upland foraging habitat, effects on turbidity are not expected to impact the species.

6.5.5 Lighting

Additional overhead roadway lighting is proposed for Project installation. This lighting would be shielded and thus would illuminate the roadway surface and narrow sections of the road shoulder and sidewalk(s). Regardless, the effects from temporary lighting during construction or permanent roadway lighting are not expected to result in effects on the RCW because the species roosts in cavities at night.

6.6 Wood Stork

6.6.1 Habitat Resources

Tidal marshes and freshwater wetlands occur in the study area that could support foraging and potentially nesting for the wood stork. While effects would be minimized, the Project would permanently impact a total of about 5.6 acres of wetlands, of which 2.4 acres are brackish tidal marsh (mostly herbaceous) and 3.2 acres are freshwater non-tidal wetlands (forested and herbaceous). The majority of the aquatic features in the study area are forested wetlands, which are typically less preferred for foraging than emergent wetlands. Furthermore, the forested wetlands in the study area have a dense understory that is not ideal for wood stork foraging and is unlikely to contain their preferred fish prey (**Appendix C**, Photographs 1–4). However, limited tidal creeks occur within the study area that lead into Horlbeck Creek (**Appendix C**, Photographs 5, 6, 13, and 14). These tidal creeks represent the most suitable foraging habitat in the study area.

While limited suitable wetland habitat and tidal creeks occur in the study area, there is an abundance of foraging habitat along the length of the Wando River and other nearby rivers that flow into the Charleston Harbor. Due to the relative abundance of wetland habitat along the Wando River and nearby coastline, the impacts on suitable habitat from the proposed action are comparatively minor and therefore may affect but are not expected to result in adverse effects on the wood stork.

6.6.2 Harm

Should the wood stork occur within the study area during construction, there is a potential that Project activities could result in indirect disturbances and behavioral changes. Behavioral changes in response to disturbances could include alarm/startle responses, temporary displacement, interrupted feeding patterns, and other stress-related behavioral changes.

Storks could modify their foraging behavior to avoid areas with Project activities. However, stork nests are particularly vulnerable to disturbances due to the immobility and dependence of young and eggs on nesting sites. Furthermore, wood storks are colonial nesters that prefer trees surrounded by water, such as in cypress swamps, shallow creeks, and impoundments. Disturbance or encroachment on rookery nest sites could risk impacting multiple nests. No rookery nests sites were detected during the Project survey or are known to occur within the study area.

The wood stork could forage but is not expected to nest in the study area due to a lack of detected or historical nesting rookeries in the study area. Therefore, other than the potential for temporary

displacement of foraging individuals, the wood stork is not expected to be adversely impacted or otherwise harmed.

6.6.3 Noise

Project noise would result from ongoing construction and over short timeframes (i.e., pile driving). Construction-related noise could result in temporary disturbance and related behavioral changes in foraging wood storks. Noise from pile driving or loud construction equipment could cause birds to temporarily relocate to nearby areas with suitable habitat. However, most construction noise would not be substantially louder than ongoing background noise from existing vehicle traffic along and associated with SC 41. Therefore, construction noise may affect but is not likely to adversely affect the wood stork.

6.6.4 Turbidity

An increase in turbidity is not expected to result in disruptions in the wood stork's foraging success. This is because wood storks are primarily tactile feeders that submerge their bills and grope for fish and other food items. Effects on water quality would be minimized throughout construction and during storm events by the installation and maintenance of control measures (e.g., silt fences). Therefore, any minor and temporary increased turbidity is expected to have no effect on the wood stork.

6.6.5 Lighting

Additional overhead roadway lighting is proposed for Project installation. This lighting would be shielded and thus would illuminate the roadway surface and narrow sections of the road shoulder and sidewalk(s). Habitat directly adjacent to the proposed bridges or otherwise near wetlands could be indirectly and partially illuminated by the temporary lighting during construction or permanent overhead roadway lighting. Because wood storks often leave the roost at night to catch fish and other prey during nocturnal low tides (Carroll 2002), there is a chance that artificial lighting could result in aversion of otherwise suitable habitat. Alternatively, artificial lighting of habitat could attract prey and potentially wood storks. Regardless, while artificial lighting may affect wood stork behavior, the effects are not expected to negatively impact the wood stork directly or indirectly. Therefore, the impacts from artificial lighting may affect but would not adversely affect the wood stork.

7.0 Conservation Measures

7.1 West Indian Manatee

If required, in-water siltation barriers would be constructed from materials in which manatees cannot become entangled. Barriers should be properly secured and monitored for manatee entrapment or impediment. Any in-water lines such as rope, chain, or cable must be stiff, taut, and non-looping. Flexible in-water lines, such as nylon rope or those materials with the ability to loop and tangle, must be enclosed in plastic or rubber sleeve/tube to add rigidity. Where appropriate, in-water wires and cable should be fitted with plastic sleeves from the surface to the bottom to prevent manatees from scraping. Additional measures and conditions that would be followed are detailed in the Standard Manatee Conditions for In-Water Work guidelines (USFWS 2011).

7.2 Birds

Impacts on marsh wetland habitat would be avoided and minimized to the maximum extent practicable. The majority of construction would be performed within or from uplands areas. However, minor but unavoidable impacts are anticipated to occur within wetlands that could serve as habitat for the eastern black rail or wood stork. Forested uplands that could provide foraging habitat for the RCW would also be removed as a result of the Project.

Impacts on bird species would be minimized by conducting vegetation clearing activities outside of the prime nesting season (April 1 through September 1) for most bird species. Should vegetation disturbances occur during the nesting season, pre-construction nesting survey(s) would be performed ahead of Project activities involving the clearing of vegetation or wetland disturbances to identify and mitigate for effects on nesting birds.

The project contractor(s) would comply with the Migratory Bird Treaty Act of 1918, USFWS's Nationwide Standard Conservation Measures (USFWS 2015), and USFWS's National Bald Eagle Management Guidelines (USFWS 2007) with regard to avoiding impacts on migratory birds and the destruction of active nests. General guidelines for the protection of birds and their habitats include personnel education regarding individual birds and/or nest identification and observation; solid waste handling and storage; incidental take; habitat loss minimization; implementation of standard sediment and erosion control measures; limitation of lighting of adjacent habitats; and minimization of noise (USFWS 2015). If a nest is observed during construction that was not discovered during the field investigations, the contractor will cease work and will contact SCDNR to determine whether the nest is active and identify appropriate impact avoidance or mitigation measures.

7.3 General Best Management Practices

In addition to conservation measures for birds, the contractor would implement the following BMPs.

- Bridge construction access will occur from upland areas.
- Standard sediment and erosion control practices would be implemented, including, but not limited to, the following:
    - Temporary impacts on aquatic features will be minimized for BMP control structures installation

- No permanent bank erosion or decreased stabilization would occur
- To the maximum extent practicable, the Project will be implemented in stages of development so that only areas that are in active construction are exposed.
- All exposed soils areas would have good cover of either temporary or permanent vegetation (using native seed mixtures), or bioengineering material.
- Grading should be completed as soon as possible following commencement
- Runoff would be minimized and retained on-site using sediment and erosion control BMPs
- Appropriate sediment and erosion controls measures would be maintained in effective operating condition throughout construction and reclamation

- Raw or live concrete may not come into contact with wetlands or open water until cured.
- Disturbances on tidal marsh would be conducted during or near low tide to the extent possible.
- Clearing of trees would be conducted outside of the prime nesting season and when NLEBs are not expected to occur in the area (i.e., during winter from November 15 to March 31).
- Use of riprap should be minimized, and only clean riprap should be used if necessary.
- All steps would be taken to prevent pollutants from entering waterways or wetlands.
- No mechanized equipment would operate in wetlands unless clearly identified and authorized.
- “Soft-starts” should be used while pile driving to deter aquatic animals from construction areas.

8.0 Effect Determinations

The review of species lists such as the USFWS IPaC report, site assessment results, and species' habitat requirements suggests there is potential for the presence of up to six federally protected species within or near the study area.

For most of the protected species that may occur in the study area during Project activities, the anticipated effects are expected to be limited to temporary displacement of a few individuals and/or minimal impacts on habitat. This is because most of the species with potential habitat are mobile enough to temporarily avoid areas with Project activities or disperse into nearby habitat of equal or higher quality. Pregnant NLEB and their offspring may have reduced mobility during pupping season and measures may need to be taken to identify the presence of maternal roosting trees.

Recently updated SCDNR guidance for avoiding impacts to NLEB suggests avoiding tree clearing from May 1st – June 30th and from January 1st – February 15th to reduce habitat disturbance during pupping season and hibernation period respectively. The USFWS recognizes that NLEB may be found in these areas year round and that tree clearing windows may not completely avoid impacts. Due to the recent change in status of NLEB from "threatened" to "endangered," the updated guidance was not considered during preliminary planning and tree clearing for the project is likely to occur outside the SCDNR recommended windows.

