Sabine Pass to Galveston Bay

Supplemental Biological Assessment for Federally-Listed Threatened and Endangered Species

August 2022

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1.0 INTRODUCTION

This Supplemental Biological Assessment (BA) has been prepared in accordance with requirements outlined under Section 7 of the Endangered Species Act (ESA). Section (7)(a)(2) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that are proposed or listed as endangered or threatened, as well as their designated critical habitat, if applicable. This BA demonstrates the proposed action is in compliance with Section 7, which assures that, through consultation with the US Fish and Wildlife Service (USFWS), 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.

All descriptions regarding the original project area are included in the 2017 Sabine Pass to Galveston Bay, Texas Coastal Storm Risk Management and Ecosystem Restoration Biological Assessment (Attachment A). All of the information found in this report, unless otherwise indicated, is a new assessment of Sabine Pass to Galveston Bay Port Arthur Contracts 3B and 3C.

1.1 Study Background

Study background is included in Attachment A.

1.2 Consultation History

The 2017 Feasibility Study included coordination with USFWS and Texas Parks and Wildlife Department (TPWD).

- September 2015: A BA was submitted to USFWS determining "No Effect" on piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), the West Indian manatee (*Trichechus manatus*), four whale species (fin, humpback, sei, and sperm), four sea turtle species (green [*Chelonia mydas*], Kemp's ridley [*Lepidochelys kempii*], loggerhead [*Caretta caretta*], leatherback [*Dermochelys coriacea*] and hawksbill [*Eretmochelys imbricata*]), and four coral species (lobed star [*Orbicella annularis*], mountainous star [*Orbicella faveolate*], boulder star [*Orbicella franksi*], and elkhorn coral [*Acropora palmata*]). As well as "No Effect" on the following Candidate species: Sprague's pipit (*Anthus spragueii*), and two freshwater mussel species (smooth pimpleback [Quadrula houstonensis] and Texas fawnsfoot [*Truncilla macrodon*]).

- August 2, 2022: PAV03B was created in IPaC using the project area boundaries. An official species list was requested and returned from the Texas Coastal Ecological Services Field Offices (2022-0029016).

- August 2, 2022: PAV03C was created in IPaC using the project area boundaries. An official species list was requested and returned from the Texas Coastal Ecological Services Field Office (2022-0063389).

2.0 DESCRIPTION OF THE ACTION AND ACTION AREA

This section describes the proposed action associated with implementing the action and a description of the action area. The information contained here is a summary of the overall project and impacts. Additional information can be found in the Final Integrated Feasibility Report and Environmental Impact Statement (FIFR-EIS) (USACE, 2017).

2.1 Description of the Action

The Port Arthur and Vicinity (PAV), Texas Hurricane Flood Protection Project (HFPP) is located in Port Arthur, Jefferson County, TX. This project was authorized by the Flood Control Act of 1962, Public Law 87-874, substantially in accordance with House Document No. 505, 87th Congress, 2nd Session. Construction began in March 1966 and was completed in April 1982. The authorization provided for raising existing seawalls and levees, highway and street ramps, roadway and railway closures, new pumping stations, modifications of existing pumping stations and gravity drainage structures. The system reduces risk to the Port Arthur region from coastal storm surge events coming from the Gulf of Mexico. It also reduces risk from flooding from the Sabine River. The levee system consists of 27.8 miles of earthen embankment and 6.6 miles of concrete and steel sheet pile floodwalls. There is also a wave barrier on Pleasure Island. It is operated by Jefferson County Drainage District No. 7 (DD7), the project Non-Federal Sponsor (NFS).

Contract PAV03B consists of the construction of approximately 4,000 linear feet of floodwall and levee on property occupied by the Port of Port Arthur (POPA), Kansas City Southern Railroad (KCS), JBS Packing, and Entergy Texas, Inc. The work also includes demolition and removal of the existing sheet pile floodwall and gate closures only where required for new construction. The majority of the existing alignment through the 3B area will remain in place but be removed from the Federal Project, and ownership will revert to DD7. See Figure 1 for an overview of the existing project location.

Contract 3b extends from Station 617+00 to 647+89 per the 2017 Feasibility Study, with an existing floodwall elevation through this area of 15.5 feet (ft). Based on site specific restrictions, particularly the POPA operational facilities that have been constructed over top of the existing alignment, a revised alignment location was developed by the Project Delivery Team (PDT) in coordination with the NFS and the local landowners, POPA and KCS.

The new design alignment will tie into the existing system's levee at Station 617+00 and Station 655+00. The existing levee between Stations 647+89 and 655+00 will be removed from the Federal Project, and turned back over to the NFS. The design alignment is shown in Figure 2, with each of the six closure gates called out by number. The seventh alignment crossing shown will be a ramp crossing over top of the levee.

The existing ground surface elevations throughout the contract area vary from approximately 0 ft elevation in the KCS-owned property, to 6 ft at the existing floodwall location near the docks. The first approximately 700 ft of the floodwall alignment, beginning from the northeast at Station 617+00, will replace the existing wall. This portion will also be built to a higher design elevation to accommodate its location along the waterway.

The first 2800 ft of the alignment will be a pile-founded concrete T-wall. This portion crosses through busy operational areas used by the POPA, JBS Packing, and Standard Alloys. Gates 1, 2 and 4 shown on Figure 2 will be single-leaf swing gates. Gate 3, which crosses 4th Ave, will be a roller gate given the required clear crossing width of 43 ft. Gates 5 and 6 and their associated storage monoliths have been removed from the PAV03B Contract, as they require further design coordination with KCS Railroad that cannot be completed in the required schedule for this effort. An approximately 50 percent (%) design has been completed for those gates with 100% design of associated features. The draft gate design is for a specially designed large, 100 ft+ gates to provide clearance for continued operations by KCS Railroad and the POPA. Point 7 is an over the levee road crossing with no closure gate.

The southwest 1100 ft of the contract will consist of new levee construction. An additional access point to the levee system, as well as to the property outside of the new levee, will be provided at the existing Denbo Avenue. A ramp system will lead to the levee crest for operations and maintenance, and over top the levee for emergency access.

Contract 3b will tie into the existing levee system as its starting and ending points of Station 617+00 and 655+00. New stationing has been provided for this Contract since it significantly deviates from the existing system. The north tie-ins will be in accordance with the standard floodwall to levee transition details provided in the Sabine Pass to Galveston Bay Design Criteria. The south tie-in will be an extension of the existing levee, while meeting the new design elevations. There will be an additional tie-in at Station 7+00 to the existing I-wall system which will remain in place through the POPA's facilities.

Originally, PAV03C was a part of Contract PAV03A. Contract PAV03A provides for the delivery of contract documents for the construction of improvements to existing levees, floodwalls, closure structures, highway crossings, and pump station fronting protection to improve HFPP for Port Arthur, in Jefferson County, Texas. The scope of this contract is to address risk drivers identified as Potential Failure Modes (PFM) that were determined during a Semi-Quantitative Risk Analysis (SQRA) for the Sabine Pass to Galveston Bay Coastal Storm Risk Management (CSRM) & Ecosystem Restoration. The objective includes both hurricane flood protection and ecosystem restoration. The contract includes eight segments identified as Zones 1 through 8.

Between STA. 731+03.06 B and STA. 733+30.14 B the existing utility corridor area contains a utility pipe bridge and counterfort wall that has dozens of pipes passing through the wall below grade. It is not feasible or cost-effective to retrofit the counterfort to meet the required design loads, so a new floodwall will be installed on the landside of the existing counterfort. In addition, the existing pipe bridge is with the right of way or conflicts with the new wall and will need to be removed. Pipe will be relocated to a new pipe bridge. The new pipe bridge and pipe relocation are not part of this projects scope; however, the construction sequence of the work has been considered. The floodwalls will be constructed by the Government hired contractor while the pipe bridge and pipe relocation will be constructed by a different contractor under separate contract. Both contractors will have to coordinate construction of each of their elements with each other. Because the floodwalls are pile supported, all underground piping/utilities have to be relocated prior to driving piles. In addition, the portions of the floodwall should be built prior to construction of the pipe bridge. The pipe bridge and pipe relocation are considered PAV03C.

2.1.1 Impacts of the Action

The maximum length of floodwalls to be included in the system would be about 16 miles. The foundation area would be cleared, grubbed, and stripped. The subsurface would then be excavated to depth for the concrete wall footing, which is to be cast in place. Excavated areas would be subsequently backfilled and thoroughly compacted. Cranes would be used to drive piles that will provide structural stability and to drive sheet pile. Formworks would be installed to form the footing and wall stem and reinforcing steel bar would be placed. Concrete mixer trucks would pump concrete to the footing and into the stem via a concrete boom. Additional earthwork would involve tying the floodwall into adjacent earthen levees and backfilling and compacting around the completed wall.

Direct and indirect impacts associated with implementing PAV03B and PAV03C are permanent in nature and limited in scope. Construction activities would contribute the greatest impacts to the environment and could include: localized effects to water quality, including increased turbidity and total suspended sediments, organic enrichment, reduced dissolved oxygen, elevated carbon dioxide levels, and decreased light penetration, among others; habitat removal and/or fragmentation; temporary habitat avoidance because of increased noise, dust generation, vibrations, and overall lower quality habitat; losses of slow moving and less mobile species (small mammals, aquatic invertebrates, benthic species, and herpetofauna); and permanent changes in hydrologic flow. The level and duration of the impacts is dependent on the type of equipment used and duration of construction activities. However, it is anticipated that once construction is complete, any temporary impacts related to construction activities would cease.

2.2 Description of the Action Area

2.2.1 PAV03B

The project area is on the southeastern boundary of Port Arthur, Texas. It is adjacent to the POPA. The project area is highly disturbed and is fragmented due to local, commercial, and industrial structures that surround the project area.

Approximately 4 acres of the action area is considered coastal prairie pondshore or palustrine emergent wetland habitat. The action area is split into two sections: west of the railroad and east of the railroad. The action area west of the railroad has dry and shrubby wetland vegetation. Here the depth of habitat is shallow (<one inch) after precipitation events otherwise it is dry. The soils west of the railroad are suitable for wetland vegetation, and are dominated by deep-rooted sedge (*Cyperus entrerianus*), Chinese tallowtree (*Triadica sebifera*), bushy bluestem (*Andropogon glomeratus*), dewberry (*Rubus spp*.) and rattlebox (*Ludwigia alternifolia).* This area does not support vascular plants (submerged aquatic vegetation [SAV]).

The action area east of the railroad is also considered palustrine emergent wetland habitat (one acre). There is a drainage ditch that supports emergent wetland habitat such as cattail (*Typhus spp*.), deep-rooted sedge, black needle rush (*Juncus roemerianus*), and Chinese tallowtree. There is some standing water within the drainage ditch, but towards the southern section of this action area it becomes dry. Although the area is dry it does accommodate wetland vegetation such as soft-stem bulrush (*Schoenoplectus tabernaemontani*), deep-rooted sedge, black willow (*Salix nigra*), and rattlebox.

Other habitat within the action area supports highly degraded low-quality coastal prairie consisting of hackberry (*Celtis occidentalis*), dewberry (*Rubus spp*.), poison ivy (*Toxicodendron radicans*), live oak (*Quercus virgininia*), green ash (*Fraxinus pennsylvanica*), and black willow (2 acres).

Within PAV03B, there is an abundance of cattail (*Typha spp*.) on approximately 1 acre of the site. Cattails can expand across large distances and are not especially sensitive species.

Approximately 1.5 acres of highly disturbed non-native invasive grassland will also be impacted by construction.

The project area sites are used by a variety of terrestrial fauna for resting, nesting, spawning, foraging, etc. For a complete description of species commonly found in the project area see the FIFR-EIS.

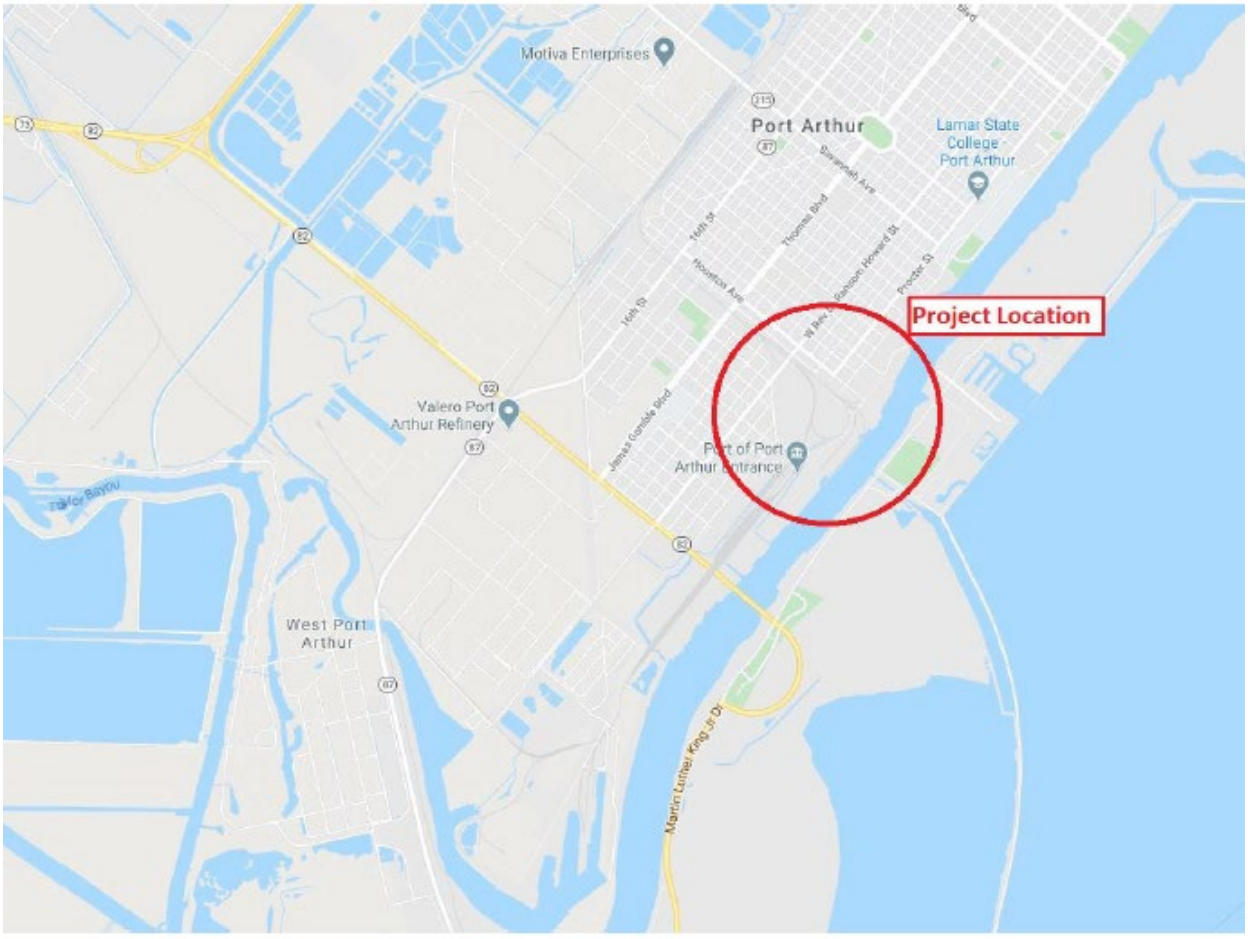

Figure 1. Action Area

Figure 2. Contract PAV03B Alignment

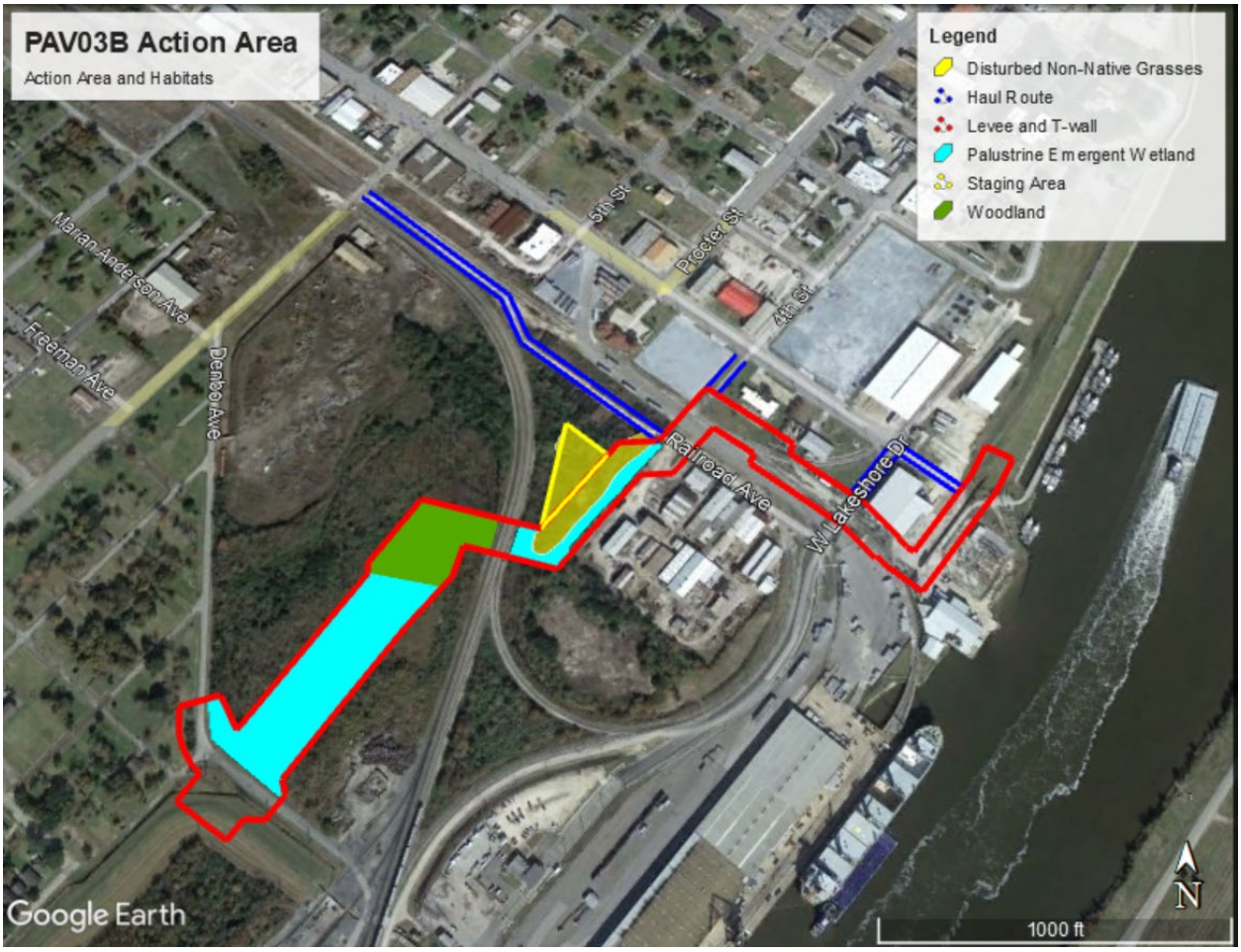

Figure 3. PAV03B Action Area

2.2.2 PAV03C

The soils within this action area for utility pipe relocation and construction staging are partially suitable for wetland vegetation, and are dominated by cattail. This area does not support rooted vascular plants (submerged aquatic vegetation [SAV]). Within PAV03C, there is an abundance of cattail (*Typha spp*.) on approximately 1 acre of the site.

This action area is highly disturbed and consists of vegetation such as small diameter hackberry and dewberry outside of the palustrine wetland site that will not be evaluated or mitigated due to their current condition.