Although no federally listed species were observed in the study area during site investigations, acoustic or other surveying methods may be needed to determine the presence of NLEB due to the challenging nature of visually observing the species in the field. A strategic impact minimization approach during construction along with clearing restrictions may be implemented to minimize effects on species to the maximum extent practical. According to the USFWS IPaC NLEB Range wide Determination Key, the Project **may affect, but is not likely to adversely affect** the NLEB (Appendix D)**.** The Project also **may affect, but is not likely to adversely affect** five other federally listed species (**Table 8-1)**.

Table 8-1. Effect Determinations

Species Name	Federal ESA Status	Justification	Effects Determination
PLANTS			
American chaffseed *Schwalbea americana*	Endangered	Required habitat conditions are not found in the study area, and/or a focused survey did not identify individuals within potentially suitable habitat. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Canby's dropwort *Oxypolis canbyi*	Endangered		No Effect
Pondberry *Lindera melissifolia*	Endangered		No Effect
INSECTS			
Monarch butterfly *Danaus plexippus*	Candidate	No suitable breeding habitat present in the study area	No Effect
MAMMALS			
West Indian manatee *Trichechus manatus*	Threatened	This is a migratory species with limited potential for presence in the study area. In-water construction noise and related work may cause behavioral disturbances.	NLAA

Species Name	Federal ESA Status	Justification	Effects Determination
Northern long-eared bat *Myotis septentrionalis*	Threatened	Suitable habitat is present in the study area and tree removal may occur during the spring and summer, potentially causing disturbances to habitat.	NLAA
AMPHIBIANS			
Frosted flatwoods salamander *Ambystoma cingulatum*	Threatened	Permanent impacts on marginal-quality habitat would occur.	NLAA
REPTILES			
Green sea turtle *Chelonia mydas*	Threatened	The study area does not contain sea turtle nesting habitat. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Kemp's Ridley sea turtle *Lepidochelys kempii*	Endangered		No Effect
Leatherback sea turtle *Dermochelys coriacea*	Endangered	The study area does not contain sea turtle nesting habitat. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Loggerhead sea turtle *Caretta caretta*	Threatened		No Effect
BIRDS			
Bachman's warbler *Vermivora bachmanii*	Endangered	No suitable habitat is found in the study area, and this species has been proposed for delisting from the ESA due to likely extinction. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Eastern black rail *Laterallus jamaicensis*	Threatened	The study area contains habitat for foraging and/or nesting. Noise may result in avoidance behavior and temporary displacement.	NLAA
Piping plover *Charadrius melodus*	Threatened	No suitable habitat is found in the study area. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Red knot *Calidris canutus rufa*	Threatened	No suitable habitat is found in the study area. Biological assessment is not required for species that cannot be present in the proposed study area.	No Effect
Red-cockaded woodpecker *Picoides borealis*	Endangered	The study area contains habitat for foraging. Noise may result in avoidance behavior and temporary displacement.	NLAA
Wood stork *Mycteria americana*	Threatened	The study area contains habitat for foraging and/or nesting. Noise may result in avoidance behavior and temporary displacement.	NLAA

NLAA = May affect, not likely to adversely affect

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Appendix A

- **Detailed Project Figures**

Figure A-1. Potential Habitat for Threatened and Endangered Species, Preferred Alternative

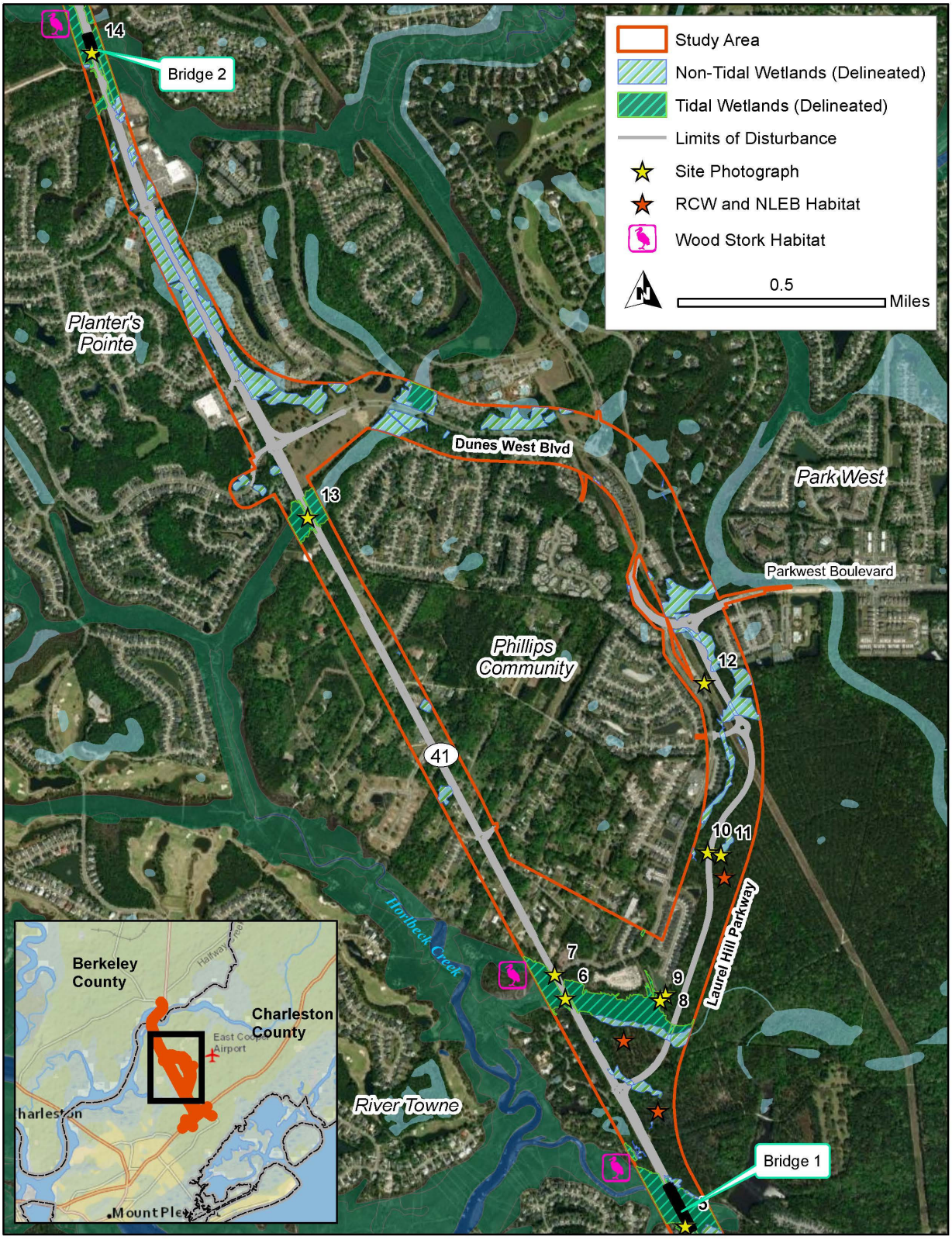

Figure A-2. Potential Habitat for Threatened and Endangered Species, Preferred Alternative

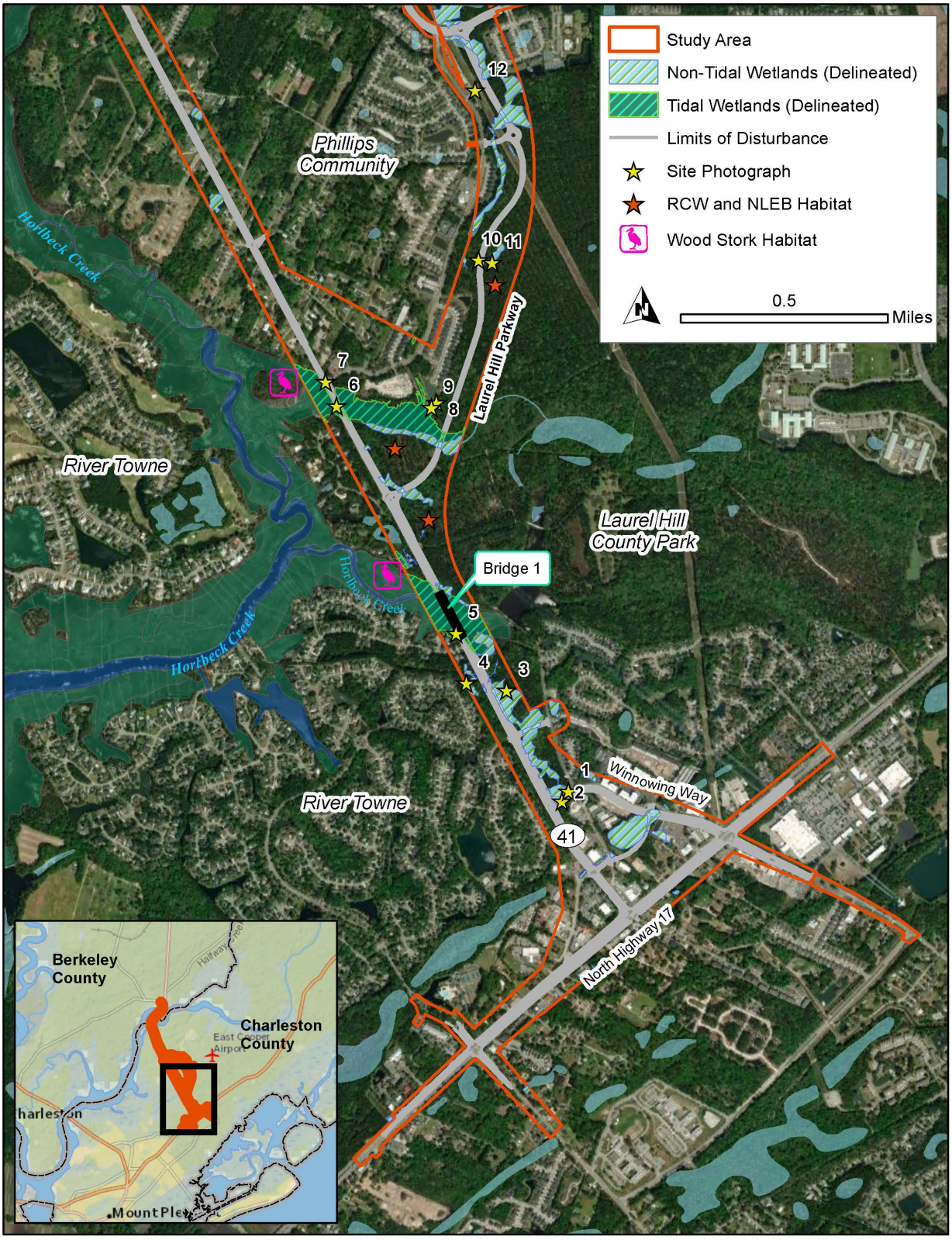

Figure A-3. Potential Habitat for Threatened and Endangered Species, Preferred Alternative

HIGHWAY 41 CORRIDOR IMPROVEMENTS

Appendix B

- **B-1 -- USFWS Information for Planning and Consultation Report**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Carolina Ecological Services
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
Phone: (843) 727-4707 Fax: (843) 727-4218
http://www.fws.gov/charleston/

In Reply Refer To:
Project Code: 2022-0028747
Project Name: SC Highway 41 Corridor Improvements Project

April 06, 2022

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.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Marine Mammals
- 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:

South Carolina Ecological Services
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
(843) 727-4707

Project Summary

Project Code: 2022-0028747
Event Code: None
Project Name: SC Highway 41 Corridor Improvements Project
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The proposed project is to reduce traffic congestion within the SC 41 corridor to accommodate future traffic projections. The secondary purposes of the proposed project are to enhance safety throughout the corridor, improve transportation system and community connections, and provide bicycle and pedestrian accommodations, while minimizing community and environmental impacts. Charleston County proposes to improve SC Highway 41 (SC 41) for a total of approximately 5.6 miles from US Highway 17 (US 17) across the Wando River Bridge to Clements Ferry Road, located in Berkeley and Charleston Counties, South Carolina. The proposed project also includes improvements to the intersection of SC 41 and US 17, a new tie-in road between SC 41 and Winnowing Way, and 1.3 mile new location roadway, Laurel Hill Parkway, between SC 41 and Park West Boulevard.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.892658850000004,-79.80272606953667,14z

Counties: Berkeley and Charleston counties, South Carolina

Endangered Species Act Species

There is a total of 17 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 Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. The location of the critical habitat is not available. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

Birds

NAME	STATUS
Bachman's Warbler (=wood) *Vermivora bachmanii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3232	Endangered
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover *Charadrius melodus* 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 *Calidris canutus rufa* 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
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: North Atlantic DPS 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/6199	Threatened
Kemp's Ridley Sea Turtle *Lepidochelys kempii* 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/5523	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* 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/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS 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/1110	Threatened

Amphibians

NAME	STATUS
Frosted Flatwoods Salamander *Ambystoma cingulatum* 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/4981	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
American Chaffseed *Schwalbea americana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1286	Endangered
Canby's Dropwort *Oxypolis canbyi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7738	Endangered
Pondberry *Lindera melissifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1279	Endangered

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 Act[1] and the Bald and Golden Eagle Protection Act[2].

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 Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
American Oystercatcher *Haematopus palliatus* 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

NAME	BREEDING SEASON
Bachman's Sparrow *Aimophila aestivalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6177	Breeds May 1 to Sep 30
Bald Eagle *Haliaeetus leucocephalus* 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/1626	Breeds Sep 1 to Jul 31
Black Skimmer *Rynchops niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Gull-billed Tern *Gelochelidon nilotica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* 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
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30

NAME	BREEDING SEASON
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wilson's Plover *Charadrius wilsonia* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Aug 20
Wood Thrush *Hylocichla mustelina* 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.

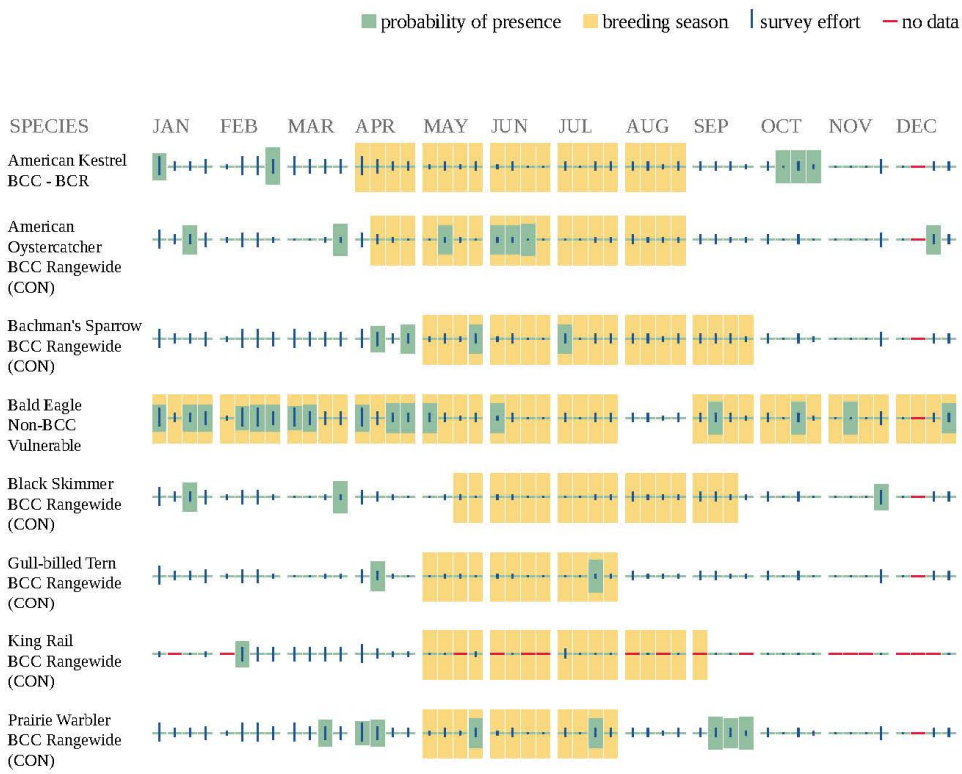
Breeding Season (■)

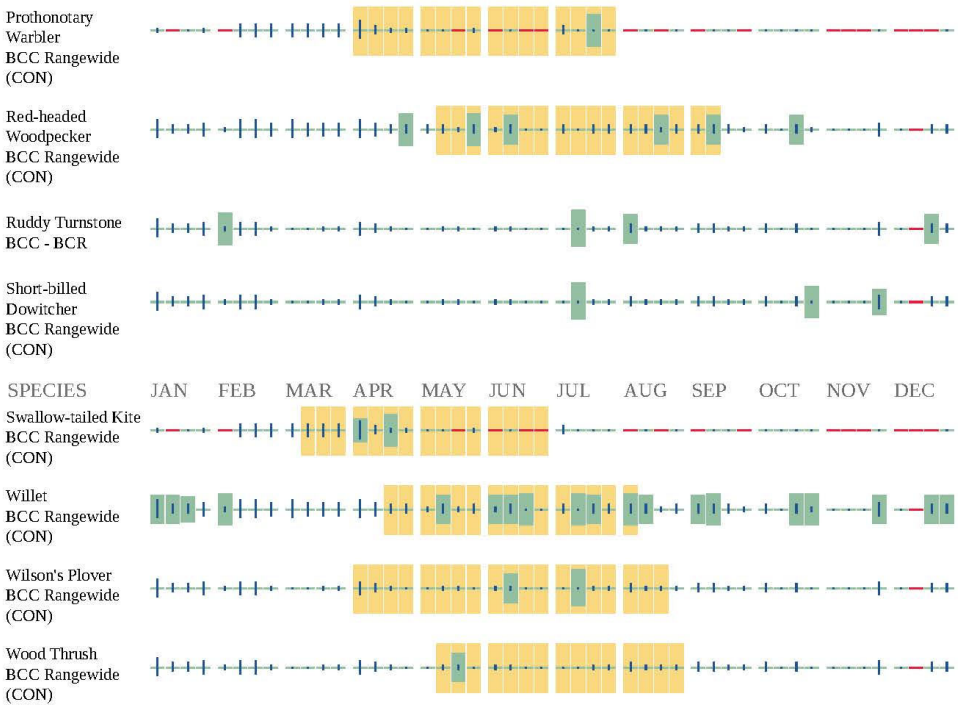
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.