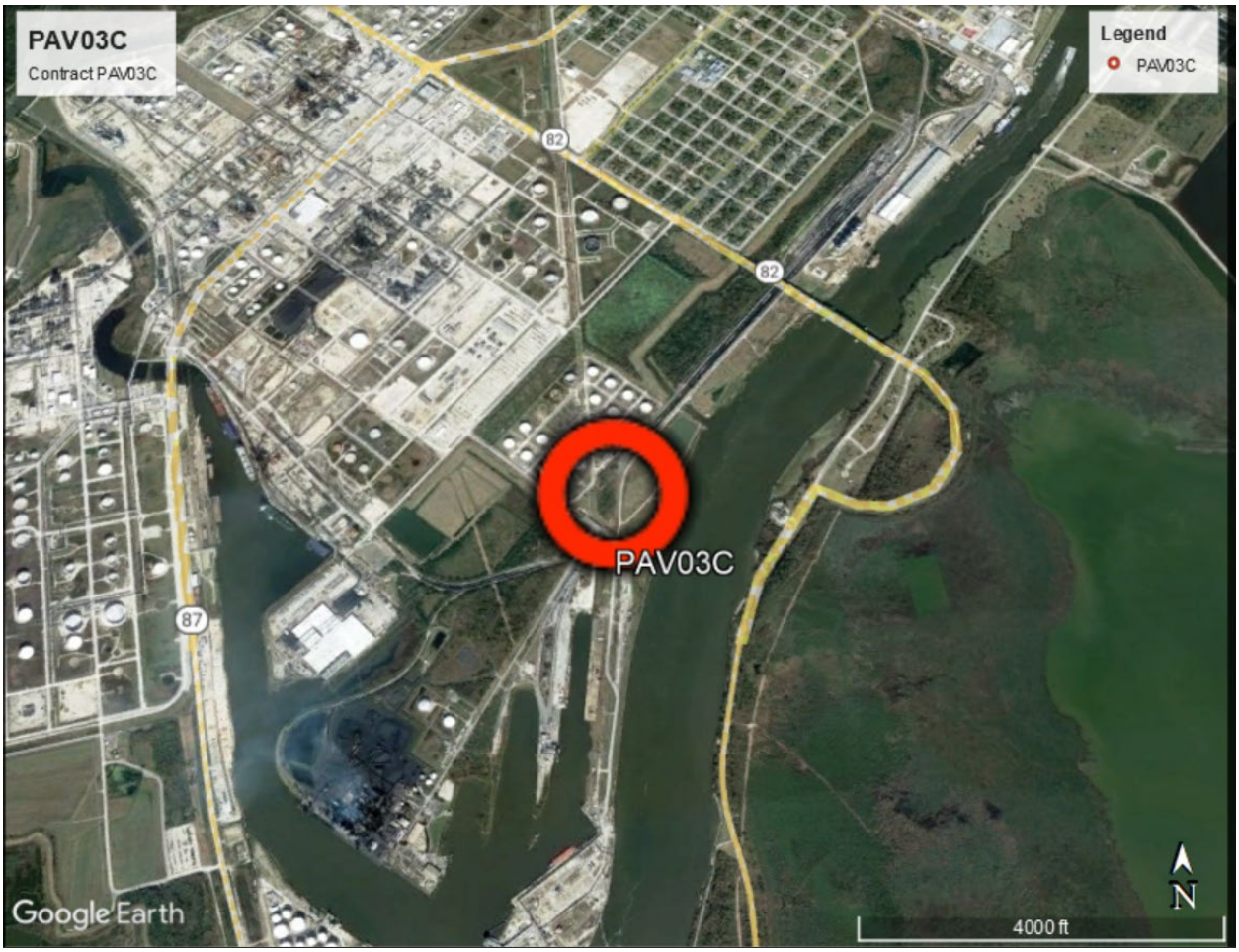

Figure 4. PAV03C Location

Figure 5. Pipe Relocation and Construction Staging Area for PAV03C

3.0 LISTED SPECIES AND CRITICAL HABITAT IN THE ACTION AREA

Eleven ESA-listed, candidate or proposed for listing species were identified in the USFWS Official Species List dated August 2, 2022. No critical habitat has been designated in the action areas.

Table 1. ESA-listed Species Identified by USFWS as Potentially Occurring in the Action Area

Species	Scientific Name	Jurisdiction	Status
Birds			
Eastern black rail	*Laterallus jamaicensis jamaicensis*	USFWS	Threatened
Piping Plover	*Charadrius melodus*	USFWS	Threatened
Red Knot	*Calidris canutus rufa*	USFWS	Threatened
Whooping Crane	*Grus americana*	USFWS	Endangered
Reptiles			
Green Sea Turtle	*Chelonia mydas*	USFWS	Threatened
Hawksbill Sea Turtle	*Eretmochelys imbricata*	USFWS	Endangered
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	USFWS	Endangered
Leatherback Sea Turtle	*Dermochelys coriacea*	USFWS	Endangered
Loggerhead Sea Turtle	*Caretta caretta*	USFWS	Threatened
Mammals			
West Indian Manatee	*Trichechus manatus*	USFWS	Threatened
Insects			
Monarch butterfly	*Danaus plexippus*	USFWS	Candidate

To assess the status of species in the action area and potential impacts of the action on ESA-listed species, several sources were consulted including: literature review of scientific data; on-site inspections; and compiled lists of ESA-listed species. Significant literature sources consulted include the USFWS species specific webpages; Federal status reports and recovery plans; TPWD species occurrence and monitoring reports; peer-reviewed journals, and other standard references.

3.1 Piping Plover

USFWS listed the piping plover as threatened and endangered on 11 December 1985 (50 FR 50726, December, 11 1985). The piping plover is an endangered species in the northern Great Plains and Great Lakes where it breeds in the summer. Piping plovers wintering in Texas are part of the northern Great Plains and Great Lakes populations and, therefore, are listed as threatened (USFWS, 2009). The wintering range on the Atlantic and Gulf coasts stretches from North Carolina to Mexico (American Ornithologists' Union [AOU], 1998; 50 FR 50726, December, 11 1985). Migration occurs both through the interior of North America east of the Rocky Mountains (especially in the Mississippi Valley), and

along the Atlantic Coast (AOU, 1998). Approximately 35 percent of the known global population of piping plovers winters along the Texas Gulf Coast, where they spend 60 to 70 percent of the year. Piping plover concentrations in Texas are believed to occur in Brazoria and Jefferson counties, primarily restricted to areas along the Gulf shoreline. On their wintering grounds, piping plover use beaches, mudflats, sandflats, dunes, and offshore emergent placement areas (USFWS, 1995; AOU, 1998), as well as sandflats in existing USACE placement areas.

Threats to piping plovers and their habitat in their migration and wintering ranges indicate a continuing loss and degradation of habitat due to sand placement projects, inlet stabilization, sand mining, groins, seawalls and revetments, exotic and invasive vegetation, and wrack removal (USFWS, 2009). There is also concern with projects that would impede the ability of barrier islands to respond to natural habitat building processes in the context of accelerating sea-level rise.

There is no piping plover critical habitat in the PAV03B or PAV03C action area.

3.2 Red Knot

Red knots of the rufa subspecies are medium-sized shorebirds that breed only in Arctic Canada and migrate approximately 18,500 miles annually between Arctic breeding grounds and primary wintering areas in Tierra Del Fuego, at the southern tip of South America. They also winter in three other distinct coastal areas of the Western Hemisphere: the southeastern United States (mainly Florida and Georgia, with smaller numbers in South Carolina), the Gulf of Mexico coast of Texas, and Maranhão in northern Brazil (USFWS, 2011). The USFWS began proposing that this species be considered a Candidate for listing in 2008, and published a final designation of threatened status in 2014 (79 FR 73706, December 11, 2014). In South American wintering areas, red knots are found principally in intertidal marine habitats, especially near coastal inlets, estuaries, and bays, or along intertidal earthen shelf formations. The Delaware Bay area (in Delaware and New Jersey) is the largest known spring migration stopover area, with far fewer migrants congregating elsewhere along the Atlantic coast. The concentration in the Delaware Bay area occurs from the middle of May to early June, corresponding to the spawning season of horseshoe crabs. The knots feed on horseshoe crab eggs, rebuilding energy reserves needed to complete migrations to the Arctic. Surveys at wintering areas and at Delaware Bay during spring migration indicate a substantial decline in the red knot in recent years. Research shows that since 1998, a high proportion of red knots leaving the Delaware Bay failed to achieve threshold departure masses needed to fly to breeding grounds and survive an initial few days of snow cover, and this corresponded to reduced annual survival rates (73 FR 75176, December 10, 2008).

The primary factor threatening the red knot is destruction and modification of its habitat, particularly the reduction in key food resources resulting from reductions in horseshoe crabs, which are harvested primarily for use as bait and secondarily to support a biomedical industry. Counts of red knots within the principal wintering areas in Chile and Argentina declined by nearly 75 percent from 1985 to 2007 and declined by an additional 15 percent in the past year (2007 to 2008).

Along the Texas coast, red knots forage on beaches, oyster reefs, and exposed bay bottoms and roost on high sand flats, reefs, and other sites protected from high tides (NatureServe, 2013a). They are believed to use the beaches in Brazoria County, near but not in the project area. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. It has been reported that Coquina clams (*Donax variabilis*) serve as a frequent and often important food resource for red knots

along Gulf beaches. Reports of the size of flocks of along the Gulf of Mexico coast vary considerably, from highs of about 2,800 to 700 (USFWS, 2011).

3.3 Eastern Black Rail

The eastern black rail (BLRA) is the most secretive of the secretive marsh birds and one of the least understood species in North America. The sparrow-sized bird with slate gray plumage and red eyes lives in remote wetlands of the Midwest and along the coasts of the Atlantic and Pacific oceans and the Gulf of Mexico. Because it only comes out at night, prefers to walk hidden in tall grasses instead of fly and rarely makes a call, very little is known about its behavior and habitat needs.

Not much is known about the subspecies diet, but they are probably opportunistic foragers. Their bill shape suggests generalized feeding methods such as gleaning or pecking at individual items, thus a reliance on sight for finding food. Examination of specimens collected indicates a diet of small aquatic and terrestrial invertebrates, as well as small seeds. Foraging most likely occurs on or near the edges of stand of emerging vegetation -- both above and below the high-water line.

The BLRA was listed as threatened on October 8, 2020 with a Section 4(d) Rule (FR 63764). No critical habitat has been designated for the species. The Section 4(d) Rule allows the Service to establish prohibitions or exceptions to prohibitions for threatened species while providing for the conservation of a threatened species by allowing flexibility under ESA. None of the 4(d) Rule prohibitions or exceptions to prohibitions apply to this project.

The primary threats to BLRA are: (1) habitat fragmentation and conversion, resulting in the loss of wetland habitats across the range; (2) sea level rise and tidal flooding; (3) land management practices (i.e., incompatible fire management practices, grazing, and haying/mowing/other mechanical treatment activities); and (4) stochastic events (e.g., extreme flooding, hurricanes). Human disturbance, such as birders using excessive playback calls of black rail vocalizations, is also a concern for the species. Additional stressors to the species include oil and chemical spills and environmental contaminants; disease, specifically West Nile virus; and predation and altered food webs resulting from invasive species introductions (fire ants, feral pigs, nutria, mongoose, and exotic reptiles).

The BLRA is a widely distributed, secretive marsh bird with little known about its population structure and dynamics (Watts, 2016). The subspecies is broadly distributed, living in salt and freshwater marshes in portions of the United States, Central America, and South America. The species is partially migratory wintering in the southern part of its breeding range.

The BLRA has a broad but poorly known breeding range that includes the Atlantic and Gulf Coasts of North America, parts of Colorado, Oklahoma and the mid-west, the West Indies including Cuba, Jamaica and historically Puerto Rico and parts of Central America from Mexico through Panama (Watts, 2016). A total of 1,937 occurrence records were found within this area between 1836 and 2016. Credible evidence of occurrence was found for 21 of the 23 states including 174 counties, parishes and independent cities and 308 named properties. Based on breeding evidence and seasonality of occurrence, 34 (19%) counties were classified as confirmed, 97 (56%) as probable breeding and 43 (25%) as possible breeding. Many of the named properties are well-known conservation lands including 46 (15%) national wildlife refuges, 44 (14%) state wildlife management areas, 26 (8%) state and municipal parks and many named lands managed by non-governmental conservation organizations.

Since 2010, 247 black rail occurrences have been recorded within 11 of the 23 states in the potential range of the species. Records were found for 53 counties, parishes and independent cities (Figure 7). Based on breeding evidence and seasonality of occurrence, 2 (4%) counties were classified as confirmed, 35 (66%) as probable breeding and 16 (30%) as possible breeding. Records were found for 92 named properties including 2 (3%) properties classified as confirmed, 73 (79%) as probable breeding and 17 (18%) properties classified as possible breeding.

The BLRA is a wetland dependent bird requiring dense overhead cover and soils that are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water (typically ≤three centimeters [cm]) to support its resource needs (Watts, 2016). BLRAs occur across an elevational gradient that lies between lower and wetter portions of the marsh and their contiguous uplands. Their location across this gradient may vary depending on the hydrologic conditions. These habitat gradients have gentle slopes so that wetlands are capable of having large areas of shallow inundation (sheet water). These wetlands are able to shrink and expand based on hydrologic conditions and thus provide dependable foraging habitat across the wetted areas and wetland-upland transition zone for the subspecies. BLRAs also require adjacent higher elevation areas (i.e., the wetland-upland transition zone) with dense cover to survive high water events due to the propensity of juvenile and adult black rails to walk and run rather than fly and chicks' inability to fly (USFWS, 2019).

The subspecies requires dense vegetation that allows movement underneath the canopy, and because they are found in a variety of salt, brackish, and freshwater wetland habitats that can be tidally or non-tidally influenced, plant structure is considered more important than plant species composition in predicting habitat suitability (Watts, 2016). In terms of nest success, nests must be well hidden in a dense clump of vegetation over moist soil or shallow water to provide shelter from the elements and protection from predators. Flooding is a frequent cause of nest failure; therefore, water levels must be lower than nests during egg-laying and incubation in order for nets to be successful. In addition, shallow pools that are one to three cm deep may be the most optimal for foraging and for chick-rearing (USFWS, 2019).

Texas is a black rail crossroad making it difficult to differentiate breeders from winter residents from migrants (Watts, 2016). Black rail in Texas use tidal salt marshes along the barrier islands and the mainland fringe, as well as drier coastal prairie. The upper Texas coast (Jefferson, Chambers, Galveston, Harris, and Brazoria counties) has a long history of black rail records that are concentrated within national wildlife refuges and state wildlife management areas. Much of the black rail activity along the upper Texas coast has been concentrated on the Bolivar Peninsula and Brazoria, Anahuac and San Bernard National Wildlife Refuges. Presence of black rail in Jefferson County (action area) is presumed to be likely.

3.4 Whooping Crane

The whooping crane (*Grus americana*) is the tallest North American bird with males approaching 1.5 meters in height, is snowy white with black primary feathers on the wings, and a bare red face and crown. Whooping cranes form monogamous pairs for life and all whooping cranes return to the same breeding territory in Wood Buffalo National Park, in Canada to nest in late April or May. Whooping cranes return to wintering grounds of Aransas National Wildlife Refuge (NWR) by late October to mid-

November where they migrate singly, in pairs, in family groups or in small flocks and remain until March or April.

Whooping cranes are omnivorous and forage by probing and gleaning foods from soil, water, and vegetation. Summer goods include dragonflies, damselflies, other aquatic insects, crayfish, clams, snails, grasshoppers, cricket, frogs, mice, voles, small birds, minnows, reptiles, and berries. During the winter in Texas, they eat a wide variety of plant and animal foods, with blue crabs, clams, and berries of Carolina wolfberry (*Lycium carolinianum*) being predominant in the diet. Foods taken at upland sites include acorns, snails, crayfish, and insects. Waste grains, such as barley and wheat, form an important part of the diet during the spring and fall migrations (Lewis, 1995; Campbell, 2003; Canadian Wildlife Service [CWS] and USFWS, 2007).

The whooping crane was federally listed as endangered on March 11, 1967 (32 FR 4001). Critical habitat has been designated in Aransas, Calhoun, and Refugio counties in Texas, and includes the Aransas National Wildlife Refuge. There is no critical habitat in or near the vicinity of the project area.

The main factors for the decline of the whooping crane were loss of habitat to agriculture (hay, pastureland, and grain production), human disturbance of nesting areas, uncontrolled hunting, specimen and egg collection, collisions with power lines, fences, and other structures, loss and degradation of migration stopover habitat, disease such as avian cholera, predation, lead poisoning, and loss of genetic diversity. Biological factors, such as delayed sexual maturity and small clutch size, prevent rapid population recovery. Drought during the breeding season presents serious hazards to the species. Exposure to disease is a special problem when large numbers of birds are concentrated in limited areas, as often happens during times of drought (Lewis, 1995; Campbell, 2003; CWS and USFWS, 2007).

Whooping cranes were originally found throughout most of North America. In the nineteenth century, the main breeding area was from the Northwest Territories to the prairie provinces in Canada, and the northern prairie states to Illinois. Only four populations of whooping cranes exist in the wild, the largest of which is the Aransas-Wood Buffalo population, which breeds in isolated marshy areas of Wood Buffalo National Park in Canada's Northwest Territories. Each fall, the entire population of whooping cranes from this national park migrates some 2,600 miles (4,183 kilometers) primarily to the Aransas NWR and adjacent areas of the central Texas coast in Aransas, Calhoun, and Refugio counties, where it overwinters in oak savannahs, salt marshes, and bays (USFWS, 1995). During migration they use various stopover areas in western Canada and the American Midwest. The three other wild populations have been introduced: an eastern population that migrates between Wisconsin and Florida and two non-migratory populations, one in central Florida, the other in Louisiana.

The natural wild population of whooping cranes spends its winters at Aransas NWR, Matagorda Island, Isla San Jose, portions of Lamar Peninsula, and Welder Point on the east side of San Antonio Bay (CWS and USFWS, 2007). The main stopover points in Texas for migrating birds are in the central and eastern Panhandle (USFWS, 1995).

USFWS reintroduced a non-essential experimental population (NEP) to Vermillion Parish in southwestern Louisiana in 2011. The reintroduced population was designated as NEP under section 10(j) of the ESA of 1973, as amended. A NEP population is a reintroduced population believed not to be essential for the survival of the species, but important for its full recovery and eventual removal from the endangered and threatened list. Since 2011, 10-16 hatched juveniles have been released annually at

White Lake Wetlands Conservation Area, and in 2016 a new release area was added 19 miles to the south at Rockefeller Wildlife Refuge. The maximum size of the non-migratory Louisiana population in 2021 was 72 individuals (36 males, 33 females, and 3 unknown) with 66 birds in Louisiana, five in Texas, and one in Oklahoma (Louisiana Department of Wildlife and Fisheries, 2021). The NEP is approximately 90 miles from the action area.

Nesting habitat in northern Canada is in poorly drained regions of freshwater marshes and wet prairies interspersed with numerous potholes and narrow-wooded ridges. Whooping cranes use a variety of habitats during migration, including freshwater marshes, wet prairies, inland lakes, small farm ponds, upland grain fields, and riverine systems. Shallow flooded palustrine wetlands are used for roosting, while croplands and emergent wetlands are used for feeding. Riverine habitats, such as submerged sandbars, are often used for roosting. The principal winter habitat in Texas is brackish bays, marshes, and salt flats, although whooping cranes sometimes feed in upland sites characterized by oak mottes, grassland swales, and ponds on gently rolling sandy soils (Lewis, 1995; Campbell, 2003; CWS and USFWS, 2007).

Members of the NEP population are known to use typical marsh habitat along with rice and crawfish fields year-round in Orange County and a nesting pair has been documented in Jefferson and Chambers County. Whooping crane use of the project area is likely particularly in intact marsh areas.

3.5 West Indian Manatee

Manatees are large, elongated marine mammals with paired flippers and a large, spoon-shaped tail. They can reach lengths of over 14 feet and weights of over 3,000 pounds. Manatees are herbivores that feed opportunistically on a wide variety of submerged, floating, and emergent vegetation.

USFWS listed the West Indian manatee as endangered on March 11, 1967 (32 FR 4001) and later received protection under ESA in 1973. On May 5, 2017, the species was reclassified from endangered to threatened because the endangered designation no longer reflected the status of the species at the time of reclassification (82 FR 16668). Critical habitat for the Florida manatee subspecies (*Trichechus manatus latirostris*) was designated in 1976 (41 FR 41914).

The major threats faced by manatees today are numerous. Collisions with watercraft account for an average of 24-30% of the known manatee deaths in Florida annually. Deaths attributed to water control structures and navigational locks represent four percent of known deaths.