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 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.

Marine Mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. 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.

NAME

West Indian Manatee *Trichechus manatus*
Species profile: https://ecos.fws.gov/ecp/species/4469

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 OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPaC User Contact Information

Agency:	Army Corps of Engineers
Name:	Andrew Phillips
Address:	4400 Leeds Avenue
Address Line 2:	Suite 450
City:	North Charleston
State:	SC
Zip:	29405
Email	andrew.phillips@hdrinc.com
Phone:	7192728816

Appendix B

- **B-2 -- SCDNR Species Report**

South Carolina Department of

Natural Resources

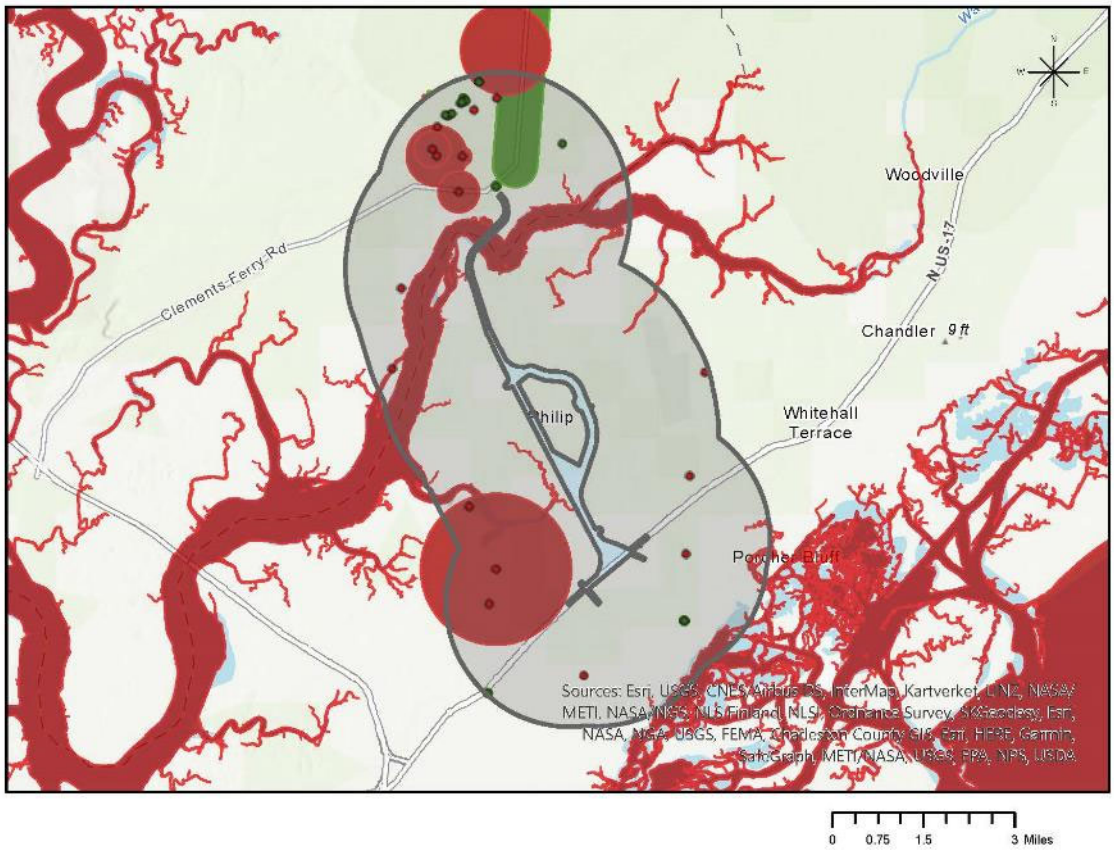
PO Box 167
Columbia, SC 29202
(803) 734-1396
speciesreview@dnr.sc.gov

Robert H. Boyles, Jr.
Director
Emily C. Cope
Deputy Director for
Wildlife and Freshwater Fisheries

Requested on Saturday, January 8, 2022 by *Andrew Phillips*.

Re: Request for Threatened and Endangered Species Consultation
Andrew Phillips - SC Highway 41 Corridor Improvements Project
Road
Charleston County-Berkeley County County, South Carolina

The South Carolina Department of Natural Resources (SCDNR) has received your request for threatened and endangered species consultation of the above named project in Charleston County-Berkeley County County, South Carolina. The following map depicts the project area and a 2 mile buffer surrounding:



South Carolina Department of

Natural Resources

Robert H. Boyles, Jr.
Director
Emily C. Cope
Deputy Director for
Wildlife and Freshwater Fisheries

This report includes the following items:
A - A report for species which intersect the project area
B - A report for species which intersect the buffer around the project area
C - A list of best management practices relevant to species near to or within the project area
D - A list of best management practices relevant to the chosen project type
E - Instructions to submit new species observation records to the SC Natural Heritage Program

Please be advised:

The contents of this report, including all tables, maps, recommendations, and various other text, are produced as a direct result of the information a user provides at the time of submission. The SCDNR assumes that all information submitted by the user represents the project scope as proposed, and recommends that additional reports be requested should the scope deviate from how the project was initially represented to the SCDNR.

The technical comments outlined in this report are submitted to speak to the general impacts of the activities as described through inquiry by parties outside the South Carolina Department of Natural Resources. These technical comments are submitted as guidance to be considered and are not submitted as final agency comments that might be related to any unspecified local, state or federal permit, certification or license applications that may be needed by any applicant or their contractors, consultants or agents presently under review or not yet made available for public review. In accordance with its policy 600.01, Comments on Projects Under Department Review, the South Carolina Department of Natural Resources, reserves the right to comment on any permit, certification or license application that may be published by any regulatory agency which may incorporate, directly or by reference, these technical comments.

Interested parties are to understand that SCDNR may provide a final agency position to regulatory agencies if any local, state or federal permit, certification or license applications may be needed by any applicant or their contractors, consultants or agents. For further information regarding comments and input from SCDNR on your project, please contact our Office of Environmental Programs by emailing environmental@dnr.sc.gov or by visiting www.dnr.sc.gov/environmental. Pursuant to Section 7 of the Endangered Species Act, requests for formal letters of concurrence with regards to federally listed species should be directed to the USFWS.

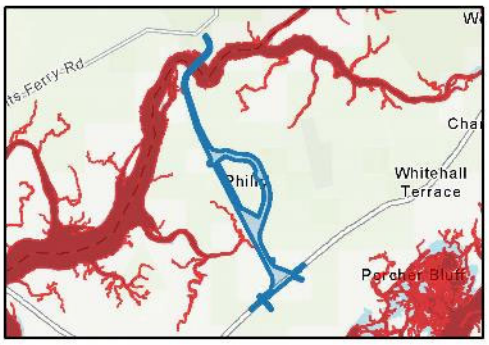
Should you have any questions or need more information, please do not hesitate to contact our office by email at speciesreview@dnr.sc.gov or by phone at 803-734-1396.

Sincerely,

Joseph Lemeris, Jr.
Heritage Trust Program
SC Department of Natural Resources

A. Project Area - Species Report

There are 2 tracked species records found within the project foot print. The following table outlines occurrences found within the project footprint (if any), sorted by listing status and species name. Please keep in mind that this information is derived from existing databases and do not assume that it is complete. Areas not yet inventoried may contain significant species or communities. You can find more information about global and state rank status definitions by visiting Natureserve's web page. Please note that certain sensitive species found on site may be listed in this table but are not represented on the map. Please contact speciesreview@dnr.sc.gov should you have further questions related to sensitive species found within the project area

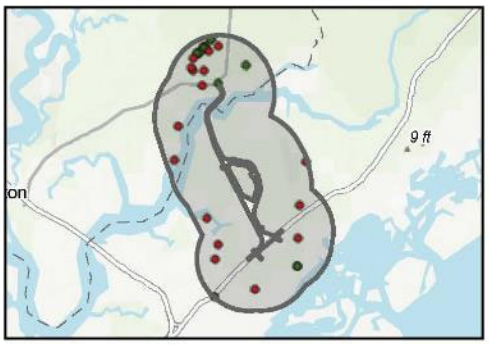


Map Credits: Sources: Esri, USGS, CNES/Airbus DS, InterMap, Kartverket, LINZ, NASA/METI, NASA/NGS, NLS Finland, NLSI, Ordnance Survey, SK Geodesy, Esri, NASA, NGA, USGS, Charleston County GIS, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

Scientific Name	Common Name	G Rank	S Rank	Fed. Status	State Status	SWAP Priority	Last Obs. Date
Lithobates capito	Carolina Gopher Frog	G2G3	S1	ARS: At-Risk Species	SE: State Endangered	Highest	1951-04-13
Trichechus manatus	West Indian Manatee	G2G3	S1S2	LT: Federally Threatened	SE: State Endangered	Highest	2020

B. Buffer Area - Species Report (1 of 2)

The following table outlines rare, threatened or endangered species found within 2 miles of the project footprint, arranged in order of protection status and species name. Please keep in mind that this information is derived from existing databases and do not assume that it is complete. Areas not yet inventoried may contain significant species or communities. You can find more information about global and state rank status definitions by visiting Natureserve's web page. Please note that certain sensitive species found within the buffer area may be listed in this table but are not represented on the map.