There are also threats to their habitat as a result of intensive coastal development throughout much of the manatee's range. As well, the availability of warm-water refuges for manatee is uncertain if minimum flows and levels are not established for the natural springs on which many manatees depend and as deregulation of the power industry in Florida occurs. There are also threats from natural events such as red tide and cold events (USFWS, 2001).

The West Indian manatee was historically found in shallow coastal waters, bays, lagoons, estuaries, rivers, and inland lakes throughout much of the tropical and sub-tropical regions of the New World Atlantic, including many of the Caribbean islands. However, at the present time, manatees are now rare or extinct in most parts of their former range. Today, manatees occur primarily in Florida and southeastern Georgia, but individuals can range as far north as Rhode Island on the Atlantic coast (Reid, 1996) and as far west as Texas on the Gulf Coast.

Manatees live in marine, brackish, and freshwater systems in coastal and riverine areas throughout their range. Preferred habitats include areas near the shore featuring underwater vegetation like seagrass and eelgrass. They feed along grass bed margins with access to deep water channels, where they flee when threatened. Manatees often use secluded canals, creeks, embayments, and lagoons, particularly near the mouths of coastal rivers and sloughs, for feeding, resting, cavorting, mating, and calving (Marine Mammal Commission, 1986). In estuarine and brackish areas, natural and artificial fresh water sources are sought by manatees.

When ambient water temperatures drop below 68 degrees Fahrenheit in autumn and winter, manatees aggregate within the confines of natural and artificial warm-water refuges or move to the southern tip of Florida (Snow, 1991). Most artificial refuges are created by warm-water outfalls from power plants or paper mills. The largest winter aggregations are at refuges in Central and Southern Florida. The northernmost natural warm-water refuge used regularly on the west coast is at Crystal River and at Blue Springs in the St. Johns River on the east coast. Most manatees return to the same warm-water refuges each year; however, some use different refuges in different years and others use two or more refuges in the same winter (Reid and Rathbun, 1986; Reid et al., 1995). Many lesser known, minor aggregation sites are used as temporary thermal refuges. Most of these refuges are canals or boat basins where warmer water temperatures persist as temperatures in adjacent bays and rivers decline.

As water temperatures rise manatees disperse from winter aggregation areas. While some remain near their winter refuges, others undertake extensive travels along the coast and far up rivers and canals. On the east coast, summer sightings drop off rapidly north of Georgia (Lefebvre et al., 2000) and are rare north of Cape Hatteras (Schwartz, 1995); the northernmost sighting is from Rhode Island (Reid, 1996). On the west coast, sightings drop off sharply west of the Suwannee River in Florida (Marine Mammal Commission, 1986). Rare sightings also have been made in the Dry Tortugas (Reynolds and Ferguson, 1984) and the Bahamas (Lefebvre et al,. 2000).

During the summer, manatees may be commonly found almost anywhere in Florida where water depths and access channels are greater than one to two meters (O'Shea, 1988). Manatees can be found in very shallow water. In warm seasons, they usually occur alone or in pairs, although interacting groups of five to ten animals are not unusual.

The West Indian manatee historically inhabited the Laguna Madre, the Gulf, and tidally influenced portions of rivers. It is currently, however, extremely rare in Texas waters and the most recent sightings are likely individuals migrating or wandering from Mexican waters. Historical records from Texas waters include Cow Bayou (in the action area), Sabine Lake (adjacent to the action area), Copano bay, the Bolivar Peninsula, and the mouth of the Rio Grande (Schmidly, 2004; Würsig, 2017). In May 2005, a live manatee appeared in the Laguna Madre near Port Mansfield (Blankinship, 2005) several hundred miles south of the action area. This species is not likely to occur within the project area due to the lack of open water habitat.

3.6 Sea Turtles

3.6.1 Green Sea Turtle

The green turtle is a circumglobal species in tropical and subtropical waters. In U.S. Atlantic waters, it occurs around the U.S. Virgin Islands, Puerto Rico, and continental U.S. from Massachusetts to Texas.

Major nesting activity occurs on Ascension Island, Aves Island (Venezuela), Costa Rica, and in Surinam. Relatively small numbers nest in Florida, with even smaller numbers in Georgia, North Carolina, and Texas (National Marine Fisheries Service (NMFS) and USFWS, 1991a; Hirth, 1997).

The green turtle was listed in 1978 as threatened, except for Florida and the Pacific Coast of Mexico (including the Gulf of California) where it was listed as endangered (43 FR 32800, July 28, 1978). In 1998, NMFS designated critical habitat to include the coastal waters around Culebra Island, Puerto Rico (63 FR 46693, September 2, 1998). On March 23, 2015, NMFS and USFWS proposed to revise the existing listing to identify 11 green sea turtle distinct population segments (DPS) worldwide (80 FR 15271, March 23, 2015). The proposed DPS rule would list the North Atlantic DPS as threatened.

The green turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries, and other areas with an abundance of marine algae and seagrasses. Hatchlings often float in masses of sea plants (e.g., rafts of sargassum) in convergence zones. Coral reefs and rocky outcrops near feeding pastures often are used as resting areas. The adults are almost exclusively herbivorous, while the juveniles consume more invertebrates. Foods consumed include seagrasses, macroalgae and other marine plants, mollusks, sponges, crustaceans, and jellyfish (Mortimer, 1982). Terrestrial habitat is typically limited to nesting activities (Balazs, 1980). They prefer high-energy beaches with deep sand, which may be coarse to fine, with little organic content. Most green turtles nest in Florida and in Mexico. Green turtle nests are rare in Texas. In 1987, the first confirmed nesting of a green sea turtle on the Texas coast was recorded (Shaver and Amos, 1988). More recently, two green turtle nests were documented in 2006 and three in 2007; all but one in 2007 were from the Padre Island National Seashore (PINS). In 2012, six green sea turtle nests were reported from PINS and two from South Padre Island.

The principal cause of the historical, worldwide decline of the green turtle is long-term harvest of eggs and adults on nesting beaches, and juveniles and adults on feeding grounds. These harvests continue in some areas of the world and compromise efforts to recover this species. Incidental capture in fishing gear, such as gillnets and trawls, is a serious ongoing source of mortality that also adversely affects the species' recovery (NMFS, 2013a). Incidental take of green turtles has been documented with hopper dredges. Of the green turtle strandings reported from 2004 through 2007 (last year reported) along the Texas Coast, 374 were from Zone 21, which extends from the mouth of the Rio Grande to the vicinity of Yarborough Pass (Sea Turtle Stranding and Salvage Network [STSSN], 2013). In 2007, 233 green turtles were reported stranded; of these, at least 147 were cold-stunned turtles resulting from a strong cold front that passed in January (Sea Turtle, Inc., 2008).

The USACE Sea Turtle Data Warehouse (USACE, 2013) maintained records of documented incidental takes of sea turtles as a result of hopper dredging activities throughout southeastern coastal waters. USACE is currently developing a new system, called Operations and Dredging Endangered Species System (ODESS), to centralize and archive data regarding T&E species and impacts from dredging activities. The system is being coordinated with NMFS Southeast Regional Office staff. Incidences involving impacts on two green sea turtle individuals within Freeport Harbor Channel were recorded in 2006. One incident regarding impact on an individual green sea turtle within the Freeport Harbor Entrance Channel was documented in 2007. These documented events provide clear indication that swimming green turtles may be found in the entrance channel and near the Freeport Harbor jetties. They are not likely to be found in the inland channels near the Freeport Coastal Storm Risk Management

project area. The project area does not include the Gulf shoreline and green sea turtle are not expected to occur within the project area.

3.6.2 Kemp's Ridley Sea Turtle

The Kemp's ridley sea turtle is the smallest of the sea turtles, with adults reaching about 2 feet in length and weighing up to 100 pounds. Adults are primarily restricted to the Gulf, although juveniles may range throughout the Atlantic Ocean. Important foraging areas include Campeche Bay, Mexico, and Louisiana coastal waters. Almost the entire population of Kemp's ridleys nests on an 11-mile stretch of coastline near Rancho Nuevo, Tamaulipas, Mexico, approximately 190 miles south of the Rio Grande. A secondary nesting area occurs at Tuxpan, Veracruz, and sporadic nesting has been reported from Mustang Island, Texas, southward to Isla Aquada, Campeche. Several scattered isolated nesting attempts have occurred from North Carolina to Colombia.

The Kemp's ridley sea turtle was listed as endangered throughout its range in 1970 (35 FR 18319, December 2, 1970). It is considered to be the most seriously endangered of all sea turtles (USFWS and NMFS, 1992). No critical habitat has yet been designated.

Kemp's ridleys inhabit shallow coastal and estuarine waters, usually over sand or mud bottoms. Adults are primarily shallow-water benthic feeders that specialize on crabs while juveniles feed on sargassum and associated infauna, and other epipelagic species of the Gulf (USFWS and NMFS, 1992). In some regions, blue crab (Callinectes sapidus) is the most common food item of adults and juveniles. Other food items include shrimp, snails, bivalves, sea urchins, jellyfish, sea stars, fish, and occasional marine plants (Pritchard and Marquez, 1973; Shaver, 1991; Campbell, 1995).

Populations of this species have declined since 1947, when an estimated 42,000 females nested in one day, to a total nesting population of approximately 1,000 in the mid-1980s. The decline of this species was primarily the result of human activities including collection of eggs, fishing for juveniles and adults, killing adults for meat and other products, and direct take for indigenous use. In addition to these sources of mortality, Kemp's ridleys have been subject to high levels of incidental capture in fishing gear, primarily in shrimp trawls, but also in gill nets, longlines, and traps (USFWS and NMFS, 1992; NMFS, 2013b). The National Research Council's (NRC) Committee on Sea Turtle Conservation estimated in 1990 that 86 percent of the human-caused deaths of juvenile and adult loggerheads and Kemp's ridleys resulted from shrimp trawling (Campbell, 1995).

Further threats to this species include collisions with boats, explosives used to remove oil rigs, and entrapment in coastal power plant intake pipes (Campbell, 1995). Dredging operations affect Kemp's ridley turtles through incidental take and by degrading the habitat. Incidental take of ridleys has been documented with hopper dredges. In addition to direct take, channelization of the inshore and nearshore areas can degrade foraging and migratory habitat through dredged material placement, degraded water quality/clarity, and altered current flow (USFWS and NMFS, 1992). Sea turtles are also especially subject to human impacts during the time the females come ashore for nesting.

Nesting beaches were afforded official protection in 1966 and this, together with the requirement to use TEDs in shrimp trawls and other measures to reduce turtle bycatch, are some of the primary factors in recovery of this species (NMFS, 2013b). Kemp's ridley appears to be in the earliest stages of recovery. In 2006, a record number of nests were recorded since monitoring began in 1978; 12,143 nests were

documented in Mexico, with 7,866 of those at Rancho Nuevo (NMFS, 2013). Kemp's ridleys may have nested sporadically in Texas in the last 50 years; however, the number of nests over recent years has shown an ever-increasing trend (NPS, 2012 and 2013). Some of these nests were from headstarted Kemp's ridley sea turtles. The majority of the Kemp's ridley nests recorded in Texas were at the PINS. Such nestings, together with the proximity of the Rancho Nuevo rookery, probably account for the occurrence of hatchlings and subadults in Texas. Kemp's ridley has been recorded from the general vicinity of the Brazoria region. The USACE Sea Turtle Data Warehouse (USACE, 2010) documents the taking of two Kemp's ridley turtles within the Freeport Harbor Entrance Channel in 2007. Documented records of Kemp's ridleys exist from Jefferson County, Texas (Dixon, 2000); however, they are not expected to be in the project area.

3.6.3 Loggerhead Sea Turtle

Loggerhead sea turtles were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as whelks and conch. The loggerhead is widely distributed in tropical and subtropical seas, being found in the Atlantic Ocean from Nova Scotia to Argentina, the Gulf, Indian, and Pacific oceans (although it is rare in the eastern and central Pacific), and the Mediterranean Sea (Rebel, 1974; Ross, 1982; Iverson, 1986), and is the most abundant sea turtle species in U.S. coastal waters (NMFS, 2013c). In the continental U.S., loggerheads nest along the Atlantic coast from Florida to as far north as New Jersey and sporadically along the Gulf Coast. In recent years, a few have nested on barrier islands along the Texas coast.

The Northwest Atlantic Ocean population of the loggerhead turtle was listed as threatened in 2011 (76 FR 58868, September 22, 2011). In 2011, the NMFS and USFWS determined that the loggerhead sea turtle is composed of nine distinct population segments (DPSs) that constitute ''species'' that may be listed as threatened or endangered under the ESA. Formerly, all populations of the loggerhead were determined threatened throughout its range (43 FR 32808, July 28, 1978). In the 2011 final rule, four DPSs were listed as threatened and five as endangered under the ESA. The four threatened DPSs are located in the Northwest Atlantic Ocean, the South Atlantic Ocean, the Southeast Indo-Pacific Ocean, and the Southwest Indian Ocean. The five endangered DTSs are located in the Mediterranean Sea, the North Indian Ocean, the North Pacific Ocean, the Northeast Atlantic Ocean, and the South Pacific Ocean. NMFS and USFWS also announced they intend to propose the designation of critical habitat for the two loggerhead sea turtle DPSs occurring within the U.S. (the Northwest Atlantic and North Pacific Oceans) in a future rulemaking. Proposed critical habitat is located in coastal counties in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi (78 FR 17999, March 25, 2013).

The loggerhead occurs in the open seas as far as 500 miles from shore, but mainly over the continental shelf, and in bays, estuaries, lagoons, creeks, and mouths of rivers. It favors warm temperate and subtropical regions not far from shorelines. The adults occupy various habitats, from turbid bays to clear waters of reefs. Subadults occur mainly in nearshore and estuarine waters. Hatchlings move directly to sea after hatching, and often float in masses of sargassum (NMFS and USFWS, 1991). Commensurate with their use of varied habitats, loggerheads consume a wide variety of both benthic and pelagic food items, which they crush before swallowing. Conches, shellfish, horseshoe crabs, prawns and other crustacea, squid, sponges, jellyfish, basket starts, fish (carrion or slow-moving species), and even hatchling loggerheads have all been recorded as loggerhead prey (Rebel, 1974; Hughes, 1974; Mortimer, 1982).

Nesting occurs usually on open sandy beaches above the high-tide mark and seaward of well-developed dunes. They nest primarily on high-energy beaches on barrier islands adjacent to continental land masses in warm-temperate and subtropical regions. Steeply sloped beaches with gradually sloped offshore approaches are favored. Recent analyses of nesting data from southeast Florida show the population is declining. Similarly, long-term nesting data show loggerhead nesting declines in North Carolina, South Carolina, and Georgia (NMFS, 2013c). The decline of the loggerhead, like that of most sea turtles, is the result of overexploitation by man, and inadvertent mortality associated with fishing and trawling activities. The most significant threats to its population are incidental capture in fishing gear, directed harvest, coastal development, increased human use of nesting beaches, and pollution (NMFS, 2013). Incidental take of loggerheads has been documented with hopper dredges.

The loggerhead is the most abundant turtle in Texas marine waters, preferring shallow inner continental shelf waters and occurring only very infrequently in the bays. It often occurs near offshore oil rig platforms, reefs, and jetties. Loggerheads are probably present year-round but are most noticeable in the spring when a favored food item, the Portuguese man-of-war (*Physalia physalis*), is abundant. Loggerheads constitute a major portion of stranded turtles on the Texas coast each year (STSSN, 2013). A large proportion of these deaths are the result of accidental capture by shrimp trawlers, where caught turtles drown and their bodies are dumped overboard. Before 1977, no positive documentation of loggerhead nests in Texas existed. Since that time, several nests have been recorded along the Texas coast. During the last decade, nesting has remained relatively stable on the Texas coast, with 0-6 nests per year. Although nests have been found state-wide, the largest numbers have been located at the PINS (NPS, 2013).

Between 1995 and 2000, eight loggerheads were caught in Freeport Harbor Channel, and during the Freeport Harbor Project (July 13 to September 24, 2002), a relocation trawler captured one loggerhead (NMFS and USFWS, 2003). More recently, an additional loggerhead was incidentally taken in the Freeport Harbor Entrance Channel in 2006 as a result of dredging activities (USACE, 2013). Documented records of loggerheads exist from Jefferson County, Texas; however, they are not expected to be in the project area due to the lack of open water and beach habitat (Dixon, 2000).

3.6.4 Hawksbill Sea Turtle

The hawksbill sea turtle is circumtropical, occurring in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans (Witzell, 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill sea turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf (especially Texas), south to Brazil (NMFS, 2013d). In the continental U.S., the hawksbill largely nests in Florida, where it is sporadic at best (National Fish and Wildlife Laboratory (NFWL), 1980). However, a major nesting beach exists on Mona Island, Puerto Rico. The hawksbill sea turtle was Federally listed as endangered in 1970 (35 FR 84952, June 2, 1970). In 1998, NMFS and USFWS designated critical habitat near Mona Island and Isla Monito, Puerto Rico, seaward to 5.6 kilometers (km) (63 FR 46693, September 2, 1998).

Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries, and lagoons, where they occur at depths of less than 70 feet. Like some other sea turtle species, hatchlings are sometimes found floating in masses of marine plants (e.g., sargassum rafts) in the open ocean (NFWL, 1980). Hawksbills reenter coastal waters when they reach a carapace length of approximately 20 to 25 centimeters. Coral

reefs are widely recognized as the resident foraging habitat of juveniles, subadults, and adults. This habitat association is undoubtedly related to their diet of sponges, which need solid substrate for attachment. Hawksbills also occur around rocky outcrops and high-energy shoals, which are also optimum sites for sponge growth. While this species is omnivorous, it prefers invertebrates, especially encrusting organisms, such as sponges, tunicates, bryozoans, mollusks, corals, barnacles, and sea urchins. Pelagic species consumed include jellyfish and fish, and plant material such as algae, sea grasses, and mangroves (Rebel, 1974; Pritchard, 1977; Mortimer, 1982). The young are reported to be somewhat more herbivorous than adults (Ernst and Barbour, 1972). Terrestrial habitat is typically limited to nesting activities. The hawksbill, which is typically a solitary nester, nests on undisturbed, deep sand beaches, from high-energy ocean beaches to tiny pocket beaches several meters wide bounded by crevices of cliff walls. Typically, the sand beaches are low energy, with woody vegetation, such as sea grape (*Coccoloba uvifera*), near the waterline (NRC, 1990).

The primary global threat to hawksbills is habitat loss of coral reef communities. There remains a continuing demand for the hawksbill's shell, as well as other products, including leather, oil, perfume, and cosmetics. Additionally, hawksbills are harvested for their eggs and meat, while whole stuffed turtles are sold as curios in the tourist trade. In addition to directed harvest, increased human presence is a threat to hawksbills. In particular, increased recreational and commercial use of nesting beaches, general harassment of turtles, and loss of nesting habitat from human activities negatively impact hawksbills. Incidental capture in fishing gear, primarily gillnets, and vessel strikes also adversely affect this species' recovery (NMFS, 2013d). Texas is the only state outside of Florida where hawksbills are sighted with any regularity. Most of these sightings involve post hatchlings and juveniles, and are primarily associated with stone jetties. These small turtles are believed to originate from nesting beaches in Mexico (NMFS, 2013). On June 13, 1998, the first hawksbill nest recorded on the Texas coast was found at PINS. This nest remains the only documented hawksbill nest on the Texas coast (NPS, 2013). Stranding data from 2004 through 2007 show that 59 hawksbills were found along Texas waters or shorelines (STSSN, 2013). No documented records of hawksbill sea turtles exist in Jefferson County (Dixon, 2000) and they are not expected to be present in the project area due to the lack of open water and beach habitat.

3.6.5 Leatherback Sea Turtle

Leatherback sea turtles are named for their appearance. They do not have shells as other sea turtles do. Instead, their backs are covered by a slate black to bluish-black leathery skin with irregular white or pink patches. They are the largest turtles in the world, reaching over 6 feet in length and 650-1,200 pounds in weight (NPS, 2013). The leatherback sea turtle was listed as endangered throughout its range in 1970 (35 FR 84952, June 2, 1970), with critical habitat designated in the U.S. Virgin Islands in 1978 and 1979 (43 FR 43688, September 26, 1978, and 44 FR 17710, March 23, 1979, respectively). In 2011, USFWS announced that revision of the critical habitat to include the coastline and offshore waters of the Northeast Ecological Corridor of Puerto Rico may be warranted and that assessment of the need for revisions to critical habitat would be conducted during a future planned status review (76 FR 47133, August 4, 2011).

The leatherback is probably the most wide-ranging of all sea turtle species. It occurs in the Atlantic, Pacific, and Indian oceans; as far north as British Columbia, Newfoundland, Great Britain, and Norway; as far south as Australia, the Cape of Good Hope, and Argentina; and in other water bodies such as the

Mediterranean Sea (NFWL, 1980). The leatherback migrates further and ventures into colder water than any other marine reptile. Adults appear to engage in routine migrations between boreal, temperate, and tropical waters, presumably to optimize both foraging and nesting opportunities. During the summer, leatherbacks tend to occur along the east coast of the U.S. from the Gulf of Maine south to the middle of Florida. Leatherbacks nest primarily in tropical regions; major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica, and Trinidad (Ross, 1982). Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz, 1976). The U.S. Caribbean, primarily Puerto Rico and the U.S. Virgin Islands, and southeast Florida support minor nesting colonies, but represent the most significant nesting activity within the U.S. (NMFS, 2013e). The leatherback sea turtle is mainly pelagic, inhabiting the open ocean, and seldom approaches land except for nesting (Eckert, 1992). It is most often found in coastal waters only when nesting or when following concentrations of jellyfish, when it can be found in inshore waters, bays, and estuaries. It dives almost continuously, often to great depths. Despite their large size, the diet of leatherbacks consists largely of jellyfish and sea squirts. They also consume sea urchins, squid, crustaceans, fish, blue-green algae, and floating seaweed (NFWL, 1980). The leatherback typically nests on beaches with a deepwater approach (Pritchard, 1971).

Its decline is attributable to overexploitation by man and incidental mortality associated with commercial shrimping and fishing activities. Nesting populations of leatherback sea turtles are especially difficult to estimate because the females frequently change nesting beaches; however, Spotila et al. (1996) estimated the 1995 worldwide population of nesting female leatherbacks at 26,000 to 42,000. Major threats include egg collecting and mortality associated with bycatch in longline, trawl, and gillnet fisheries throughout their range; although they are jeopardized to some extent by harvesting of adult females, destruction or degradation of nesting habitat, and ingestion of floating trash (Nature Serve, 2013). This species is probably more susceptible than other turtles to drowning in shrimp trawlers equipped with turtle extruder devices (TEDs) because adult leatherbacks are too large to pass through the TED exit opening. Because leatherbacks nest in the tropics during hurricane season, a potential exists for storm-generated waves and wind to erode nesting beaches, resulting in nest loss (NMFS and USFWS, 1992).

Apart from occasional feeding aggregations such as the large one of 100 animals reported by Leary (1957) off Port Aransas in December 1956, or possible concentrations in the Brownsville Eddy in winter, leatherbacks are rare along the Texas coast, tending to keep to deeper offshore waters where their primary food source, jellyfish, occurs. In the Gulf, the leatherback is often associated with two species of jellyfish: the cabbagehead (*Stomolophus sp*.) and the moon jellyfish (*Aurelia sp*.) (NMFS and USFWS, 1992). According to USFWS (1981), leatherbacks never have been common in Texas waters. Leatherback nests were recorded on Padre Island in the 1930's to 40's. One leatherback nest was located at PINS in 2008. Since then, no leatherback nests have been located anywhere in Texas (NPS, 2013). This species is not likely to occur within the project area due to the lack of open water and beach habitat.

3.7 Monarch Butterfly

The monarch butterfly is one of the most recognizable species in North America with its iconic orange and black markings. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias spp*.) and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and

sequestering toxic cardenolides as a defense again predators. The larva pupate into chrysalis before eclosion begins six to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter into reproductive diapause (suspended reproduction) and live six to nine months.

On December 15, 2020, the USFWS announced that listing the monarch as endangered or threatened under ESA is warranted but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants (85 FR 81813). The monarch is now a candidate species under ESA; its status will be reviewed each year until a listing decision is made.

Threats to the monarch include loss of milkweed and nectar resources (i.e. breeding and migratory habitat) from conversion and development of grasslands and widespread use of herbicides), exposure to insecticides, availability and quality of overwintering habitat, and climate change.

The life cycle varies by geographic locations and in many regions breed year-round. While in more temperate climates, the species can migrate long distances (over 1850 miles) lasting for over two months to reach their overwintering sites.

Texas is situated between the principal breeding grounds in the north and the overwintering areas in Mexico. Monarchs funnel through Texas both in the fall and spring. During the fall, monarchs use two principal flyways. One traverses Texas in a 300-mile wide path stretch from Wichita Falls to Eagle Pass. Monarchs enter the Texas portion of this flyway during the last days of September and by early November most have passed through to Mexico. The second flyway is situated along the Texas coast and lasts roughly from the third week of October to the middle of November. Early each March overwintering monarchs begin arriving from their overwintering grounds in Mexico seeking emerging milkweeds where they lay their eggs before dying. Most of their offspring continue heading north to repopulate the eastern half of the US and southern Canada.

Adult monarch butterflies during breeding and migration require a sufficient quality and quantity of nectar from nectar blooming resources, which they feed on throughout their migration routes and at their breed grounding (spring through fall). Monarchs also need healthy and abundant milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat. Many monarchs use a variety of roosting trees along the fall migration route. The size and spatial arrangement of habitat patches are generally thought to be important aspects but is not well understood.

Within the action area, there are grasslands, and depressional wetlands that could support milkweed and nectar flowering species in the fall and spring that monarchs could use along their migration paths.

4.0 EFFECTS OF THE PROPOSED ACTION

This chapter describes the potential effects of the proposed action on listed species.

4.1 Piping Plover

On their wintering grounds, piping plovers use beaches, mudflats, sandflats, and dunes. None of the other landscape features attractive to plovers are present in or adjacent to the construction right-of-way. The general area is heavily industrialized with substantial disturbances including roadway traffic, and plant and port activities. The Port Arthur project area is located well inland from the coast and does not contain piping plover habitat, making it highly unlikely that piping plovers would occur in the area.

It is unlikely that piping plovers would frequent the project area because of the lack of acceptable habitat and extensive urban and industrial disturbances. Therefore, USACE has determined that PAV03B and PAV03C would have no effect on piping plovers.

4.2 Red Knot

The red knot winters along the Texas coast, foraging on beaches, oyster reefs, and exposed bay bottoms and roosting on high sand flats, and reefs, utilizing the same areas as piping plovers. The potential for occurrence in the project area is the same as that of the piping plover. It is unlikely that red knots would frequent the project area because of the lack of acceptable habitat and extensive urban and industrial disturbances. Therefore, USACE has determined that PAV03B and PAV03C would have no effect on red knots.

4.3 Eastern Black Rail

The USACE has determined implementation of any of the actionable measures “May Affect but is Not Likely to Adversely Affect.” Conservation measures have been incorporated into the plan and no work would be completed in high-quality marsh habitat.

Floodwall Construction

Attempts would be made to avoid construction during the BLRA breeding season (March 01 through August 31). If construction must be completed during this time, in order to take advantage of the construction windows, potential impacts to BLRA include noise disturbance during foraging activities or habitat avoidance of individuals that may be present within intact marsh while construction equipment is operating in open water areas.

Within the perimeter of the floodwall alignment, existing shrub-scrub habitat is considered suitable habitat and could support individuals due to the connectivity to upland areas making it suitable for nesting and foraging. Mortality of individuals has the potential to occur during construction due to the presence of suitable habitat. Birds could also be temporarily affected by the noise of the construction equipment operating in wetlands resulting in temporary habitat avoidance. Voluntary conservation measures, such as biological monitors and nest avoidance measures, have been incorporated into the plan to further minimize any potential for impacts (section 5.2).

4.4 Whooping Crane

Although their primary migration route is to the west, occasionally whooping cranes may pass through the Jefferson County region on the way to and from their principal winter habitat in and around the Aransas National Wildlife Refuge in the Texas coastal bend region. They may rest along the way in brackish bays, marshes, and salt flats, feeding primarily on blue crabs, clams, snails and insects. The Port Arthur project area is located in coastal prairie pondshore habitat surrounded by hardwood flatwoods. The project area is surrounded by extensive urban and industrial development. The type of coastal marsh system these large birds prefer is not present in the area that would be affected by construction of PAV03B or PAV03C. However, in 2021 a pair that had spent significant time in Jefferson County, Texas established a territory and nested three times, resulting in one successful chick hatching (Louisiana Department of Wildlife and Fisheries, 2021). This pair is likely to remain and continue to nest in Texas in future years. Although the habitat is not conducive for breeding or foraging, there is a possibility of birds temporarily using the project area.

Therefore, USACE has determined that Contract PAV03B "May Affect, but is Not Likely to Adversely Affect." Birds could be temporarily affected by the noise of the construction equipment operating in wetlands resulting in temporary habitat avoidance. Voluntary conservation measures, such as biological monitors and avoidance measures, have been incorporated into the plan to further minimize any potential for impacts (section 5.3).

4.5 West Indian Manatee

Sightings of West Indian manatees are very rare along the Texas coast. The construction right-of-way water crossings are shallow depressional wetlands to which manatees would not have access. Given these considerations, USACE has determined that the manatee is not likely to occur in the project areas, and that PAV03B and PAV03C would have no effect on the West Indian manatee.

4.6 Sea Turtles

The leatherback is not likely to occur in the project areas due to its preference for deep marine waters. No documented records of hawksbills exist from Jefferson County.

Green, Kemp's ridley, and loggerhead sea turtles occur in and around the Entrance Channel of the Freeport Harbor Navigation Channel and the Entrance Channel of the Sabine-Neches Waterway, but they are unlikely to occur in the inland channels of either system. They are not likely to occur near the construction rights-of-way for Port Arthur plans. Furthermore, project construction will not utilize hopper dredges, which are known to adversely impact sea turtles. Inasmuch as it would be unlikely that sea turtles would visit the area, USACE has determined that PAV03B and PAV03C would have no effect on sea turtles.

4.7 Monarch Butterfly

The proposed action would involve placement of material into existing wetland habitat; therefore, there would be no impact to existing potentially suitable habitat that may be present in the action area. Over the long-term, marsh restoration and planting of the living shoreline would increase the amount of area

available for nectar producing species to establish thereby increasing suitable habitat in the action area for monarchs.

Construction activities may produce vibrations and noise that monarchs find undesirable. Habitat avoidance would be shifted by a couple hundred feet if at all. Monarchs are known to utilize roadside patches of milkweed and flowering plants, which would produce as much or more noise than the construction equipment operating to move and place the sediment.

Due to the construction within suitable habitat within the active construction area, implementation of the action "May Affect but is Not Likely to Adversely Affect" monarch butterfly.

5.0 VOLUNTARY CONSERVATION MEASURES AND MONITORING

5.1 General Conservation Measures

The following conservation measures would be incorporated into operations for the protection of all listed species:

- All personnel (contractors, workers, etc.) will attend training sessions prior to the initiation of, or their participation in, project work activities. Training will include: 1) recognition of BLRA and their habitat, and sign; 2) impact avoidance measures; 3) reporting criteria; 4) contact information for rescue agencies in the area; and 5) penalties of violating the ESA.
- Project equipment and vehicles transiting between the staging area and restoration site will be minimized to the extent practicable, including but not limited to using designated routes and confining vehicle access to the immediate needs of the project.
- The contractor will coordinate and sequence work to minimize the frequency and density of vehicular traffic within and near the restoration unit(s) and limit driving to the greatest extent practicable.
- Use of construction lighting at night shall be minimized, directed toward the construction activity area, and shielded from view outside of the project area to the maximum extent practicable.
- A designated monitor(s) will be identified who will act as the single point of contact responsible for communicating and reporting endangered species issues throughout the construction period.

In addition to the conservation measures above, palustrine emergent wetland habitat would be restored and/or created as part of a mitigation plan to compensate for the habitat loss resulting from PAV03B and PAV03C. The proposed mitigation plan will be included in Section 6.14 of the Sabine to Galveston Port Arthur Supplemental Environmental Assessment.

5.2 Eastern Black Rail

The following conservation measures would be implemented to minimize the potential for adverse effects during construction to BLRA:

- No marsh construction activities will occur from March 1st through September 30th (breeding, nesting, chick rearing, and molting season). If this timing restriction cannot be achieved, then the following will take place:
    - On-site vegetative field surveys will be conducted before work begins to identify BLRA habitat types within the project area.
    - If temporary access routes, pipeline routes, or staging areas occur within identified black rail habitat, the contractor must minimize traffic in these areas therefore minimizing the construction footprint (i.e. limited paths).
    - In addition to minimizing access routes, areas of high marsh habitat should be left intact to provide refugia for the black rail to ensure escape access routes. The USACE will work with the Service to identify refugia areas once site specific planning begins.
    - Biological monitors are required to assist construction crews with avoidance and minimization of black rail habitats once work begins.
- Use of construction lighting at night shall be minimized, directed toward the construction activity area, and shielded from view outside of the project area.
- Efforts will be made to mitigate noise and vibration within and adjacent to BLRA habitat to include planning and performing work outside of peak breeding call times (i.e., one hour before and after dawn and one hour before and after dusk) for BLRA.
- Clearing of BLRA habitat must be done in a way that allows for the escape of the birds toward refugia areas remaining adjacent to the project area. The project should avoid clearing in a way that creates isolated pockets of suitable BLRA habitat. This is achieved by linear clearing in the direction of refugia and avoiding clearing via decreasing concentric circles.
- Clearing should be done at a slow speed. The Service has not identified a specific speed because construction equipment may not be calibrated, and operator efficiency may differ. Understanding that slow is a relative term, avoiding bird mortality from being run over by equipment must be the goal that dictates speed. Thus, speed must be maintained at a slow enough level that BLRA and other wildlife can escape approaching equipment.
- A biological monitor may be required to maintain a sufficiently slow pace of equipment moving through potential habitat, which allows for the escape of the birds ahead. Biological monitors should be aware that the species will run to escape oncoming disturbance and are highly unlikely to fly during daylight.
- Additionally, the biological monitor will have authority to stop work immediately if BLRA chicks or eggs are observed within the project area and the Texas Coastal Ecological Services Field Office should be contacted immediately at (281)286-8282. The need for a biological monitor will depend on the results of the surveys and time of year that work is completed in BLRA habitat and must be coordinated with the Service.
- In the rare instance that equipment is left idle within BLRA habitat (e.g., mechanical failure, temporary stoppage), a complete inspection of the equipment surroundings should take place prior to moving it to ensure that no birds have settled around the equipment.

- Upon discovery of any injured BLRA, the Texas Coastal Ecological Services Field Office will be notified at 281-286-8282, and the individual will be kept comfortable and safe until a Service biologist can arrive and transport the bird to a veterinary facility for appropriate care.

5.3 Whooping Crane

The following conservation measures would be implemented to minimize the potential for adverse effect to whooping crane:

- Seasonal timing restriction between January 15th and June 15th in which construction should be avoided if possible. If the seasonal timing restriction cannot be avoided:
    - A biological monitor qualified in identifying whooping cranes and with stop work authority will be on site when any work is being done in suitable wetland habitat if the work is performed during the breeding/nesting season (January through June) or the wintering season (October 1 through April 15).
    - Prior to the start of work each day, the project area will be surveyed for the presence of whooping cranes within 1,000 feet (805 m) of the project area. If whooping cranes are observed, no work will be performed until the birds have moved away from the project area. If birds move into the project area during project construction implementation, all mechanized equipment actions will cease until the birds vacate the project area.
    - If construction equipment is over 15 feet tall, the equipment must be marked with visual flagging as bird avoidance measures when equipment is in use and laid horizontally on the ground when not in use; and contractors are to ensure that the equipment is placed horizontally on the ground when not in use to the maximum extent practicable, during fog or inclement weather, and at dusk and overnight to avoid whooping crane strikes during low visibility conditions.
- Workers, temporary or permanent, should be educated on the importance and protections allocated to this species, including but not limited to no collection of features or eggs and do not touch or harass birds.
- All whooping crane sightings should be immediately reported to the Texas Coastal Ecological Services Field Office at 281-286-8282, Wade Harrel (Service Species Lead) at Wade_Harrell@fws.gov, Trey Barron (TPWD) at Trey.Barron@tpwd.texas.gov, and Eva Szyszkoski (Louisiana Wildlife and Fisheries Department) at ESzyszkoski@wlf.la.gov or by phone at (337) 536-9596.

6.0 CONCLUSION

Based upon the findings of this BA, USACE has made the following effects determination for species that were identified as occurring or potentially occurring in the action area:

Table 2. Effect Determinations

Species	Scientific Name	Jurisdiction	Effect Determination
Birds			
Piping Plover	*Charadrius melodus*	USFWS	No Effect
Red Knot	*Calidris canutus rufa*	USFWS	No Effect
Eastern black rail	*Laterallus jamaicensis jamaicensis*	USFWS	NLAA
Whooping Crane	*Grus americana*	USFWS	NLAA
Mammals			
West Indian Manatee	*Trichechus manatus*	UFWS	No Effect
Reptiles			
Green Sea Turtle	*Chelonia mydas*	USFWS	No Effect
Kemp's Ridley Sea Turtle	*Eretmochelys imbricata*	USFWS	No Effect
Loggerhead Sea Turtle	*Lepidochelys kempii*	USFWS	No Effect
Hawksbill Sea Turtle	*Dermochelys coriacea*	USFWS	No Effect
Leatherback Sea Turtle	*Caretta caretta*	USFWS	No Effect
Insects			
Monarch Butterfly	*Danaus plexippus*	USFWS	No Effect

NLAA= Not likely to adversely affect

7.0 REFERENCES

AOU. 1998. Check-list of North American birds. Seventh edition.

Balazs, G. 1980. Synopsis of biological data on the green turtle in the Hawaiian Islands. NOAA Technical Memorandum. NMFS-SWFC-7.

Blakenship, R. 2005. Texas Parks and Wildlife Department, Coastal Fisheries Division. Personal communication to Erik Huebner, PBS&J, 12 May.

Campbell, L. 2003. Endangered and threatened animals of Texas, their life history and management. Texas Parks and Wildlife Department, Resource Protection Division, Endangered Species Branch. Austin, TX.

Campbell, L. 1995. Endangered and threatened animals of Texas, their life history and management. Texas Parks and Wildlife Department, Resource Protection Division, Endangered Resources Branch, Austin.

CWS and USFWS. 2007. International recovery plan for the whooping crane. Third revision. Recovery of Nationally Endangered Wildlife (RENEW), Ottawa, and US. Fish and Wildlife Service. Albuquerque, NM. 162 pp.

Dixon, J.R. 2000. Amphibians and reptiles of Texas. Second edition. Texas A&M University Press, College Station.

Eckert, S.A. 1992. Bound for deepwater. Natural History. March:28—35.

Ernst, C.H., and R.W. Barbour. 1972. Turtles of the United States. University of Kentucky Press, Lexington.

Hughes, G.R. 1974. The Sea Turtles of South East Africa: Vol. II. The Biology of the Tongoland Loggerhead Turtle *Caretta caretta L.* with Comments on the Leatherback Turtle *Dermachelys coriacea L.* and the Green Turtle Chelonia mydas L. in the Study Region. Investigational Report 67:1-96, Oceanographic Research Institute. Durban.

Iverson, J.B. 1986. A checklist with distribution maps of the turtles of the world. Paust Printing, Richmond, Indiana.

Leary, T. 1957. A schooling of leatherback turtles, *Dermochelys coriacea coriacea*, on the Texas coast. Copeia 3:232.

Lefebvre, L.W., J.P. Reid, W.J. Kenworthy, and J.A. Powell. 2000. Characterizing manatee habitat use and seagrass grazing in Florida and Puerto Rico: Implications for conservation and management. Pacific Conservation Biology 5(4):289—298.