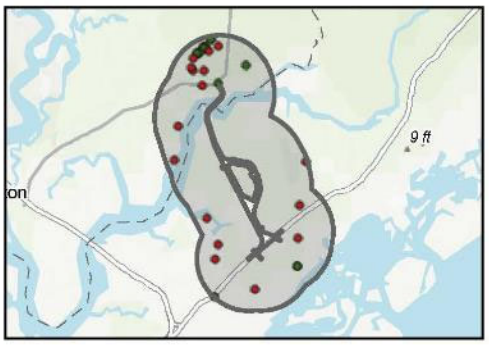


Map Credits: Sources: Esri, USGS, CNES/Airbus DS, InterMap, Kartverket, LINZ, NASA/METI, NASA/NGS, NLS Finland, NLSI, Ordnance Survey, SKGeodesy, Charleston County GIS, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Esri, NASA, NGA, USGS

Scientific Name	Common Name	G Rank	S Rank	Fed. Status	State Status
Lithobates capito	Carolina Gopher Frog	G2G3	S1	ARS: At-Risk Species	SE: State Endangered
Lithobates capito	Carolina Gopher Frog	G2G3	S1	ARS: At-Risk Species	SE: State Endangered
Clemmys guttata	Spotted Turtle	G5	S3	ARS: At-Risk Species	ST: State Threatened
Clemmys guttata	Spotted Turtle	G5	S3	ARS: At-Risk Species	ST: State Threatened
Clemmys guttata	Spotted Turtle	G5	S3	ARS: At-Risk Species	ST: State Threatened
Haliaeetus leucocephalus	Bald Eagle	G5	S3B,S3N	Bald & Golden Eagle Protection Act	ST: State Threatened
Haliaeetus leucocephalus	Bald Eagle	G5	S3B,S3N	Bald & Golden Eagle Protection Act	ST: State Threatened
Haliaeetus leucocephalus	Bald Eagle	G5	S3B,S3N	Bald & Golden Eagle Protection Act	ST: State Threatened
Haliaeetus leucocephalus	Bald Eagle	G5	S3B,S3N	Bald & Golden Eagle Protection Act	ST: State Threatened
Lindera melissifolia	Southern Spicebush, Pondberry	G3	S2	LE: Federally Endangered	Not Applicable
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	LE: Federally Endangered	SE: State Endangered
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	LE: Federally Endangered	SE: State Endangered
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	LE: Federally Endangered	SE: State Endangered
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	LE: Federally Endangered	SE: State Endangered
Ambystoma cingulatum	Frosted Flatwoods Salamander	G2	S1	LT: Federally Threatened	SE: State Endangered
Ambystoma cingulatum	Frosted Flatwoods Salamander	G2	S1	LT: Federally Threatened	SE: State Endangered
Ambystoma cingulatum	Frosted Flatwoods Salamander	G2	S1	LT: Federally Threatened	SE: State Endangered
Mycteria americana	Wood Stork	G4	S2	LT: Federally Threatened	SE: State Endangered
Trichechus manatus	West Indian Manatee	G2G3	S1S2	LT: Federally Threatened	SE: State Endangered
Ammospiza maritima macgillivraii	Macgillivray's Seaside Sparrow	G4T3	S2	MBTA: Migratory Bird Treaty Act	Not Applicable
Ardea alba	Great Egret	G5	S4S5	MBTA: Migratory Bird Treaty Act	Not Applicable
Ardea alba	Great Egret	G5	S4S5	MBTA: Migratory Bird Treaty Act	Not Applicable
Amblyscirtes alternata	Dusky Roadside-Skipper	G2G3	SNR	Not Applicable	Not Applicable
Ambystoma mabeei	Mabee's Salamander	G4	S3S4	Not Applicable	Not Applicable
Canna flaccida	Golden Canna, Yellow Canna	G4?	S2	Not Applicable	Not Applicable
Carex gholsonii	Gholson's Sedge	G4G5	S2S3	Not Applicable	Not Applicable
Iris hexagona	Angiepod Blue Flag	G4G5	S1	Not Applicable	Not Applicable
Liodytes pygaea	Black Swamp Snake	G5	SU	Not Applicable	Not Applicable
Lithobates palustris	Pickerel Frog	G5	S3S4	Not Applicable	Not Applicable
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable
Ophioglossum petiolatum	Long-stem Adder's-tongue	G5	S1	Not Applicable	Not Applicable
Pseudacris ornata	Ornate Chorus Frog	G4	S3S4	Not Applicable	Not Applicable
Rhexia aristosa	Awned Meadow-beauty, Bristly Meadow-beauty	G3G4	S3	Not Applicable	Not Applicable
Rhynchospora inundata	Narrow-fruit Horned Beaksedge	G4?	S2?	Not Applicable	Not Applicable
Sarracenia rubra ssp. rubra	Carolina Sweet Pitcherplant, Carolina Redflower Pitcherplant	G3G4T3T4	S3S4	Not Applicable	Not Applicable
Satyrium kingi	King's Hairstreak	G3G4	S2S4	Not Applicable	Not Applicable
Spiranthes laciniata	Lace-lip Ladies'-tresses	G4G5	S1S2	Not Applicable	Not Applicable

B. Buffer Area - Species Report (2 of 2)

The following table outlines rare, threatened or endangered species found within 2 miles of the project footprint, arranged in order of protection status and species name. Please keep in mind that this information is derived from existing databases and do not assume that it is complete. Areas not yet inventoried may contain significant species or communities. You can find more information about global and state rank status definitions by visiting Natureserve's web page. Please note that certain sensitive species found within the buffer area may be listed in this table but are not represented on the map.

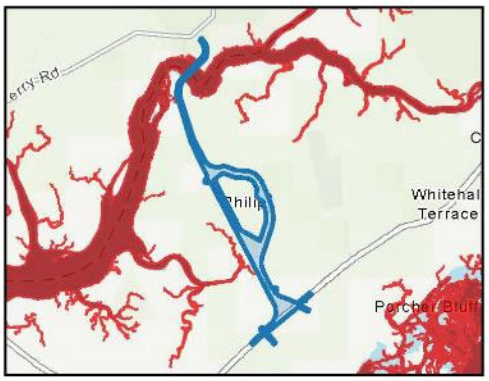


Map Credits: Sources: Esri, USGS, CNES/Airbus DS, InterMap, Kartverket, LINZ, NASA/METI, NASA/NGS, NLS Finland, NLSI, Ordnance Survey, SKGeodesy, Charleston County GIS, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Esri, NASA, NGA, USGS

Scientific Name	Common Name	G Rank	S Rank	Fed. Status	State Status	SWAP Priority	Last Obs. Date
Helenium pinnatifidum	Southeastern Sneezeweed	G4	S2	Not Applicable	Not Applicable	Not Applicable	1977-04-01
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2006-06-15
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2006-06-15
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2002-08-01
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2006-05-31
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2010-05-30
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2010-05-30
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2010-06-13
Litsea aestivalis	Pondspice	G3?	S3	Not Applicable	Not Applicable	High	2012-10-17
Neottia bifolia	Southern Twayblade	G4	S2	Not Applicable	Not Applicable	Not Applicable	1973-03-28
Orthochilus ecristatus	Spiked Medusa, Smooth-lipped Eulophia	G2G3	S2	Not Applicable	Not Applicable	High	1998-08-31
Procambarus blandingii	Santee Crayfish	G4	S4	Not Applicable	Not Applicable	Moderate	1969-01-10
Rhynchospora tracyi	Tracy's Beaksedge	G4	S3	Not Applicable	Not Applicable	Not Applicable	2002-08-03
Sageretia minutiflora	Small-flowered Buckthorn	G4	S3	Not Applicable	Not Applicable	Not Applicable	1975-06-14
Waterbird Colony	Waterbird Colony	GNR	S3S4	Not Applicable	Not Applicable	Not Applicable	1995
Waterbird Colony	Waterbird Colony	GNR	S3S4	Not Applicable	Not Applicable	Not Applicable	1998
Deirochelys reticularia	Chicken Turtle	G5	S3S4	Not Applicable	R: Regulated	Moderate	2022-01-02
Kinosternon subrubrum	Eastern Mud Turtle	G5	SNR	Not Applicable	R: Regulated	Not Applicable	1952-12-06
Heterodon simus	Southern Hog-nosed Snake	G2	S1S2	Not Applicable	ST: State Threatened	Highest	1911-05

C. Species Best Management Practices (1 of 3)

SCDNR offers the following comments and best management practices (BMPs) regarding this project's potential impacts to species of concern which may be found on or near to the project area. Please contact speciesreview@dnr.sc.gov should you have further questions with regard to survey methods, consultation, or other species-related concerns.