Lewis, J.C. 1995. Whooping crane (*Grus americana*). In: The birds of North America, No. 153 (A. Poole and F. Gill, editors). The Academy of Natural Sciences, Philadelphia, and the American Ornithologist's Union. Washington, D.C.

Louisiana Department of Wildlife and Fisheries. 2021. 2020-2021 Louisiana Whooping Crane Report. Coastal and Nongame Resources. Internet URL: https://www.wlf.louisiana.gov/assets/Resources/Publications/Whooping_Crane/2020-21_louisiana_whooping_crane_report.pdf. Accessed on 01 June 2022.

Marine Mammal Commission. 1986. Habitat protection needs for the subpopulation of West Indian manatees in the Crystal River area of northwest Florida. Document No. PB86-2000250. National Technical Information Service. Silver Spring, MD. 46pp.

Mortimer, J.A. 1982. Feeding ecology of sea turtles. In: Biology and conservation of sea Turtles (K. Bjorndal, ed.), 103–109. Smithsonian Institution Press, Washington, D.C.

NatureServe. 2013a. *Calidris canutus rufa* (Red Knot – rufa subspecies) in NatureServe Explorer: An online encyclopedia of life. Available at: http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Calidris+canutus+rufa.

NatureServe. 2013b. *Dermochelys coriacea* (Leatherback) in NatureServe Explorer: An online encyclopedia of life. Accessed on the internet on June 4, 2013. http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dermochelys+coriacea

NatureServe. 2017. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. Available at: http://explorer.natureserve.org.

NFWL. 1980. Selected vertebrate endangered species of the seacoast of the United States. US Fish and Wildlife Service. Biological Services Program. Washington, D.C. FWS/OBS-80/01.

NMFS. 2013a. Office of Protected Species – Green Turtle (*Chelonia mydas*). http://www.nmfs.noaa.gov/pr/species/turtles/green.htm (accessed June 6, 2013).

NMFS. 2013b. Office of Protected Species – Kemp's Ridley Turtle (*Lepidochelys kempii*). http://www.nmfs.noaa.gov/pr/species/turtles/kempsridley.htm (accessed June 6, 2013).

NMFS. 2013c. Office of Protected Species – Loggerhead Turtle (*Caretta caretta*). http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm (accessed June 6, 2013).

NMFS. 2013d. Office of Protected Species – Hawksbill Turtle (*Eretmochelys imbricata*). http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm (accessed June 6, 2013).

NMFS. 2013e. Office of Protected Species – Leatherback Turtle (*Dermochelys coriacea*). http://www.nmfs.noaa.gov/pr/species/turtles/leatherback.htm (accessed June 6, 2013).

NMFS and USFWS. 1991. Recovery plan for U.S. population of Atlantic green turtle. National Marine Fisheries Service, Washington, D.C.

NMFS and USFWS. 1992. Recovery plan for leatherback turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C.

NMFS and USFWS. 2003. Endangered Species Act, Section 7 Consulation, Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining (Borrow) Areas Using Hopper Dredges by COE Galveston.

NPS. 2012. Sea Turtle Nesting Season 2012, Padre Island National Seashore, Texas. http://www.nps.gov/pais/naturescience/nesting2012.htm (accessed on June 6, 2013).

NPS. 2013. The Kemp's Ridley Sea Turtle. http://www.nps.gov/pais/naturescience/kridley.htm (accessed June 6, 2013).

NRC. 1990. Decline of the sea turtles: causes and prevention. National Academy Press, Washington, D.C.

O'Shea, T. J. 1988. The past, present, and future of manatees in the southeastern United States: realities, misunderstandings, and enigmas. Pages 184-204 in R. R. Odom, K. A. Riddleberger, and J. C. Ozier, editors. Proceedings of the Third Southeastern Nongame and Endangered Wildlife Symposium, Georgia Department of Natural Resources, Social Circle.

Pritchard, P.C.H. 1971. The leatherback or leathery turtle Dermochelys coriacea. IUCN Monograph No. 1. International Union for Conservation of Nature and Natural Resources, Morges, Switzerland.

Pritchard, P.C.H. and R. Marquez. 1973. Kemp's ridley turtle or Atlantic ridley, *Lepidochelys kempi*. IUCN Monograph 2, Morges, Switzerland.

Pritchard, P.C.H. 1977. Marine Turtles of Micronesia. Chelonia Press, San Francisco. 83 pp.

Rebel, T.P. 1974. Sea turtles and the turtle industry of the West Indies, Florida, and the Gulf of Mexico. Rev. Ed. University of Miami Press, Coral Gables, Florida.

Reid. J.P. 1996. Chessie the manatee: From Florida to Rhode Island. Argos Newsletter 51:13.

Reid, J.P. and G.B. Rathbun. 1986. 1985 manatee identification catalog update. United States Fish and Wildlife Service and Florida Power and Light Co. Unpublished Report. 14pp.

Reid, J.P., R.K. Bonde, and T.J. O'Shea. 1995. Reproduction and mortality of radio-tagged and recognizable manatees on the Atlantic Coast of Florida. Pages 171—191 *in* T.J. O'Shea, B.B. Acherman, and H.F. Percival (eds.). Population Biology of the Florida Manatee. National Biological Service, Information Technology Report No. 1. Washington, D.C.

Reynolds, J.E., III and J.C. Ferguson. 1984. Implications of the presence of manatees (*Trichechus manatus*) near the Dry Tortugas Islands. Florida Scientist 47:187—189.

Ross, J.P. 1982. Historical decline of loggerhead, ridley, and leatherback sea turtles. In: Biology and conservation of sea turtles (K. Bjorndal, ed.), 189–195. Smithsonian Institution Press, Washington, D.C.

Schwartz, F. 1976. Status of sea turtles, Cheloniidae and Dermochelidae, in North Carolina. Abstr. in Proceedings and abstracts from the 73rd meeting of the North Carolina Academy of Science, Inc., April 2–3, 1976, at the Univ. N. Carolina, Wilmington, N. Carolina. J. Elisha Mitchell Sci. Soc. 92(2):76–77.

Schmidly, D.J. 1983. Texas mammals east of the Balcones Fault Zone. Texas A&M University Press. College Station, TX.

Schwartz, F.J. 1995. Florida manatees, *Trichechus manatus* (Sirenia: Trichechidae) in North Carolina 1919-1994. Brimleyana 22:53—60.

Sea Turtle, Inc. 2008. http://www.seaturtleinc.com/ (accessed February 11, 2008).

STSSN. 2013. http://www.sefsc.noaa.gov/STSSN/STSSNReportDriver.jsp (accessed June 6, 2013).

Shaver, D.J. 1991. Feeding ecology of wild and head-started Kemp's ridley sea turtles in south Texas waters. Journal of Herpetology 25(3):327–334.

Shaver, D.J. and A. Amos. 1988. Sea Turtle Nesting on Texas Beaches in 1987. Marine Turtle Newsletter 42:7-9.

Snow, R.W. 1991. The distribution and relative abundance of the Florida manatee in Everglades National Park, an annual report, October 1, 1991. South Florida Research Center. Everglades National Park. 26 pp. Homestead, FL.

Spotila, J.R., A.E. Dunham, A.J. Leslie, A.C. Steyermark, P.T. Plotkin, and F.V. Paladino. 1996. Worldwide population decline of *Dermochelys coriacea*: are leatherback turtles going extinct? Chelonian Conservation and Biology 2(2):209–222.

USFWS. 2009. Piping Plover (*Charadrius melodus*): Spotlight Species Action Plan for the threatened Atlantic Coast and Northern Great Plains populations. U.S. Fish and Wildlife Service, Northeast Region. Hadley, MA.

USACE. 2013. Sea Turtle Data Warehouse. http://el.erdc.usace.army.mil/seaturtles/list.cfm?Code=Project&Step=2&Type=SWG (accessed June 6, 2013).

USACE. 2017. Sabine Pass to Galveston Bay, Texas Coastal Storm Risk Management and Ecosystem Restoration Final Integrated Feasibility Report – Environmental Impact Statement. Galveston District. May 2017.

USFWS. 1981. Endangered species assessments and surveys in Hidalgo and Willacy counties, Texas. Final report to USACE, Galveston by USFWS, Denver Wildlife Research Center.

USFWS. 1995. Threatened and endangered species of Texas. U.S. Fish and Wildlife Service. Austin, TX.

USFWS. 2001. Florida Manatee Recovery Plan (*Trichechus manatus latirostris*), Third Revision. US Department of Fish and Wildlife Service, Southeast Region. Atlanta, GA.

USFWS. 2011. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form "*Calidris canutus ssp. rufa*".

USFWS. 2019. Species Status Assessment Report for the Eastern Black Rail (Laterallus jamaicensis jamaicensis). U.S. Fish and Wildlife Service, Southeast Region. Atlanta, GA.

USFWS. 2020. Monarch (*Danaus plexippus*) Species Status Assessment Report. V2.1 96 pp + appendices.

Witzell, W.N. 1983. Synopsis of biological data on the hawksbill turtle Eretmochelys imbricata (Linnaeus, 1766). FAO Fisheries Synopsis No. 137. FIR/S137, SAST – Hawksbill Turtle – 5.31 (07) 017.01. Food and Agriculture Organization (FAO) of the United Nations, Rome, Italy.

Würsig, B. 2017. Marine Mammals of the Gulf of Mexico. In: Ward C. (eds) Habitats and Biota of the Gulf of Mexico: Before the Deepwater Horizon Oil Spill. Springer. New York, NY. Available at: https://doi.org/10.1007/978-1-4939-3456-0_5.

ATTACHMENT A

Sabine Pass to Galveston Bay, Texas
Coastal Storm Risk Management and Ecosystem Restoration
Final Integrated Feasibility Report and Environmental Impact Study

Appendix J

BIOLOGICAL ASSESSMENT
FOR ENDANGERED SPECIES ACT COORDINATION

May 2017

US Army Corps of Engineers ®
Galveston District

BIOLOGICAL ASSESSMENT FOR FEDERALLY-LISTED THREATENED AND ENDANGERED SPECIES

SABINE PASS TO GALVESTON BAY, TEXAS
COASTAL STORM RISK MANAGEMENT AND ECOSYSTEM RESTORATION PROJECT
TENTATIVELY SELECTED PLAN (SABINE AND FREEPORT REGIONS)
ORANGE, JEFFERSON AND BRAZORIA COUNTIES, TEXAS

PREPARED BY U.S. ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT
2000 FORT POINT ROAD
GALVESTON, TEXAS 77550

September 2015

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LIST OF ATTACHMENTS

List of Acronyms

Biological Assessment (BA)
Coastal Storm Risk Management (CSRM)
Distinct Population Segment (DPS)
Draft Integrated Feasibility Report and Environmental Impact Statement (DIFR-EIS)
Ecosystem Restoration (ER)
Essential Fish Habitat (EFH)
Endangered Species Act (ESA)
National Marine Fisheries Service (NMFS)
National Wildlife Refuge (NWR)
Padre Island National Seashore (PINS)
Relative sea-level rise (RSLR)
Submerged aquatic vegetation (SAV)
Tentatively Selected Plan (TSP)
Texas General Land Office (GLO)
United States (U.S.)
United States Army Corps of Engineers (USACE)
United States Fish and Wildlife Service (USFWS)
Wildlife Management Area (WMA)

1 INTRODUCTION

1.1 PURPOSE OF THE BIOLOGICAL ASSESSMENT

This Biological Assessment (BA) is being prepared for the purpose of fulfilling the U.S. Army Corps of Engineers (USACE) requirements as outlined under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended, and to assist the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS) personnel in fulfilling their obligations under the ESA. The proposed Federal action (also referred to as the tentatively selected plan or TSP) consists of coastal storm risk management projects in Orange, Jefferson and Brazoria Counties, Texas. The proposed action was identified during the Sabine Pass to Galveston Bay, Texas, Coastal Storm Risk Management (CSRM) and Ecosystem Restoration (ER) Study, conducted by USACE and the non-Federal sponsor for the study, the Texas General Land Office. USACE and GLO are in the process of completing a Draft Integrated Feasibility Report and Environmental Impact Statement (DIFR-EIS) for the study. A Notice of Intent to prepare an EIS was published on November 24, 2014. The DIFR-EIS is currently scheduled to be released for public review in September, 2015. Further engineering refinement of the TSP will be conducted after comments are received on the DIFR-EIS. USACE Headquarters review will confirm the final recommended plan. If impacts of the final plan are greatly different from that presented in the DIFR-EIS, USACE will prepare a revised biological assessment and consult further with USFWS and the NMFS. Depending upon the scale and significance of the plan revisions, USACE may also prepare a revised DEIS. Currently, the Final IFR-EIS is scheduled for release in August 2016.

1.2 PROJECT SETTING

The Sabine Pass to Galveston Bay feasibility study is evaluating CSRM and ER problems in a six-county (Orange, Jefferson, Chambers, Harris, Galveston and Brazoria) study area along the upper Texas coast (Figure 1). The study area is located in the northwest Gulf of Mexico, which has a higher probability risk for occurrence of severe hurricanes and storm surge than other areas of the Gulf. Over five million people reside in these six counties, including the 4th largest U.S. city (Houston), and three other large metropolitan areas (Beaumont/Port Arthur/Orange, Galveston/Texas City and Freeport/Lake Jackson/Surfside). The population of these six counties is projected to increase to over nine million within the next 50 years. In addition to the potential population at risk, three of the world's nine largest oil refineries, 40 percent of the nation's petrochemical industry, 25 percent of the nation's petroleum-refining capacity, and three of the 10 largest U.S. seaports are also located in the study area. Waterborne commerce statistics data show that $232 billion in cargo transits the study area annually. The growing population, communities

and nationally significant industries are extremely vulnerable to risks from coastal storm events with approximately 2.26 million people in the study area living within a storm-surge inundation zone.

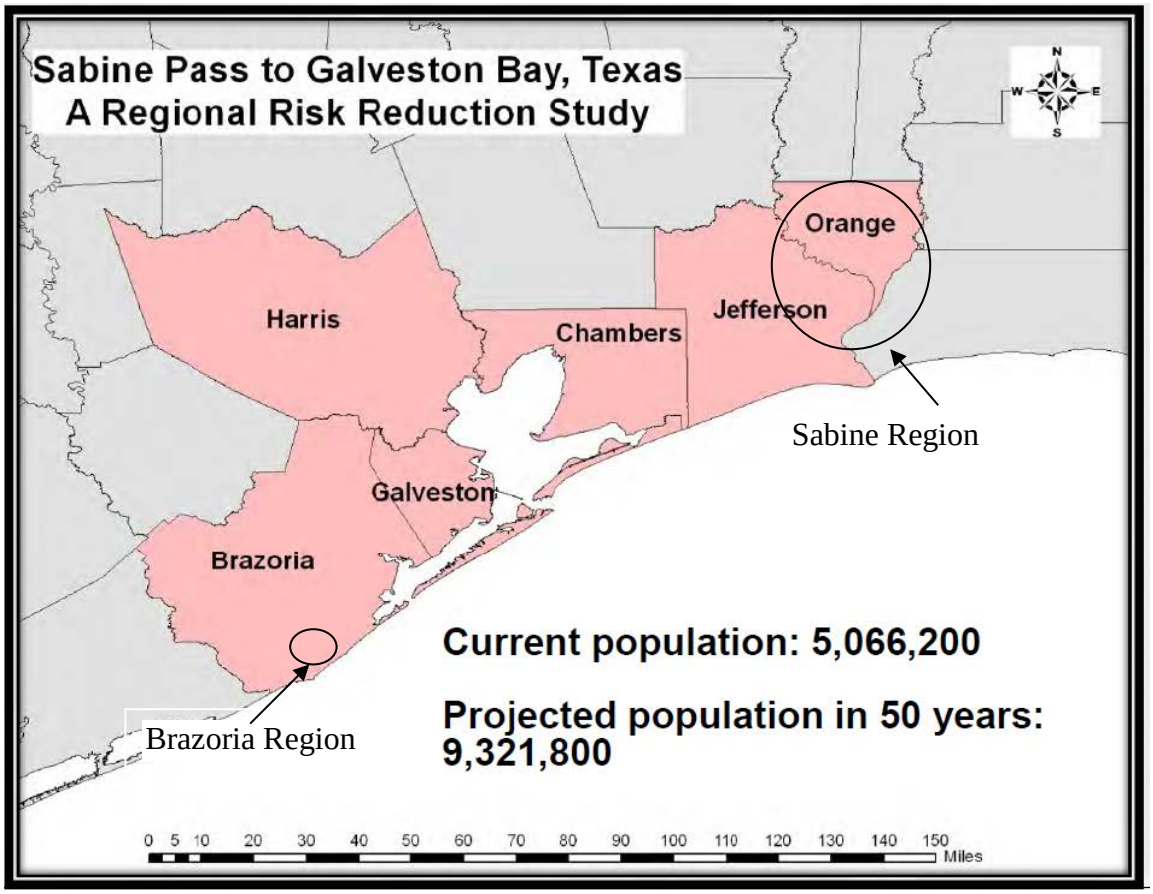


Figure 1: S2G Study and Project Areas Vicinity Map

The study area consists of three watershed-based regions: the Sabine, Galveston, and Brazoria Regions. The Sabine Region is focused on Orange and Northeast Jefferson Counties, including the three communities known as the Golden Triangle – Beaumont, Port Arthur, and Orange, Texas. The Galveston Region includes all of the Galveston Bay system, including the Gulf shoreline along Bolivar Peninsula and Galveston Island from High Island to San Luis Pass. The Brazoria Region includes the lower Brazos River Diversion and Old River Channels in the vicinity of Freeport, Texas.

In this assessment, the footprint of proposed CSRM projects and the areas affected by these systems will be referred to as the "project areas." This Biological Assessment evaluates two geographically separate project areas in detail – the Sabine Region and the Brazoria Region. The general extent of the two regions is circled on Figure 1. The DIFR-EIS has identified a Tentatively

Selected Plan (TSP) with three separate elements. The Orange-Jefferson CSRM Plan and the Port Arthur and Vicinity CSRM Plan are located in the Sabine Region, and the Freeport and Vicinity CSRM Plan is located in the Brazoria Region.

The DIFR-EIS will present a programmatic overview of coastal storm risk problems and opportunities in the entire six-county study area, but will fully evaluate only the three plans in the Sabine and Brazoria regions. A programmatic overview of coastal storm risk problems and opportunities in the Galveston Region (Chambers, Harris and Galveston Counties) will be presented in the DIFR-EIS. This overview will provide recommendations for future studies in the Galveston Region; no in-depth alternative analyses will be conducted and no recommendations for project construction will be made for this region. The study report will also present a programmatic overview of ER opportunities for the entire six-county study area. None of the ER proposals will be fully developed or recommended for construction in this report. This Biological Assessment does not evaluate potential impacts on listed species for recommended future studies in the Galveston Region or the programmatic overview of ER opportunities in the six-county study area. Assessments will be developed in the future for specific recommended projects covered by subsequent feasibility reports.

1.3 DESCRIPTION OF THE ECOLOGICAL REGION

1.3.1 General Overview

The study area lies within the Gulf Prairie and Marsh ecological region, which extends along the Texas Gulf Coast from the Sabine River south to the Rio Grande (Gould et al. 1960). The prominent features of this coastal ecosystem include tidal, micro-tidal, and freshwater coastal marshes; bays and lagoons which support extensive seagrass beds, tidal flats and reef complexes; barrier islands; tallgrass prairie with small depressional wetlands, and forest riparian corridors, oak mottes and coastal woodlots, and dense brush habitats. Wetland habitats provide important wintering and migration stopover habitat for migratory birds including Central Flyway waterfowl, shorebirds, wading birds, and marsh and waterbirds. A string of refuges and wildlife management areas (WMAs) along the coast serve as critical staging areas for waterfowl migrating to and from Mexico (TPWD, 2013; USFWS, 2013).

Natural forces, which shape the system, include dominant south to southeast winds, tropical weather systems, and a substantial rainfall of over 60 inches per year. Flooding and freshwater inflows are key systemic processes, which buffer salinity and provide nutrients and sediments to extensive estuaries in the Sabine and Galveston regions. In contrast to these regions, the Brazos River discharges directly into the Gulf of Mexico, and deltaic and barrier island processes have formed extensive coastal wetlands along the coast in Brazoria County. While highly impacted by

human activities, this ecosystem remains very productive for a wide variety of fish and wildlife.

The Sabine and greater Galveston Bay estuaries and extensive coastal wetlands in the Brazos delta region are a vital habitat for 75 percent of the fish and shellfish species found in the Gulf of Mexico. The marshes and rice prairies over the entire study area are a major wintering area for waterfowl of the central flyway. On average, 1.3 to 4.5 million ducks, or 30 to 71 percent of the total flyway population, winter annually on the Texas Gulf coast (Stutzenbaker and Weller 1989). This area also winters 90 percent of the snow, Canada, and greater white-fronted geese in the Central Flyway. On average, 180,000 pairs of colonial-nesting waterbirds nest annually in Texas coastal habitats. Near coastal forests are critically important for the nation's songbird resources as the vast majority utilize this habitat during their trans- and circum-Gulf migrations (USFWS 2008).

1.3.2 Biological Communities in the Project Areas

Coastal prairies

Remnant tracts of tall grass and salty prairies are present in the study area, often interspersed within coastal marshes. Slightly higher in elevation, the grass and prairie tracts offer a different type of habitat (USFWS 2008). Wooly rosemallow, bushy bluestem, and gulf cordgrass thrive here and provide important nesting habitat for mottled ducks, dickcissels, and other species. Black rails, short-eared owls, and LeConte's sparrow find shelter and feed within these prairie habitats. Almost all of the region's historic native coastal tall grass prairie and its associated prairie wetlands have been lost through conversion to agricultural uses and urban development (USFWS, 2008).

Coastal marshes

Salt marsh is located along the Gulf shoreline and higher salinity areas of the estuarine systems. Subjected to regular tidal inundation, low saline marsh is dominated by smooth cordgrass/oystergrass (*Spartina alterniflora*) and often accompanied by seashore saltgrass (*Distichlis spicata*), blackrush (*Juncus romerianus*), saline marsh aster (*Aster tenuifolius*), and marshhay cordgrass/wiregrass (*S. patens*). The dominant species in high salt marsh, which is subject to less-frequent tidal inundation, is glasswort (*Salicornia* spp.). Brackish marshes grade inland from salt marsh. The dominant species in low brackish marsh is saltmarsh bulrush (*Scirpus robustus*); seashore saltgrass and marshhay cordgrass are co-dominant species in high brackish marsh. Intermediate marshes are subjected to periodic pulses of salt water and maintain a year-round salinity in the range of 3 to 4 ppt. They grade inland from brackish marshes and dominate interior marshes of the Sabine and coastal Brazoria systems. The diversity and density of plant species are relatively high with marshhay cordgrass the most dominant species in high marsh. Co-dominant species in low marsh are seashore paspalum (*Paspalum vaginatum*), Olney bulrush (*S.*

americanus), California bulrush/giant bulrush (*S. californicus*), and common reedgrass/roseau cane (*Phragmites australis*); bulltongue (*Sagittari lancifolia*) and sand spikerush (*E. montevidensis*) are also frequent. Freshwater marshes dominate in upstream reaches of the Sabine and Brazos Rivers. They are heterogeneous, with local species composition governed by frequency and duration of flooding, topography, substrate, hydrology, and salinity. Co-dominant species in low marsh are maidencane (*P. hemitomen*), giant cutgrass (*Zizaniopsis milacea*), and bulltongue. Co-dominant species in high marsh are squarestem spikerush (*E. quadrangulata*) and marshhay cordgrass. Other characteristic species include American lotus (*Nelumbo lutea*), watershield (*Brasenia screben*), duckweed *(Lemna* spp.), and fanwort (*Cabomba caroliniana*). Salinity rarely increases above 2 ppt,, with a year-round average of approximately 0.5 to 1 ppt. Tidal fresh marshes support extremely high densities of wildlife, such as migratory waterfowl. Marsh serves as nursery areas for many important commercial and recreational fish and shellfish species including white and brown shrimp, blue crab, red drum, flounder, and speckled sea trout.

Coastal marsh habitats provide important functions of improving water quality in the estuarine ecosystem, providing flood control benefits, and buffering inland habitats from tropical storm-generated tidal surges. In addition, marshes are extremely biologically productive and diverse and provide detrital input, which is the basis for the estuarine food chain (USFWS 2008). The shallow Gulf of Mexico waters, tidal flats, and beaches provide important shallow water feeding, breeding, and nesting habitat utilized by a host of colonial and migrating waterfowl and shorebirds (USFWS 2008).

Forested Wetlands

Upstream of the coastal marshes in the Sabine-Neches estuary, the study area is dominated by dense bottomland hardwood forests and cypress-tupelo swamps. These wetland forests cover an intricate network of sloughs and sandy ridges formed within the rivers' relict meander belts. Bald cypress (*Taxodium distichum*) – tupelo-gum (*Nyssa aquatica*) swamps grow in the inundated areas between the ridges, and floodplain hardwood forest of oaks (*Quercus nigra, Q. phellos, Q. alba, Q. lyrata*), sweetgum (*Liquidambar styraciflua*), hickories (*Carya* spp.), American elm (*Ulmus americanus*), maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), American holly (*Ilex opaca*), and loblolly pine (*Pinus taeda*) grow atop the sandier ridges and on the Pleistocene terrace uplands which border the floodplains. In general, these are healthy, stable habitats. The hardwoods, and especially the cypress trees, have been logged repeatedly since the turn of the century and as recently, perhaps, as the 1950s (USACE 1998). Though much of the forest is secondary growth, the swamp and bottomland hardwood habitats have medium to high value for food and cover to resident and migratory fish and wildlife. Inland from the coastal zone, forested wetlands in the Brazos River system are dominated by bottomland hardwood communities.

Aquatic Habitats

Large estuarine aquatic habitats are present in the Sabine Lake area. Sabine Lake is the drowned valley of the converged Sabine and Neches River systems. In contrast to the Sabine Region, the Brazos River discharges directly into the Gulf of Mexico. Both the Sabine and Brazoria regions contain essential fish habitat (EFH), which is considered necessary for spawning, breeding, feeding, or growth to maturity of species managed by Regional Fishery Management Councils, as described in a series of Fishery Management Plans, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. The study area contains EFH for larval, juvenile, and adult brown and white shrimp (*Penaeus aztecus* and *Penaeus setiferus*); juvenile king mackerel (*Scomberomorus cavalla*), vermillion snapper (Rhomboplites aurorubens), Warsaw grouper (Epinephelus nigritus), and Wenchman snapper (*Pristipomoides aquilonaris)*; juvenile and adult red drum (*Sciaenops ocellatus*), Almaco jack (Seriola rivoliana), and gray triggerfish (Balistes capriscus); adult gag grouper (*Mycteroperca microlepis*) and gray snapper (*Lutjanus griseus*); larval, juvenile, and adult red snapper (*Lutjanus campechanus*), lane snapper (*Lutjanus synagris*), greater amberjack (*Seriola dumerili*), and cobia (*Rachycentron canadum*). The categories of EFH that occur within the study area include estuarine emergent marsh, estuarine submerged aquatic vegetation (SAV), estuarine hard bottom, and estuarine mud/soft bottoms.

1.3.3 Protected Lands

In or Adjacent to the Sabine Region

McFaddin NWR covers about 58,861 acres in Jefferson and Chambers Counties (USFWS 2012 and 2013). Along with the J.D. Murphree WMA, it protects the largest expanse of remaining freshwater marsh on the Texas Coast and thousands of acres of intermediate marsh. The Refuge's southern boundary consists of over 15 miles of Gulf of Mexico shoreline. Remnant dune/beach systems exist along the coastline, although much has been lost through erosion and shoreline retreat, leaving only a low-lying washover terrace (TPWD, 2013).

J.D. Murphree WMA comprises 24,498 acres of fresh, intermediate, and brackish marsh on the Chenier plain in Jefferson County (TPWD, 2013). Extending north and south of the GIWW west of the Sabine-Neches Waterway, the WMA is highly diverse in coastal wetland communities.

Texas Point NWR in Jefferson County encompasses 8,952 acres of fresh to saline marshes and some wooded uplands and prairie ridges (USFWS, 2012 and 2013). The Refuge's southern boundary consists of over 6 miles of Gulf of Mexico shoreline. The Chenier plain is characterized by relict beach fronts that form ridges paralleling the Gulf shore. The term derives from the French name for live oak trees (*chenier*), which typically are found growing atop these ridges.

The Lower Neches River WMA is comprised of 7,998 acres located near Bridge City in Orange

County (TPWD, 2015). The Nelda Stark and Old River units are located adjacent to the lower Neches River. The Nelda Stark Unit is primarily shallow open-water which resulted from the degradation of a former marsh system by saltwater intrusion and subsidence. The Old River Unit, near Bridge City at the mouth of the Neches River, is a mixture of intermediate marsh and open water. The Adams Bayou Unit is located on Adams Bayou, a tributary of the lower Sabine River. This unit was formerly a placement area; it is much higher than surrounding wetland habitats and remains hydrologically isolated.

The Tony Houseman WMA, managed as a cooperative effort between the TxDOT and TPWD, is located on the Sabine River at Interstate 10 (TPWD, 2015). A 600-foot boardwalk leads from the center into the swamp. Outdoor recreation includes public hunting opportunities, fishing, wildlife viewing, hiking, and canoeing. The WMA extends from the western bank of the Sabine River just north of the community of Echo, down to the confluence of Little Cypress Bayou and the Sabine River south of I-10 at Orange. More than 80 percent is cypress-tupelo swamp.

In or Adjacent to the Brazoria Region

The Brazoria NWR is a 44,414-acre wildlife conservation area along the coast in Brazoria County (USFWS, 2015). It borders the GIWW, behind Follets Island in Brazoria County. Refuge habitats are made up of salt water, fresh water, and brackish wetlands. In addition, there are prairies, woody thickets, salt and mud flats, and lakes and streams. The refuge also contains 5,000 acres of rare, native bluestem prairie, representing one of the last coastal prairies in Texas. Brazoria NWR has a key location on the Texas Gulf, which helps Freeport draw one of the highest Audubon Christmas bird counts in the nation - more than 200 species.

Justin Hurst WMA (Bryan Beach Unit) is located on the Gulf shoreline on the eastern shore of the Brazos River Diversion Channel. The unit is 440 acres dominated by a 90-acre embayment, which is flooded by Gulf waters during high tides and storms. Large vegetated coastal dunes surround the embayment and separate it from the Gulf.

The San Bernard NWR in Brazoria County serves as the end point of the Central Flyway for waterfowl in winter and an entry point for neotropical migratory songbirds tired from a 600-mile Gulf crossing from the Yucatan Peninsula (USFWS, 2015). The 57,698-acre refuge contains salt and freshwater marshes, sloughs, ponds, coastal prairies, and bottomland forest. Refuge bottomland forests and willow trees attract high numbers of warblers migrating north. Several remote islands in a sheltered bay between the GIWW and the Gulf come alive every nesting season with herons, egrets, terns, and gulls.

1.4 ALTERNATIVES CONSIDERED

A lengthy array of alternatives was considered during plan formulation. The alternatives were developed from ideas provided by the public, resource agencies, USACE, and the non-Federal sponsor. Four public scoping meetings were held in February and March 2012 to gather ideas and information on coastal storm risks and ecosystem restoration opportunities in the study area. Comments were captured in a list of about 250 initial measures, which were organized geographically by the Sabine, Galveston Bay, and Brazoria regions of the study area.

An initial array, an evaluation array, and a final array of alternatives were screened to identify the TSP. Criteria applied to evaluate the alternatives included performance related to planning objectives, potential economic benefits, preliminary environmental benefits and/or impacts, and cost. Structural alternatives evaluated for the Sabine region include Gulf shoreline protection and restoration measures such as beach nourishment, dune restoration, Chenier ridge restoration, sediment management, shoreline armoring, and submerged near-shore breakwaters. Structural alternatives evaluated for the Brazoria area include various Gulf shoreline protection and restoration measures such as beach nourishment, dune restoration, sediment management, shoreline armoring, and submerged near-shore breakwaters. Non-structural alternatives, such as raising structures to reduce surge impacts and targeted buy-outs, were also evaluated for both the Sabine and Brazoria regions. No ER alternatives will be evaluated in detail for these regions.

The following plans are being evaluated in detail in the DIFR-EIS:

The TSP in the Sabine Region is comprised of two elements, which together would provide storm surge protection to Orange and Northeast Jefferson County: 1) the Orange-Jefferson CSRM Plan, and 2) the Port Arthur and Vicinity CSRM Plan. Upgrades to the existing Port Arthur and Vicinity HFP system would, in combination with the new Orange-Jefferson levee system, reduce the risk of storm surge impacts over all of the most densely populated parts of Jefferson and Orange Counties.

The TSP in the Brazoria Region, the Freeport and Vicinity TSP Plan, would consist of improvements to the existing the Freeport HFP System.

1.5 DESCRIPTION OF THE TENTATIVELY SELECTED PLAN

1.5.1 Orange-Jefferson CSRM Plan

The TSP would include a new levee/floodwall system constructed along the upland-floodplain margin of the Sabine and Neches Rivers in south Orange County and along the Neches River in northeast Jefferson County. The maximum length of the full system in Orange County would be about 42 miles; in Jefferson County, the maximum length would be about 16.5 miles. Further evaluations are likely to result in a reduction in the overall length. The new system would protect several communities in Orange County, including Bridge City, West Orange, and Orange, as well as an area known as "Chemical Row" where Dupont, Chevron-Phillips Chemical Company, Honeywell, and Lanxess facilities are located. In northeast Jefferson County, several large petro-chemical facilities such as ExxonMobil, Dupont, ChemTreat, Oil Tanking-Beaumont, Huntsman Performance Products, Texaco, and Calabrian would be protected, in addition to some Nederland and Port Neches residential and commercial areas.

For earthen levee segments of the new system (up to a maximum of about 43 miles system-wide), dozers and front-end loaders would clear, grub, and strip the ground within the identified construction right-of-way in preparation for levee construction. Dump trucks would haul and place commercially-obtained fill material to construct the levees. All fill material would be compacted and the levee crown would be covered with crushed limestone or gravel to provide a paved surface. Revetment (riprap, reinforced concrete slab and/or articulated concrete block mattresses) would be installed along the levee embankment where necessary to prevent erosion. Construction would be conducted using equipment such as bulldozers, excavators, front-end loaders, scrapers, graders, and cranes. Best management practices such as silt curtains would be utilized to prevent fill material from entering wetlands, streams, and larger waterways during construction. It is estimated that construction of the new system could take 5 to 7 years to complete. Figure 2 illustrates the largest potential footprint of the new levee system in Orange and Northeast Jefferson County; the earthen levee is in yellow and floodwalls in red.

Some segments will require use of a floodwall rather than an earthen levee, generally because of right-of-way width constraints. The maximum length of floodwalls to be included in the system would be about 16 miles. The foundation area would be cleared, grubbed, and stripped. The subsurface would then be excavated to depth for the concrete wall footing, which is to be cast in place. Excavated areas would be subsequently backfilled and thoroughly compacted. Cranes would be used to drive piles that will provide structural stability and to drive sheet pile. Formworks would be installed to form the footing and wall stem and reinforcing steel bar would be placed. Concrete mixer trucks would pump concrete to the footing and into the stem via a

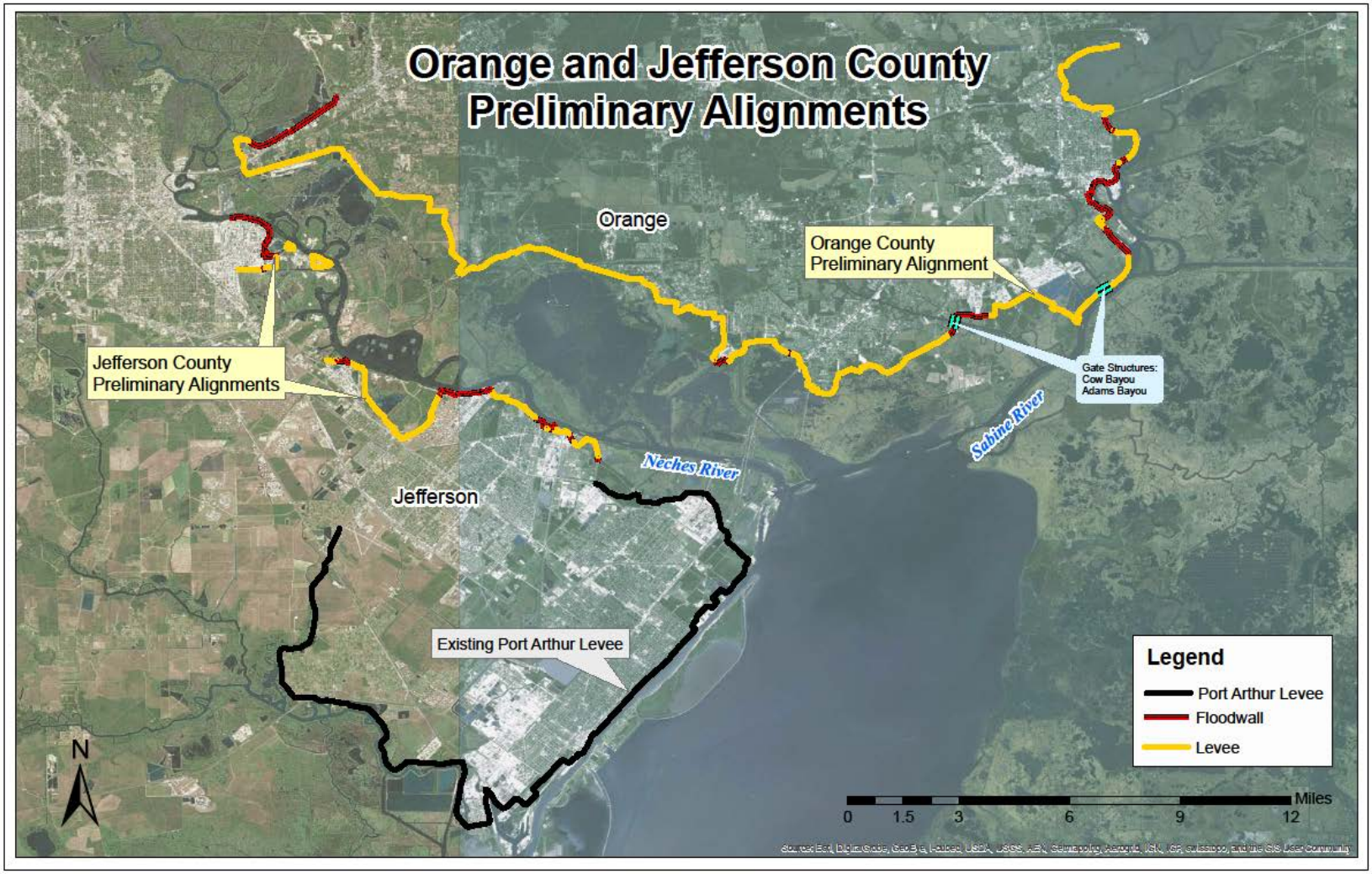


Figure 2: Orange-Jefferson Levee Alternative (Maximum Potential Length)

concrete boom. Additional earthwork would involve tying the floodwall into adjacent earthen levees and backfilling and compacting around the completed wall.

Two new navigable surge gates would be constructed on Cow and Adams Bayous. The gate locations are shown on Figure 2. Both gates would be similar to the structure shown in Figure 3. Since both streams currently accommodate barge traffic, there would be sector gates on the navigation channels with one or more flanking vertical lift gates to maintain flows on one or both sides of the navigation gates. An aerial view of this type of structure is shown in Figure 3. Coffer dams would be constructed around the gate sites so they could be constructed in the dry. A temporary navigation channel would be excavated to the side of the coffer dam to allow navigation and tidal flows to continue unobstructed during construction.