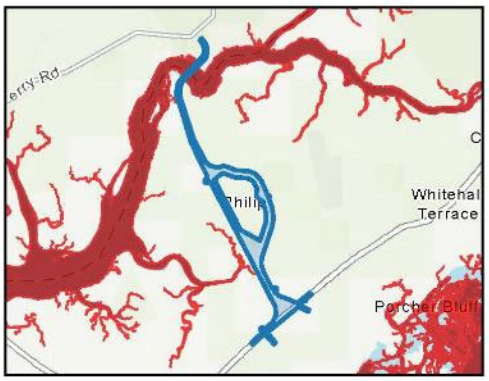


Map Credits: Sources: Esri, USGS, CNES/Airbus DS, InterMap, Kartverket, LINZ, NASA/METI, NASA/NGS, NLS Finland, NLSI, Ordnance Survey, SKGeodesy, Esri, NASA, NGA, USGS, Charleston County GIS, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

One or more occurrences of state listed species are found within or near to your project area. Please note that take of these species are prohibited under S.C. Code of Laws §50-15-30.
Frosted flatwoods salamander, a federally threatened and state endangered species, has been known to occur near to your project area. Flatwoods salamanders live underground most of the year and migrate between isolated wetlands and uplands through mostly open woodland habitats. Should appropriate habitat exist within the project area, surveys are recommended to rule out presence of frosted flatwoods salamander. If frosted flatwoods salamander are found within the project area, please consult with the U.S. Fish & Wildlife Service before proceeding with any construction activities. Please note a take of this state listed species is prohibited under S.C. Code of Laws §50-15-30.
To reduce potential construction-related impacts to the manatee to discountable and insignificant levels, the US Fish & Wildlife Service recommends implementing the following Standard Manatee Construction Conditions to all projects affecting the coastal waters of South Carolina (1 of 2): • The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel must monitor water-related activities for the presence of manatee(s) during May 1 - November 15. Construction personnel are requested to monitor outside of that timeframe as manatees may be in the area before or after the above dates. • The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. • Any siltation barriers used during the project shall be made of material in which manatees cannot become entangled and must be properly secured, and regularly monitored to avoid manatee entrapment. • All vessels associated with the project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
To reduce potential construction-related impacts to the manatee to discountable and insignificant levels, the US Fish & Wildlife Service recommends implementing the following Standard Manatee Construction Conditions to all projects affecting the coastal waters of South Carolina (2 of 2): • If manatee(s) are seen within 100 yards of the active construction area all appropriate precautions shall be implemented to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet to a manatee. Operation of any equipment closer than 50 feet to a manatee shall necessitate immediate shutdown of that equipment. Activities will not resume until the manatee(s) has departed the project area of its own volition. • The permittee understands and agrees that all in-water lines (rope, chain, and cable, including the lines to secure turbidity curtains) must be stiff, taut, and non-looping. Examples of such lines are heavy metal chains or heavy cables that do not readily loop and tangle. Flexible in-water lines, such as nylon rope or any lines that could loop or tangle, must be enclosed in a plastic or rubber sleeve/tube to add rigidity and prevent the line from looping and tangling. In all instances, no excess line is allowed in the water. Where appropriate in water wires, cables, should be fitted with PVC sleeve from the surface to the bottom to prevent any potential scraping of the passing manatees. • Any collision with and/or injury to a manatee shall be reported immediately to the U.S. Fish and Wildlife Service contacts: Melanie Olds, South Carolina Manatee Lead, Charleston Field Office, at 843-727-4707 ext. 205; or Terri Calleson, Manatee Recovery Coordinator, North Florida Field Office, at 904-731-3286.

C. Species Best Management Practices (2 of 3)

SCDNR offers the following comments and best management practices (BMPs) regarding this project's potential impacts to species of concern which may be found on or near to the project area. Please contact speciesreview@dnr.sc.gov should you have further questions with regard to survey methods, consultation, or other species-related concerns.



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The spotted turtle is a state-threatened species and a federal At-Risk species (ARS). If spotted turtles are found to occur on the proposed site, please note the following:

- Prior to habitat disturbance in the proposed work area, the areas of impact be completely surveyed by individuals qualified to identify this species and its habitat;
- It is unlawful for any person to take, possess, transport, import, export, process, sell, offer for sale, ship, or receive for shipment any spotted turtle without a permit from the department;
- Spotted turtles may be allowed to be relocated into areas of suitable habitat, management, and conservation status; however, any plans for relocation should be submitted for review to SCDNR with a detailed description and images of the current and future habitat and proposed work plan and methodologies as it pertains to a relocation project.

An active bald eagle nest(s) is known to occur within or near to your project area. Surveys during the nesting season (October through May) to rule out nests in the project area are advised to avoid negative impacts to bald eagles. Eagle nests may occur in areas which have not yet been surveyed where suitable habitat is present, as the SCDNR does not survey every nest every year. Bald eagles are a state listed threatened species and are federally protected under the Bald and Golden Eagle Protection Act. If bald eagle nests are found to be within 660 feet of the project area, please consult with the U.S. Fish and Wildlife Service and the National Bald Eagle Management Guidelines to ensure that impacts are avoided to this species before proceeding with any construction activities.. https://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf

An occurrence of southern hognose snake (Heterodon simus) is known to exist within or near the project area. This state threatened species is often associated with open pine habitats. Southern hognose snakes are most active and vulnerable above ground during the spring (March-April) and fall (September-early November). The SCDNR recommends activities during these times are minimized, especially the use of heavy equipment, to reduce impacts to highly fossorial species underground from soil compaction and crushing. If the southern hognose snake is found within the project footprint, efforts must be made to avoid any negative impacts or take of the species. No southern hognose snake may be removed from the project site without first obtaining a permit from SCDNR.

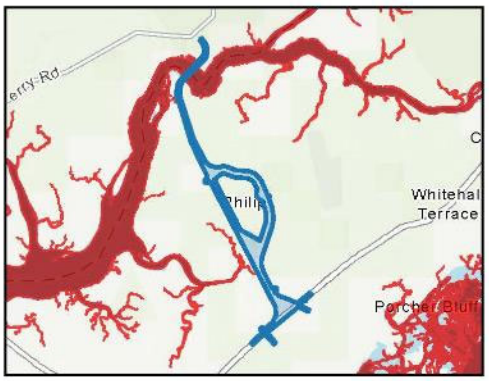
The gopher frog is a state listed endangered and federal At-Risk species (ARS). Take of this state listed species is prohibited under S.C. Code of Laws §50-15-30. If gopher frogs are found to occur on the proposed site, please note the following:

- Prior to habitat disturbance in the proposed work area, the areas of impact be completely surveyed by individuals qualified to identify this species and its habitat;
- It is unlawful for any person to take, possess, transport, import, export, process, sell, offer for sale, ship, or receive for shipment any gopher frog without a permit from the department;
- Gopher frogs may be allowed to be relocated into areas of suitable habitat, management, and conservation status; however, any plans for relocation should be submitted for review to SCDNR with a detailed description and images of the current and future habitat and proposed work plan and methodologies as it pertains to a relocation project.

Wood stork, a federally threatened and state endangered species, is known to occur within or near to your project area. Surveys to rule out nests in the project area are advised to avoid negative impacts to wood stork. While nesting sites may not be located on the project site, wood storks and other wading birds may seasonally use the water features if any are within the project footprint. If wood storks are found to be within the project area, please consult with the U.S. Fish and Wildlife Service before proceeding with construction or other management activities.

C. Species Best Management Practices (3 of 3)

SCDNR offers the following comments and best management practices (BMPs) regarding this project's potential impacts to species of concern which may be found on or near to the project area. Please contact speciesreview@dnr.sc.gov should you have further questions with regard to survey methods, consultation, or other species-related concerns.