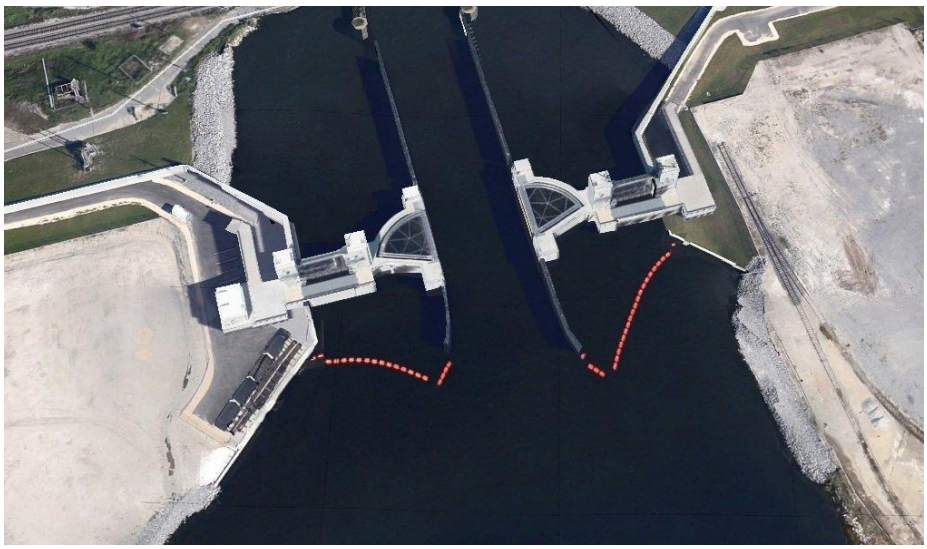


Figure 3: Conceptual Plan View of Adams and Cow Bayou Structures

Desk-top modeling was conducted to determine if operation of these gates in their normal, open condition would adversely affect water surface elevations, velocities, and salinities in the bayous (USACE 2015). The results indicate negligible impacts within Adams and Cow Bayous from potential constrictions to the channel cross-section with the proposed surge gates in their normal, open condition. This was determined by a sensitivity analysis conducted on the inlet size for each bayou, based on the assumption that construction of the gates would result in some reduction of the cross-section in their normal, open condition. In the analysis, bayou cross-sections were reduced by a wide range of estimated parameters, up to a maximum 75 percent constriction. It was determined that the limited tidal prism associated with the bayous results in minimal energy loss across the connection between the bayous and the Sabine River, and therefore, constriction of this access point results in little change in the tidal energy passing into the bayou. The insensitivity of the water surface elevation and salinity gives high confidence that the general conclusion

associated with this study is robust; constriction of the inlet, even significant constriction, results in minimal impacts on water surface elevation and salinity within the bayous. With high flows such as those occurring with tropical storms, velocities through the gated structures would be somewhat higher than the existing condition; these can be managed with appropriate armoring.

The extent to which these constrictions would impound storm water within the bayous was also examined by evaluating the effects of a significant rainfall event (Tropical Storm Allison) that had been captured in the median flow simulation. Once again, this analysis applies to the normal, open condition of the gate and evaluated the impacts of rainfall not associated with a significant storm surge event. Given the type of structures currently being evaluated (sector gates on the navigation channels with one or more flanking vertical lift gates to maintain flows on one or both sides of the navigation gates), it is estimated that existing flows may be reduced by a maximum of 50 percent. The DOWSMM analysis showed that, even for a 50 percent constriction, the volume of water resulting from such a storm could still pass through the constriction with little impact on upstream stage.

Impacts on the floodplain, both upstream and downstream of the levee system, would be minimized to the greatest extent possible. Culverts have been designed to maintain existing flows for a 100-year rainfall event, with an additional 10 percent to account for the predicted increase in rainfall due to climate change over the period of analysis. In addition, they will be designed with longer spans and lesser heights than would typically be used in an attempt to replicate the natural opening. In the existing condition, freshwater inflows from the upland areas to marshes and forested wetlands in the floodplain are being conveyed primarily though existing stream channels. The majority of the time, flows are directed toward channels and ditches that discharge into the floodplain through existing drainages. Water flows into the major rivers through those channels that have an incised bed, and in some cases flows spread out directly into wetland areas. Overland sheet flow is temporary, occurring during intense or long-duration rain events, as the majority of the area upstream of the levee is undeveloped and permeable. The degree to which shallow groundwater aquifers may contribute flows to the floodplain is unknown, but they are assumed to be a minor contributor. It is believed that marshes in the floodplain rely primarily on rainfall and tidal push for inundation.

Just before and during a surge event, the Adams and Cow Bayou surge gates and sluice gates in the levee system would be closed; pumps would be used to pump rainfall runoff from the interior to the exterior. The pumps are being conservatively sized to avoid floodplain impacts on the interior of the levee system, and to allow overbank flooding in the streams in the floodplain outside of the levee during high flow events. Hydrologic flows in the FWP condition would thus be very similar to FWOP flows and in location, duration, and magnitude, both inside and outside of the

levee system. It is assumed that the Adams and Cow Bayou gates would be closed for an estimated two weeks every 10-15 years to protect the area from surge impacts during tropical storms. The operating plan for the gates has not yet been developed, but even a worst case estimate of closure time would result in only minor and temporary impacts on fisheries access for gates with tidal flows.

New pump stations would be installed to ensure that the levee does not result in flooding upstream of the levee alignment, and the extensive system of large, new drainage structures would ensure that tidal ebb and flow in the area remains essentially the same as the FWP condition. Sluice gate culverts are planned for use everywhere there are tidal flows; flap gate culverts may be utilized in upstream areas above tidal influence. Gated culverts would be placed everywhere the red drainage lines intersect the yellow levee alignment, as shown on Figure 4. The sluice gates would remain open except when surge protection is needed; they would be closed temporarily for a short period before and after a storm occurs. Flap gate culverts would provide for one-way flow downstream from the levee system.

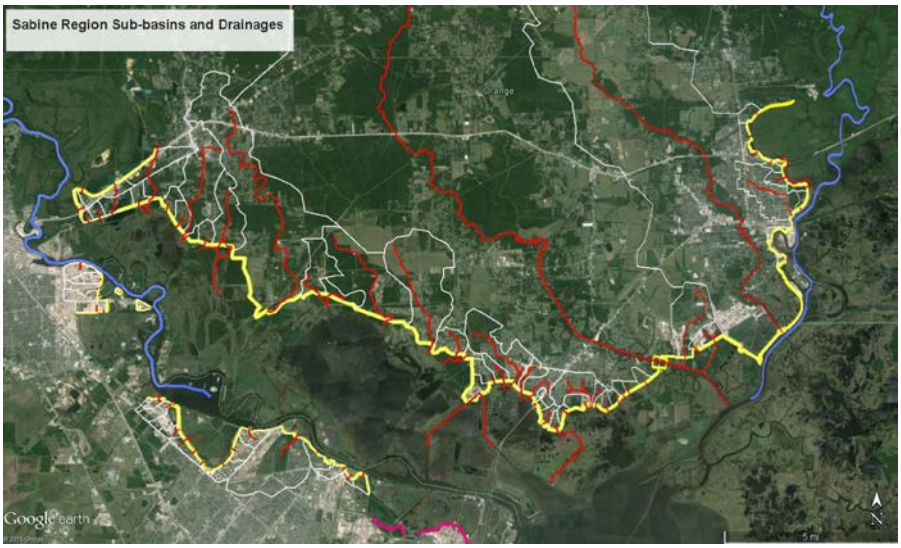


Figure 4: Sabine Region Sub-Basins and Drainages

1.5.2 CSRM Plan Improvements for Port Arthur and Freeport

Improvements to the existing HFP systems would consist of measures which increase the resiliency of the existing system features, and to accommodate future RSLR. Improvements would likely include replacement of outmoded I-Wall-type flood walls with newer, more resilient T-Wall-type floodwalls, repairs to existing earthen levees as needed, levee raisings where needed to reduce the risk of storm surge impacts under intermediate RSLR conditions, and armoring of levee toes and transitions as needed to provide resiliency during over-topping. Based on engineering

information developed to date, it is assumed that proposed improvements to the existing HFP systems can be made largely within the existing project alignments. Impacts on wetlands or fish and wildlife and their habitat from improvements to the existing Freeport and Port Arthur HFPs are not anticipated.

1.5.2.1 Port Arthur and Vicinity CSRM Plan

This existing HFP system, located west of Sabine Lake in Jefferson County, protects the Port Arthur area from coastal storm surge. The non-Federal partner for the existing project is the Jefferson County Drainage District No. 7. The system was designed and constructed in the mid-1960's to protect the area from a 100-year storm surge event. The levee system consists of 27.8 miles of earthen embankment, 6.6 miles of floodwall including 3.5 miles of coastal cantilever I-wall, and a wave barrier on Pleasure Island. In addition to residential and commercial areas in Port Arthur, the system protects the Motiva Enterprises refinery, the largest refinery in the United States. Lying adjacent to the HFP, this facility was initially constructed in 1903 during the Spindletop oil boom and now has a capacity of 600,000 barrels of crude oil per day. In addition to residential and commercial areas in Port Arthur, Nederland, and Groves, the area protected by the HFP also includes Valero Refining, Total/BASF, and the Port of Port Arthur.

Figure 5: Existing Port Arthur HFP System

Sections of floodwall fronting the deep-draft navigation Sabine-Neches Canal would be modified

or reconstructed to accommodate intermediate RSLR and to meet current engineering standards. Other sections of earthen levee along the Sabine-Neches Canal may also be raised to match floodwall elevations. All construction activities would be conducted within the existing project right-of-way and therefore, no wetland impacts are anticipated. Construction equipment and methods would be similar to those described for the new levee system.

1.5.2.1 Freeport and Vicinity CSRM Plan

The Velasco Drainage District is the non-Federal sponsor for the existing system. Located in south-central Brazoria County, the system was designed and constructed in the early 1960's to protect the area from a 100-year storm surge event. The system consists of approximately 43 miles of levees and wave barriers, seven pump stations and multiple gates, culverts, and related facilities. Protection is provided for Dow Chemical, Dow Chemical Shipping, Gulf Chemical, and Port Freeport. Although the system primarily protects industrial areas, some residential areas in Freeport, Oyster Creek, Clute, and Lake Jackson are also protected.

Improvements to the existing system would consist of contracting a surge gate and I-wall reconstruction at the mouth of the Dow Barge Canal, raising approximately 2.5 miles of earthen levee in the East Storm/Oyster Levee to accommodate intermediate RSLR, raising approximately one-third mile of the Oyster Creek Levee, and raising approximately 3.2 miles of the Old River North Levee at the Dow Thumb. Most of the improvements can be made within the existing right-of-way. However, about 1 mile of the Oyster Creek Levee would require a minor amount of additional right-of-way; no wetland or aquatic impacts are anticipated in this area. Construction equipment and methods would be similar to those described for the new levee system.

The new navigable surge gate at the mouth of the Dow Barge Canal would be similar to the structure shown in Figure 3. This is a man-made canal with no natural habitat along the channel. A sector gate would be constructed on the navigation channel to allow barge-traffic access, with one or more flanking vertical lift gates to maintain flows. A coffer dam would probably be needed to construct the gate; existing tidal access would be maintained during construction and after construction. The gate would be constructed with bulldozers and draglines; no hopper dredges would be used to construct this gate.

Figure 6: Existing Freeport HFP System

2.0 FEDERALLY-LISTED THREATENED AND ENDANGERED SPECIES AND CRITICAL HABITAT

Descriptions of ESA species and habitats are combined for the two geographic areas (Sabine and Brazoria Regions) being studied in detail because most of the species are present in both areas. USACE contacted the USFWS and NMFS by email, requesting information on threatened and endangered species in the project areas. The agency lists are provided in Appendix A. Endangered or threatened species listed in Table 1 are those that the agencies list as possibly occurring in the general vicinity of the two regions. The status, range, habitat, and presence are discussed separately for each species following the table order. There is no designated Critical Habitat in either region.

2.1 PIPING PLOVER

USFWS listed the piping plover (*Charadrius melodus*) as threatened and endangered on 11 December 1985 (50 FR 50726, December, 11 1985). The piping plover is an endangered species in the northern Great Plains and Great Lakes where it breeds in the summer. Piping plovers wintering in Texas are part of the northern Great Plains and Great Lakes populations and, therefore, are listed as threatened (USFWS, 2009). The wintering range on the Atlantic and Gulf coasts stretches from North Carolina to Mexico (AOU, 1998; 50 FR 50726, December, 11 1985). Migration occurs both through the interior of North America east of the Rocky Mountains (especially in the Mississippi Valley), and along the Atlantic Coast (AOU, 1998). Approximately 35 percent of the known global population of piping plovers winters along the Texas Gulf Coast, where they spend 60 to 70 percent of the year. Piping plover concentrations in Texas are believed to occur in Brazoria and Jefferson counties, primarily restricted to areas along the Gulf shoreline. On their wintering grounds, piping plover use beaches, mudflats, sandflats, dunes, and offshore emergent placement areas (USFWS, 1995; AOU, 1998), as well as sandflats in existing USACE placement areas. Piping plovers are known to frequent the area immediately south of the Brazoria study area; they occur less frequently in the more inland Sabine study area.

Threats to piping plovers and their habitat in their migration and wintering ranges indicate a continuing loss and degradation of habitat due to sand placement projects, inlet stabilization, sand mining, groins, seawalls and revetments, exotic and invasive vegetation, and wrack removal (USFWS, 2009). There is also concern with projects that would impede the ability of barrier islands to respond to natural habitat building processes in the context of accelerating sea-level rise.

Table 1: Threatened and Endangered Species, Orange, Jefferson and Brazoria Counties

Common Name	Scientific Name	Listing Status	Jurisdiction
BIRDS			
piping plover	*Charadrius melodus*	Threatened	USFWS
red knot	*Calidris canutus rufa*	Threatened	USFWS
whooping crane	*Grus americana*	Endangered	USFWS
MAMMALS			
West Indian manatee	*Trichechus manatus*	Endangered	USFWS
fin whale	*Balaenoptera physalus*	Endangered	NMFS
humpback whale	*Megaptera novaeangliae*	Endangered	NMFS
sei whale	*Balaenoptera borealis*	Endangered	NMFS
sperm whale	*Physeter macrocephalus*	Endangered	NMFS
REPTILES			
green sea turtle	*Chelonia mydas*	Threatened	USFWS; NMFS
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	USFWS; NMFS
loggerhead sea turtle	*Caretta caretta*	Threatened	USFWS; NMFS
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	USFWS; NMFS
leatherback sea turtle	*Dermochelys coriacea*	Endangered	USFWS; NMFS
INVERTEBRATES			
lobed star coral	*Orbicella annularis*	Threatened	NMFS
mountainous star coral	*Orbicella faveolata*	Threatened	NMFS
boulder star coral	*Orbicella franksi*	Threatened	NMFS
eklkhorn coral	*Acropora palmata*	Threatened	NMFS
CANDIDATE SPECIES			
Sprague's pipit	*Anthus spragueii*	Candidate	USFWS
smooth pimpleback clam	*Quadrula houstonensis*	Candidate	USFWS
Texas fawnsfoot clam	*Truncilla macrodon*	Candidate	USFWS

Sources: USFWS and NMFS websites:
http://www.fws.gov/southwest/es/ES_Lists_Main.cfm (accessed May 21, 2015)
http://sero.nmfs.noaa.gov/pr/esa/specieslst.htm (accessed May 21, 2015)
http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm (accessed May 21, 2015)

There is no piping plover critical habitat in the Sabine and Brazoria project areas. However, critical habitat is located in the general area, the nearest being approximately 2 miles southwest of the project area in Brazoria County (74 FR 23476, May 19, 2009).

2.2 RED KNOT

Red knots of the *rufa* subspecies (*Calidris canutus rufa*) are medium-sized shorebirds that breed only in Arctic Canada and migrate approximately 18,500 miles annually between Arctic breeding grounds and primary wintering areas in Tierra Del Fuego, at the southern tip of South America.

They also winter in three other distinct coastal areas of the Western Hemisphere: the southeastern United States (mainly Florida and Georgia, with smaller numbers in South Carolina), the Gulf of Mexico coast of Texas, and Maranhão in northern Brazil (USFWS, 2011). The USFWS began proposing that this species be considered a Candidate for listing in 2008, and published a final designation of threatened status in 2014 (79 FR 73706, December 11, 2014).

In South American wintering areas, red knots are found principally in intertidal marine habitats, especially near coastal inlets, estuaries, and bays, or along intertidal earthen shelf formations. The Delaware Bay area (in Delaware and New Jersey) is the largest known spring migration stopover area, with far fewer migrants congregating elsewhere along the Atlantic coast. The concentration in the Delaware Bay area occurs from the middle of May to early June, corresponding to the spawning season of horseshoe crabs. The knots feed on horseshoe crab eggs, rebuilding energy reserves needed to complete migrations to the Arctic. Surveys at wintering areas and at Delaware Bay during spring migration indicate a substantial decline in the red knot in recent years. Research shows that since 1998, a high proportion of red knots leaving the Delaware Bay failed to achieve threshold departure masses needed to fly to breeding grounds and survive an initial few days of snow cover, and this corresponded to reduced annual survival rates (73 FR 75176, December 10, 2008).

The primary factor threatening the red knot is destruction and modification of its habitat, particularly the reduction in key food resources resulting from reductions in horseshoe crabs, which are harvested primarily for use as bait and secondarily to support a biomedical industry. Counts of red knots within the principal wintering areas in Chile and Argentina declined by nearly 75 percent from 1985 to 2007 and declined by an additional 15 percent in the past year (2007 to 2008).

Along the Texas coast, red knots forage on beaches, oyster reefs, and exposed bay bottoms and roost on high sand flats, reefs, and other sites protected from high tides (NatureServe, 2013). They are believed to use the beaches in Brazoria County, near but not in the project area. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. It has been reported that Coquina clams (*Donax variabilis*) serve as a frequent and often important food resource for red knots along Gulf beaches. Reports of the size of flocks of along the Gulf of Mexico coast vary considerably, from highs of about 2,800 to 700 (USFWS 2011).

2.3 WHOOPING CRANE

The whooping crane (*Grus americana*) was Federally listed as endangered on March 11, 1967 (32 FR 4001). Critical habitat has been designated in Aransas, Calhoun, and Refugio counties in Texas, and includes the Aransas National Wildlife Refuge (NWR). The main factors for the decline of the whooping crane are loss of habitat to agriculture, human disturbance of nesting areas, uncontrolled hunting, and collisions with power lines (NatureServe, 2015). Biological factors, such as delayed sexual maturity and small clutch size, prevent rapid population recovery. Drought during the breeding season presents serious hazards to this species (Campbell, 1995). Whooping cranes are vulnerable to loss of habitat along their long migration route (NatureServe, 2015), along which they are still subject to cataclysmic weather events, accidental shooting, collision with power lines, and predators. They are susceptible to avian tuberculosis, avian cholera, and lead poisoning (Campbell, 1995). Exposure to disease is a special problem when large numbers of birds are concentrated in limited areas, as often happens during times of drought.

The principal winter habitat in Texas is brackish bays, marshes, and salt flats, although whooping cranes sometimes feed in upland sites characterized by oak mottes, grassland swales, and ponds on gently rolling sandy soils (NatureServe, 2015). Summer foods include large insect nymphs or larvae, frogs, rodents, small birds, minnows, and berries. During the winter in Texas, they eat a wide variety of plant and animal foods. Blue crabs, clams, and berries of Carolina wolfberry (*Lycium carolinianum*) comprise the diet. Foods taken at upland sites include acorns, snails, crayfish, and insects.

Whooping cranes were originally found throughout most of North America. In the nineteenth century, the main breeding area was from the Northwest Territories to the prairie provinces in Canada, and the northern prairie states to Illinois. A nonmigratory flock existed in Louisiana, but is now extirpated. Whooping cranes wintered from Florida to New Jersey along the Atlantic Coast, along the Texas Gulf Coast, and in the high plateaus of central Mexico. They now breed in isolated, marshy areas of Wood Buffalo National Park, Northwest Territories, and Canada. They winter primarily in the Aransas NWR and adjacent areas of the central Texas Gulf Coast (USFWS, 1995). During migration they use various stopover areas in western Canada and the American Midwest.