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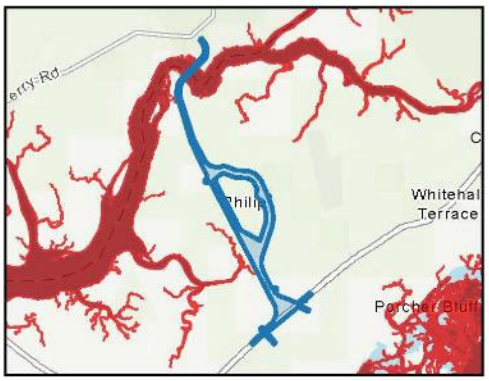
Red-cockaded woodpecker, a federally endangered and state endangered species, is known to occur within or near your project area. Surveys of mature pine trees (50-years or older) to rule out RCW within the project footprint is advised, regardless of habitat condition, and use of heavy machinery is prohibited within 200-feet of a cavity tree during the breeding season (April through July). If RCW are found within the project area, please consult with the U.S. Fish and Wildlife Service before proceeding with any construction activities. Please note the take of this state listed species is prohibited under S.C. Code of Laws §50-15-30.
Pondberry is a federally endangered deciduous shrub typically associated with shaded edges of wetland habitats. Surveys to rule out pondberry within the project footprint is recommended during the months of February, March, September or October when the species is most easily identifiable. Should pondberry be found within the project site, please consult with the U.S. Fish & Wildlife Service before proceeding with construction activities.
Cavity- and tree-roosting bat species including the federally threatened northern long-eared bat (Myotis septentrionalis), state-endangered Rafinesque's big-eared bat (Corynorhinus rafinesquii), and the federally at-risk tricolored bat (Perimyotis subflavus) have been known to occur in the county of the proposed site. As a conservation measure, it is recommended that any tree clearing activities be conducted during the inactive season for Northern long-eared bat (November 15th through March 31st) to avoid negative impacts to the species. If any of the above species are found on-site, please contact the USFWS and SCDNR.
In the interest of preserving plant diversity, the South Carolina Plant Conservation Alliance performs native plant rescues in order to protect and preserve our diversity of native plants. If you are interested in assisting with this important endeavor please contact Mrs. April Punsalan at (843) 727-4707 ext. 218, or by email: sepca@lists.fws.gov before any development occurs onsite. There may be plants of interest on the project site that the Alliance would like to preserve.
Species in the above table with SWAP priorities of High, Highest or Moderate are designated as having conservation priority under the South Carolina State Wildlife Action Plan (SWAP). SWAP species are those species of greatest conservation need not traditionally covered under any federal funded programs. Species are listed in the SWAP because they are rare or designated as at-risk due to knowledge deficiencies; species common in South Carolina but listed rare or declining elsewhere; or species that serve as indicators of detrimental environmental conditions. SCDNR recommends that appropriate measures should be taken to minimize or avoid impacts to the aforementioned species of concern.

D. Project Best Management Practices (1 of 2)

SCDNR offers the following comments and best management practices (BMPs) regarding this project's potential impacts to natural resources within or surrounding the project area. Please contact our Office of Environmental Programs at environmental@dnr.sc.gov should you have further questions with regard to best management practices related to this project area.



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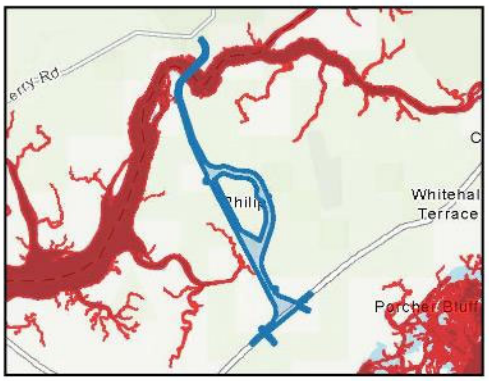
Our records indicate one or more parcels within your project area may be associated with a conservation easement. We recommend you inquire with the appropriate County to receive a copy of the recorded deed and plat before moving forward with any alterations to the project site.
If this project is associated with the Federal Government and the project area is or once was used as farmland, we recommend that consultation occur with the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) per the Farmland Protection Policy Act; areas of the site are classified as prime farmland or farmland of statewide importance.
• All necessary measures must be taken to prevent oil, tar, trash and other pollutants from entering the adjacent offsite areas/wetlands/water. • Once the project is initiated, it must be carried to completion in an expeditious manner to minimize the period of disturbance to the environment. • Upon project completion, all disturbed areas must be permanently stabilized with vegetative cover (preferable), riprap or other erosion control methods as appropriate. • The project must be in compliance with any applicable floodplain, stormwater, land disturbance, shoreline management guidance or riparian buffer ordinances. • Prior to beginning any land disturbing activity, appropriate erosion and siltation control measures (e.g. silt fences or barriers) must be in place and maintained in a functioning capacity until the area is permanently stabilized. • Materials used for erosion control (e.g., hay bales or straw mulch) will be certified as weed free by the supplier. • Inspecting and ensuring the maintenance of temporary erosion control measures at least: a. on a daily basis in areas of active construction or equipment operation; b. on a weekly basis in areas with no construction or equipment operation; and c. within 24 hours of each 0.5 inch of rainfall. • Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification, or as soon as conditions allow if compliance with this time frame would result in greater environmental impacts. • Land disturbing activities must avoid encroachment into any wetland areas (outside the permitted impact area). Wetlands that are unavoidably impacted must be appropriately mitigated. • Your project may require a Stormwater Permit from the SC Department of Health & Environmental Control, please visit https://www.scdhec.gov/environment/water-quality/stormwater
• If clearing must occur, riparian vegetation within wetlands and waters of the U.S. must be conducted manually and low growing, woody vegetation and shrubs must be left intact to maintain bank stability and reduce erosion. • Construction activities must avoid and minimize, to the greatest extent practicable, disturbance of woody shoreline vegetation within the project area. Removal of vegetation should be limited to only what is necessary for construction of the proposed structures. • Where necessary to remove vegetation, supplemental plantings should be installed following completion of the project. These plantings should consist of appropriate native species for this ecoregion.

D. Project Best Management Practices (2 of 2)

SCDNR offers the following comments and best management practices (BMPs) regarding this project's potential impacts to natural resources within or surrounding the project area. Please contact our Office of Environmental Programs at environmental@dnr.sc.gov should you have further questions with regard to best management practices related to this project area.



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- Review of available data, National Hydrography Dataset, indicates that streams or waters of the United States are present within your project area. These areas may require a permit from the U.S. Army Corps of Engineers (USACE), as well as a compensatory mitigation plan. SCDNR advises that you consult with the USACE Regulatory to determine if jurisdictional waters are present and if a permit and mitigation is required for any activities impacting these areas. For more information, please visit their website at www.sac.usace.army.mil/Missions/Regulatory. Additionally, a 401 Water Quality Certification or a State Navigable Waters permit may also be required from the SC Department of Health & Environmental Control. For more information, please visit the following websites:
  - https://www.scdhec.gov/environment/water-quality/water-quality-certification-section-401-clean-water-act
  - https://www.scdhec.gov/environment/water-quality/navigable-waters
- Excavation/Construction activities must not occur during fish spawning season from March through June due to its negative impacts on eggs and reproduction activities.
- If clearing must occur, riparian vegetation within wetlands and waters of the U.S. must be conducted manually and low growing, woody vegetation and shrubs must be left intact to maintain bank stability and reduce erosion.
- Construction activities must avoid and minimize, to the greatest extent practicable, disturbance of woody shoreline vegetation within the project area. Removal of vegetation should be limited to only what is necessary for construction of the proposed structures.
- Where necessary to remove vegetation, supplemental plantings should be installed following completion of the project. These plantings should consist of appropriate native species for this ecoregion.

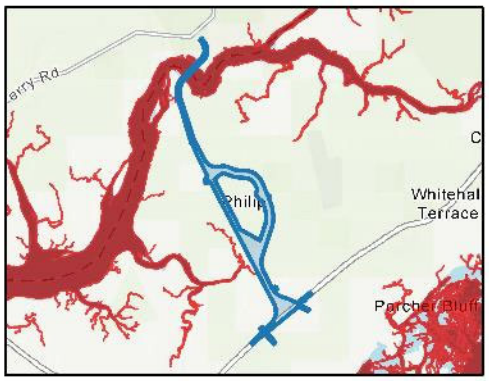
Your project area includes a FEMA special flood hazard area and may require a permit from the County National Floodplain Insurance Program Manager before impacts occur to aquatic resources and the associated floodplains on site. Please refer to https://www.dnr.sc.gov/water/flood/documents/nfipadmindirectory.pdf to find your appropriate contact information.

All tributary crossings for road projects must be made with appropriately sized bridges and/or culverts. Culverts must be sized and designed to prevent alteration of the natural stream morphology. SCDNR prefers that arched or bottomless culverts are utilized; however, if using boxed culverts or pipes, the bottom elevation of the culvert or pipe must be at or below the stream bed elevation to allow for natural migration of aquatic organisms up- and downstream. Where feasible, disturbed stream banks should be restored by using bioengineering techniques for stream bank stabilization. Stream banks at crossings must be restored after construction has been completed. Disturbed stream banks can be restored by planting woody vegetation and by using bioengineering techniques for stream bank stabilization.

- Your project boundary lies within a coastal county in South Carolina which means you may also need a Coastal Zone Consistency Certification for your project from the SC Department of Health and Environmental Control. For more information, visit: https://www.scdhec.gov/environment/your-water-coast/ocean-coastal-management/beach-management/coastal-permits/coastal-zone
- If your project could affect coastal waters, tidelands, beaches and beach/dune systems, you may also need a critical area permit from the SC Department of Health and Environmental Control. For more information, visit: https://www.scdhec.gov/environment/your-water-coast/ocean-coastal-management/beach-management/coastal-permits/critical-l

E. Instructions for Submitting Species Observations

The SC Natural Heritage Dataset relies on continuous monitoring and surveying for species of concern throughout the state. Any records of species of concern found within this project area would greatly benefit the quality and comprehensiveness of the statewide dataset for rare, threatened and endangered species. Below are instructions for how to download the SC Natural Heritage Occurrence Reporting Form through the Survey123 App.



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Instructions for accessing the SC Natural Heritage Occurrence Reporting Form

For use in a browser (on your desktop/PC):

1) Follow https://bit.ly/scht-reporting-form
2) Select 'Open in browser'
3) The form will open and you can begin entering data!

This method of access will also work on a browser on a mobile device, but only when connected to the internet. To use the form in the field without relying on data/internet access, follow the steps below.

For use on a smartphone or tablet using the field app:

1) Download the Survey123 App from the Google Play store or the Apple Store. This app is free to download. Allow the app to use your location.

2) No need to sign in. However, you will need to provide the app with our Heritage Trust GIS portal web address. You will only need to do this once: (this is a known bug with ESRI's software, and future releases of the form should not require the below steps. Bear with us in the meantime!).

a. Tap 'Sign in'
b. Tap the settings (gear symbol) in the upper right corner
c. Tap 'Add Portal'
d. After the 'https://', type schtportal.dnr.sc.gov/portal
e. Tap 'Add Portal'
f. Tap the back-arrow icon (upper left corner) twice to return to the main sign in page.

3) Use the camera app (or other QR Reader app) to scan the QR code on this page from your smartphone or tablet. Click on the 'Open in the Survey123 field app'. This will prompt a window to allow Survey123 to download the SC Natural Heritage Occurrence Reporting Form. Select 'Open.'

4) The form will automatically open in Survey123, and you can begin entering data! This form will stay loaded in the app on your device until you manually delete it, and you can submit as many records as you like.

HIGHWAY 41 CORRIDOR IMPROVEMENTS

Appendix C

- **Site Photographs**

Photograph 1 – Wetland area adjacent to Winnowing Way and SC 41 intersection (dry/winter season)

Photograph 2 – Wetland area adjacent to Winnowing Way and SC 41 intersection (wet/growing season)

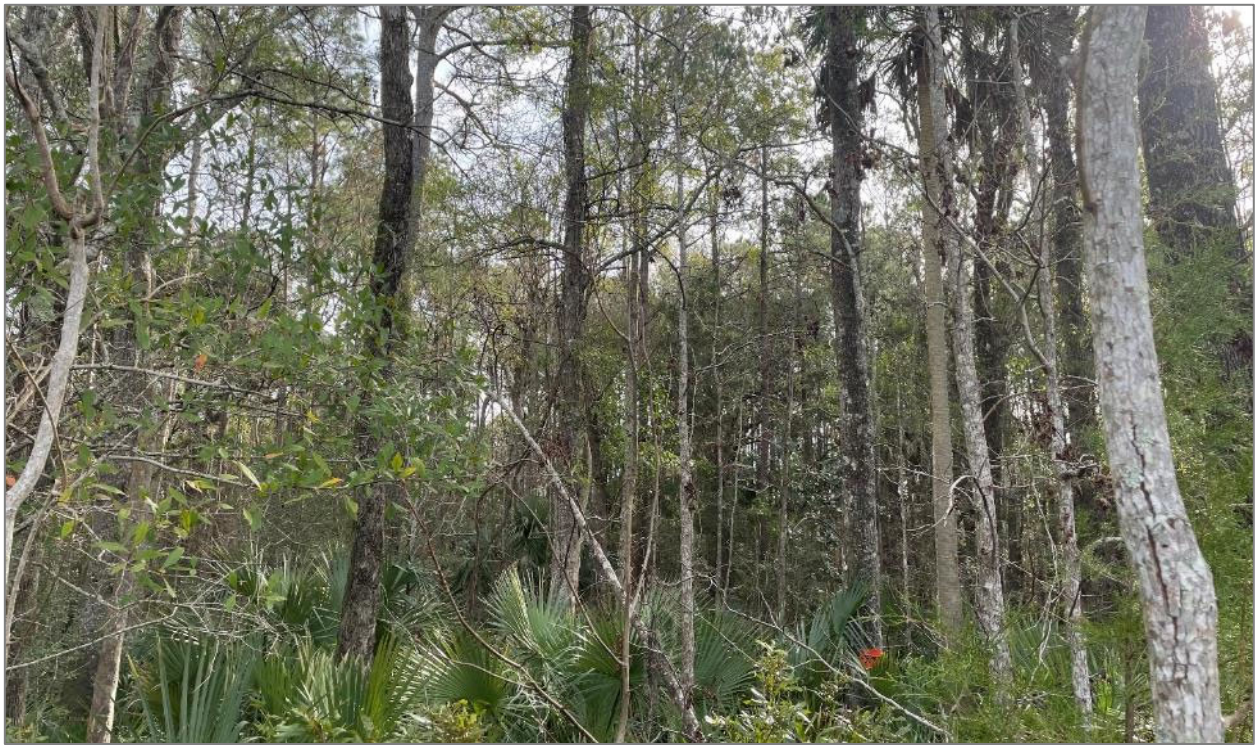
Photograph 3 – Wetland area adjacent to SC 41 south of Horlbeck Creek (east of SC 41)

Photograph 4 – Wetland area adjacent to SC 41 south of Horlbeck Creek (west of SC 41)

Photograph 5 – Tidal marsh associated with Horlbeck Creek (facing northwest)

Photograph 6 – High marsh along Horlbeck Creek (facing east)

Photograph 7 – Upland island within tidal marsh located adjacent to Horlbeck Creek (facing west)



Photograph 8 – Forested uplands adjacent to Wagner Creek (facing east)

Photograph 9 – Forested uplands (forground) and tidal marsh (background) along Wagner Creek (facing south)

Photograph 10 – Forested uplands (facing north)

Photograph 11 – Forested wetland avoided during construction (facing north)

Photograph 12 – Transmission line corridor (facing northwest)

Photograph 13 – Tidal marsh along upper tributary of Horlbeck Creek (facing southwest)

Photograph 14 – Tidal marsh along Mill Creek (facing southeast)

Photograph 15 – Tidal marsh along Wando River (facing west)

Photograph 16 – Wando River bridge (facing north)

Appendix D

- **USFWS IPaC NLEB Range-wide Determination Key**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Carolina Ecological Services
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
Phone: (843) 727-4707 Fax: (843) 727-4218

In Reply Refer To:
Project code: 2023-0077130
Project Name: SC-41

May 03, 2023

Federal Nexus: no
Federal Action Agency (if applicable): County of Charleston

Subject: Technical assistance for 'SC-41'

Dear Michael Inman:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on May 03, 2023, for 'SC-41' (here forward, Project). This project has been assigned Project Code 2023-0077130 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- American Chaffseed *Schwalbea americana* Endangered
- Bachman's Warbler (=wood) *Vermivora bachmanii* Endangered
- Canby's Dropwort *Oxypolis canbyi* Endangered
- Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* Threatened
- Green Sea Turtle *Chelonia mydas* Threatened
- Kemp's Ridley Sea Turtle *Lepidochelys kempii* Endangered
- Leatherback Sea Turtle *Dermochelys coriacea* Endangered
- Loggerhead Sea Turtle *Caretta caretta* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Piping Plover *Charadrius melodus* Threatened
- Pondberry *Lindera melissifolia* Endangered
- Red Knot *Calidris canutus rufa* Threatened
- Red-cockaded Woodpecker *Picoides borealis* Endangered
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- West Indian Manatee *Trichechus manatus* Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope,

timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the South Carolina Ecological Services and reference Project Code 2023-0077130 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

SC-41

2. Description

The following description was provided for the project 'SC-41':

> Corridor improvements

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@32.89206025,-79.80271187899409,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Your project overlaps with an area where northern long-eared bats may be present year-round. Time-of-year restrictions may not be appropriate for your project due to bats being active all year.

   Do you understand that your project may impact bats at any time during the year and time-of-year restrictions may not apply to your project?

   Yes

3. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

4. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

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Name: Michael Inman
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LEAD AGENCY CONTACT INFORMATION

Lead Agency: County of Charleston