The natural wild population of whooping cranes spends its winters at the Aransas NWR, Matagorda Island, Isla San Jose, portions of the Lamar Peninsula, and Welder Point on the east side of San Antonio Bay (NatureServe, 2015). The main stopover points in Texas for migrating birds are in the central and eastern Panhandle (USFWS, 1995).
Brazoria County is on the extreme margin of the species' migration corridor. The species is

unlikely to occur in the Brazoria project area because of the absence of suitable habitat. TPWD (2006) indicates documented records of whooping cranes from marshes west of the Brazos River; however, these likely represent vagrant birds, and no wintering populations are present in the project area.

2.4 WEST INDIAN MANATEE

Manatees (*Trichechus manatus*) are marine mammals found in marine, estuarine, and freshwater environments. The manatee ranges from the southeastern U.S. and coastal regions of the Gulf, through the West Indies and Caribbean, to northern South America. U.S. populations occur primarily in Florida, where they are effectively isolated from other populations by the cooler waters of the northern Gulf and the deeper waters of the Straits of Florida (NatureServe, 2013).

USFWS listed the West Indian manatee as endangered in 1967 (32 FR 4001, March 11, 1967). Later it received protection under the ESA of 1973. Critical habitat has been designated in Florida, but none in Texas.

The West Indian manatee inhabits shallow coastal waters, estuaries, bays, rivers, and lakes. Throughout most of its range, it appears to prefer rivers and estuaries to marine habitats. It is not averse to traveling through dredged canals or using quiet marinas. Manatees are apparently not able to tolerate prolonged exposure to water colder than 68 degrees Fahrenheit. In the northern portions of their range, during October through April, they congregate in warmer water bodies, such as spring-fed rivers and outfalls from power plants. They usually avoid areas with strong currents (NatureServe, 2013). Manatees are primarily dependent upon submergent, emergent, and floating vegetation, with the diet varying according to plant availability.

The largest known human-related cause of manatee mortality is collisions with hulls and/or propellers of boats and ships. The second-largest human related cause of mortality is entrapment in floodgates and navigation locks. Other known causes of human-related manatee mortality include poaching and vandalism, entrapment in shrimp nets and other fishing gear, entrapment in water pipes, and ingestion of marine debris (USFWS, 2001). Hunting and fishing pressures were responsible for much of its original decline because of the demand for meat, hides, and bones, which resulted in near extirpation of the species (USFWS, 1995). A prominent cause of natural mortality in some years is cold stress, and major die-offs associated with the outbreaks of red tide have occurred (USFWS, 2001). The low reproductive rate and habitat loss make it difficult for manatee populations to recover.

The West Indian manatee historically inhabited the Laguna Madre, the Gulf, and tidally influenced portions of rivers. It is currently, however, extremely rare in Texas waters and the most recent sightings are likely individuals migrating or wandering from Mexican waters. Historical records from Texas waters include Copano Bay, the Bolivar Peninsula, and the mouth of the Rio Grande River (Schmidly, 2004). In November, 2014, a live manatee was rescued from Trinity Bay (USFWS, 2015). The occurrence of the West Indian manatee in the study area is possible but not likely.

2.5 WHALES

NMFS identifies four endangered whale species of potential occurrence in the Gulf. These are the sei whale (*Balaenoptera borealis*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), and sperm whale (*Physeter macrocephalus*) (NMFS, 2015). These species are generally restricted to deeper offshore waters; therefore, it is unlikely that any of these five species would regularly occur in either the Brazoria or Sabine project areas.

2.6 SEA TURTLES

NFMS and USFWS identify five sea turtle species of potential occurrence in both the Brazoria and Sabine regions.

2.6.1 Green Sea Turtle

The green turtle (*Chelonia mydas*) is a circumglobal species in tropical and subtropical waters. In U.S. Atlantic waters, it occurs around the U.S. Virgin Islands, Puerto Rico, and continental U.S. from Massachusetts to Texas. Major nesting activity occurs on Ascension Island, Aves Island (Venezuela), Costa Rica, and in Surinam. Relatively small numbers nest in Florida, with even smaller numbers in Georgia, North Carolina, and Texas (NMFS and USFWS, 1991a; Hirth, 1997).

The green turtle was listed in 1978 as threatened, except for Florida and the Pacific Coast of Mexico (including the Gulf of California) where it was listed as endangered (43 FR 32800, July 28, 1978). In 1998, NMFS designated critical habitat to include the coastal waters around Culebra Island, Puerto Rico (63 FR 46693, September 2, 1998). On March 23, 2015, NMFS and USFWS proposed to revise the existing listing to identify 11 green sea turtle distinct population segments (DPS) worldwide (80 FR 15271 (March 23, 2015)). The proposed DPS rule would list the North Atlantic DPS as threatened.

The green turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries, and other areas with an abundance of marine algae and seagrasses. Hatchlings often float in masses of sea plants (e.g., rafts of sargassum) in convergence zones. Coral reefs and rocky outcrops near

feeding pastures often are used as resting areas. The adults are almost exclusively herbivorous, while the juveniles consume more invertebrates. Foods consumed include seagrasses, macroalgae and other marine plants, mollusks, sponges, crustaceans, and jellyfish (Mortimer, 1982).

Terrestrial habitat is typically limited to nesting activities (Balazs, 1980). They prefer high-energy beaches with deep sand, which may be coarse to fine, with little organic content. Most green turtles nest in Florida and in Mexico. Green turtle nests are rare in Texas. In 1987, the first confirmed nesting of a green sea turtle on the Texas coast was recorded (Shaver and Amos, 1988). More recently, two green turtle nests were documented in 2006 and three in 2007; all but one in 2007 were from the Padre Island National Seashore (PINS). In 2012, six green sea turtle nests were reported from PINS and two from South Padre Island.

The principal cause of the historical, worldwide decline of the green turtle is long-term harvest of eggs and adults on nesting beaches, and juveniles and adults on feeding grounds. These harvests continue in some areas of the world and compromise efforts to recover this species. Incidental capture in fishing gear, such as gillnets and trawls, is a serious ongoing source of mortality that also adversely affects the species' recovery (NMFS, 2013). Incidental take of green turtles has been documented with hopper dredges.

Of the green turtle strandings reported from 2004 through 2007 (last year reported) along the Texas Coast, 374 were from Zone 21, which extends from the mouth of the Rio Grande to the vicinity of Yarborough Pass (STSSN, 2013). In 2007, 233 green turtles were reported stranded; of these, at least 147 were cold-stunned turtles resulting from a strong cold front that passed in January (Sea Turtle, Inc., 2008).

The USACE Sea Turtle Data Warehouse (USACE, 2013) maintained records of documented incidental takes of sea turtles as a result of hopper dredging activities throughout southeastern coastal waters. USACE is currently developing a new system, called Operations and Dredging Endangered Species System (ODESS), to centralize and archive data regarding T&E species and impacts from dredging activities. The system is being coordinated with NMFS SERO staff. Incidences involving impacts on two green sea turtle individuals within Freeport Harbor Channel were recorded in 2006. One incident regarding impact on an individual green sea turtle within the Freeport Harbor Entrance Channel was documented in 2007. These documented events provide clear indication that swimming green turtles may be found in the entrance channel and near the Freeport Harbor jetties. They are not likely to be found in the inland channels near the Freeport CSRM project area. The project area does not include the Gulf shoreline. The southernmost extent of the Port Arthur CSRM Plan project area is 15 stream-miles inland from the Gulf shoreline; there is very little likelihood that green turtles would be found in that study area.

2.6.2 Kemp's Ridley Sea Turtle

The Kemp's ridley sea turtle (*Lepidochelys kempii*) is the smallest of the sea turtles, with adults reaching about 2 feet in length and weighing up to 100 pounds. Adults are primarily restricted to the Gulf, although juveniles may range throughout the Atlantic Ocean. Important foraging areas include Campeche Bay, Mexico, and Louisiana coastal waters. Almost the entire population of Kemp's ridleys nests on an 11-mile stretch of coastline near Rancho Nuevo, Tamaulipas, Mexico, approximately 190 miles south of the Rio Grande. A secondary nesting area occurs at Tuxpan, Veracruz, and sporadic nesting has been reported from Mustang Island, Texas, southward to Isla Aquada, Campeche. Several scattered isolated nesting attempts have occurred from North Carolina to Colombia.

The Kemp's ridley sea turtle was listed as endangered throughout its range in 1970 (35 FR 18319, December 2, 1970). It is considered to be the most seriously endangered of all sea turtles (USFWS and NMFS, 1992). No critical habitat has yet been designated.

Kemp's ridleys inhabit shallow coastal and estuarine waters, usually over sand or mud bottoms. Adults are primarily shallow-water benthic feeders that specialize on crabs while juveniles feed on sargassum and associated infauna, and other epipelagic species of the Gulf (USFWS and NMFS, 1992). In some regions, blue crab (*Callinectes sapidus*) is the most common food item of adults and juveniles. Other food items include shrimp, snails, bivalves, sea urchins, jellyfish, sea stars, fish, and occasional marine plants (Pritchard and Marquez, 1973; Shaver, 1991; Campbell, 1995).

Populations of this species have declined since 1947, when an estimated 42,000 females nested in one day, to a total nesting population of approximately 1,000 in the mid-1980s. The decline of this species was primarily the result of human activities including collection of eggs, fishing for juveniles and adults, killing adults for meat and other products, and direct take for indigenous use. In addition to these sources of mortality, Kemp's ridleys have been subject to high levels of incidental capture in fishing gear, primarily in shrimp trawls, but also in gill nets, longlines, and traps (USFWS and NMFS, 1992; NMFS, 2013b). The National Research Council's (NRC) Committee on Sea Turtle Conservation estimated in 1990 that 86 percent of the human-caused deaths of juvenile and adult loggerheads and Kemp's ridleys resulted from shrimp trawling (Campbell, 1995).

Further threats to this species include collisions with boats, explosives used to remove oil rigs, and entrapment in coastal power plant intake pipes (Campbell, 1995). Dredging operations affect Kemp's ridley turtles through incidental take and by degrading the habitat. Incidental take of ridleys has been documented with hopper dredges. In addition to direct take, channelization of the

inshore and nearshore areas can degrade foraging and migratory habitat through dredged material placement, degraded water quality/clarity, and altered current flow (USFWS and NMFS, 1992). Sea turtles are also especially subject to human impacts during the time the females come ashore for nesting.

Nesting beaches were afforded official protection in 1966 and this, together with the requirement to use TEDs in shrimp trawls and other measures to reduce turtle bycatch, are some of the primary factors in recovery of this species (NMFS, 2013). Kemp's ridley appears to be in the earliest stages of recovery. In 2006, a record number of nests were recorded since monitoring began in 1978; 12,143 nests were documented in Mexico, with 7,866 of those at Rancho Nuevo (NMFS, 2013).

Kemp's ridleys may have nested sporadically in Texas in the last 50 years; however, the number of nests over recent years has shown an ever-increasing trend (NPS, 2012 and 2013). Some of these nests were from headstarted ridleys. The majority of the Kemp's ridley nests recorded in Texas were at the PINS. Such nestings, together with the proximity of the Rancho Nuevo rookery, probably account for the occurrence of hatchlings and subadults in Texas.

Kemp's ridley has been recorded from the general vicinity of the Brazoria region. The USACE Sea Turtle Data Warehouse (USACE, 2010) documents the taking of two Kemp's ridley turtles within the Freeport Harbor Entrance Channel in 2007. Documented records of Kemp's ridleys exist from Jefferson County, Texas (Dixon, 2000); however, they would not be expected to occur as far inland as the Port Arthur and Orange-Jefferson CSRM project areas.

2.6.3 Loggerhead Sea Turtle

Loggerhead sea turtles (*Caretta caretta*) were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as whelks and conch. The loggerhead is widely distributed in tropical and subtropical seas, being found in the Atlantic Ocean from Nova Scotia to Argentina, the Gulf, Indian, and Pacific oceans (although it is rare in the eastern and central Pacific), and the Mediterranean Sea (Rebel, 1974; Ross, 1982; Iverson, 1986), and is the most abundant sea turtle species in U.S. coastal waters (NMFS, 2013). In the continental U.S., loggerheads nest along the Atlantic coast from Florida to as far north as New Jersey and sporadically along the Gulf Coast. In recent years, a few have nested on barrier islands along the Texas coast.

The Northwest Atlantic Ocean population of the loggerhead turtle was listed as threatened in 2011 (76 FR 58868, September 22, 2011). In 2011, the NMFS and USFWS determined that the loggerhead sea turtle is composed of nine distinct population segments (DPSs) that constitute

‘‘species’’ that may be listed as threatened or endangered under the ESA. Formerly, all populations of the loggerhead were determined threatened throughout its range (43 FR 32808, July 28, 1978). In the 2011 final rule, four DPSs were listed as threatened and five as endangered under the ESA. The four threatened DPSs are located in the Northwest Atlantic Ocean, the South Atlantic Ocean, the Southeast Indo-Pacific Ocean, and the Southwest Indian Ocean. The five endangered DTSs are located in the Mediterranean Sea, the North Indian Ocean, the North Pacific Ocean, the Northeast Atlantic Ocean, and the South Pacific Ocean. NMFS and USFWS also announced they intend to propose the designation of critical habitat for the two loggerhead sea turtle DPSs occurring within the U.S. (the Northwest Atlantic and North Pacific Oceans) in a future rulemaking. Proposed critical habitat is located in coastal counties in North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi (78 FR 17999, March 25, 2013).

The loggerhead occurs in the open seas as far as 500 miles from shore, but mainly over the continental shelf, and in bays, estuaries, lagoons, creeks, and mouths of rivers. It favors warm temperate and subtropical regions not far from shorelines. The adults occupy various habitats, from turbid bays to clear waters of reefs. Subadults occur mainly in nearshore and estuarine waters. Hatchlings move directly to sea after hatching, and often float in masses of sargassum (NMFS and USFWS, 1991). Commensurate with their use of varied habitats, loggerheads consume a wide variety of both benthic and pelagic food items, which they crush before swallowing. Conches, shellfish, horseshoe crabs, prawns and other crustacea, squid, sponges, jellyfish, basket starts, fish (carrion or slow-moving species), and even hatchling loggerheads have all been recorded as loggerhead prey (Rebel, 1974; Hughes, 1974; Mortimer, 1982).

Nesting occurs usually on open sandy beaches above the high-tide mark and seaward of well-developed dunes. They nest primarily on high-energy beaches on barrier islands adjacent to continental land masses in warm-temperate and subtropical regions. Steeply sloped beaches with gradually sloped offshore approaches are favored.

Recent analyses of nesting data from southeast Florida show the population is declining. Similarly, long-term nesting data show loggerhead nesting declines in North Carolina, South Carolina, and Georgia (NMFS, 2013). The decline of the loggerhead, like that of most sea turtles, is the result of overexploitation by man, and inadvertent mortality associated with fishing and trawling activities. The most significant threats to its population are incidental capture in fishing gear, directed harvest, coastal development, increased human use of nesting beaches, and pollution (NMFS, 2013). Incidental take of loggerheads has been documented with hopper dredges.

The loggerhead is the most abundant turtle in Texas marine waters, preferring shallow inner continental shelf waters and occurring only very infrequently in the bays. It often occurs near

offshore oil rig platforms, reefs, and jetties. Loggerheads are probably present year-round but are most noticeable in the spring when a favored food item, the Portuguese man-of-war (*Physalia physalis*), is abundant. Loggerheads constitute a major portion of stranded turtles on the Texas coast each year (STSSN, 2013). A large proportion of these deaths are the result of accidental capture by shrimp trawlers, where caught turtles drown and their bodies are dumped overboard.

Before 1977, no positive documentation of loggerhead nests in Texas existed. Since that time, several nests have been recorded along the Texas coast. During the last decade, nesting has remained relatively stable on the Texas coast, with 0-6 nests per year. Although nests have been found state-wide, the largest numbers have been located at the PINS (NPS, 2013).

This species has been recorded in the Brazoria study area. Between 1995 and 2000, eight loggerheads were caught in Freeport Harbor Channel, and during the Freeport Harbor Project (July 13 to September 24, 2002), a relocation trawler captured one loggerhead (NMFS, 2003). More recently, an additional loggerhead was incidentally taken in the Freeport Harbor Entrance Channel in 2006 as a result of dredging activities (USACE, 2013). No nests have been recorded in the study area. Documented records of loggerheads exist from Jefferson County, Texas (Dixon, 2000); however, potential for its occurrence in the Sabine study area is low.

2.6.4 Hawksbill Sea Turtle

The hawksbill sea turtle (*Eretmochelys imbricata*) is circumtropical, occurring in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans (Witzell, 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill sea turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf (especially Texas), south to Brazil (NMFS, 2013d). In the continental U.S., the hawksbill largely nests in Florida, where it is sporadic at best (NFWL, 1980). However, a major nesting beach exists on Mona Island, Puerto Rico.
The hawksbill sea turtle was Federally listed as endangered in 1970 on (35 FR 84952, June 2, 1970b). In 1998, NMFS and USFWS designated critical habitat near Mona Island and Isla Monito, Puerto Rico, seaward to 5.6 kilometers (km) (63 FR 46693, September 2, 1998).

Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries, and lagoons, where they occur at depths of less than 70 feet. Like some other sea turtle species, hatchlings are sometimes found floating in masses of marine plants (e.g., sargassum rafts) in the open ocean (NFWL, 1980). Hawksbills reenter coastal waters when they reach a carapace length of approximately 20 to 25 centimeters. Coral reefs are widely recognized as the resident foraging

habitat of juveniles, subadults, and adults. This habitat association is undoubtedly related to their diet of sponges, which need solid substrate for attachment. Hawksbills also occur around rocky outcrops and high-energy shoals, which are also optimum sites for sponge growth.

While this species is omnivorous, it prefers invertebrates, especially encrusting organisms, such as sponges, tunicates, bryozoans, mollusks, corals, barnacles, and sea urchins. Pelagic species consumed include jellyfish and fish, and plant material such as algae, sea grasses, and mangroves (Rebel, 1974; Pritchard, 1977; Mortimer, 1982). The young are reported to be somewhat more herbivorous than adults (Ernst and Barbour, 1972). Terrestrial habitat is typically limited to nesting activities. The hawksbill, which is typically a solitary nester, nests on undisturbed, deep-sand beaches, from high-energy ocean beaches to tiny pocket beaches several meters wide bounded by crevices of cliff walls. Typically, the sand beaches are low energy, with woody vegetation, such as sea grape (*Coccoloba uvifera*), near the waterline (NRC, 1990).

The primary global threat to hawksbills is habitat loss of coral reef communities. There remains a continuing demand for the hawksbill's shell, as well as other products, including leather, oil, perfume, and cosmetics. Additionally, hawksbills are harvested for their eggs and meat, while whole stuffed turtles are sold as curios in the tourist trade. In addition to directed harvest, increased human presence is a threat to hawksbills. In particular, increased recreational and commercial use of nesting beaches, general harassment of turtles, and loss of nesting habitat from human activities negatively impact hawksbills. Incidental capture in fishing gear, primarily gillnets, and vessel strikes also adversely affect this species' recovery (NMFS, 2013).

Texas is the only state outside of Florida where hawksbills are sighted with any regularity. Most of these sightings involve posthatchlings and juveniles, and are primarily associated with stone jetties. These small turtles are believed to originate from nesting beaches in Mexico (NMFS, 2013). On June 13, 1998, the first hawksbill nest recorded on the Texas coast was found at PINS. This nest remains the only documented hawksbill nest on the Texas coast (NPS, 2013). Stranding data from 2004 through 2007 show that 59 hawksbills were found along Texas waters or shorelines (STSSN, 2013). No documented records of hawksbills exist from Brazoria, Jefferson, or Orange counties (Dixon, 2000) and they are not expected to be present in the project area.

2.6.5 Leatherback Sea Turtle

Leatherback sea turtles (*Dermochelys coriacea*) are named for their appearance. They do not have shells as other sea turtles do. Instead, their backs are covered by a slate black to bluish-black leathery skin with irregular white or pink patches. They are the largest turtles in the world, reaching over 6 feet in length and 650-1,200 pounds in weight (NPS, 2013).

The leatherback sea turtle was listed as endangered throughout its range in 1970 (35 FR 84952, June 2, 1970), with critical habitat designated in the U.S. Virgin Islands in 1978 and 1979 (43 FR 43688, September 26, 1978, and 44 FR 17710, March 23, 1979, respectively). In 2011, USFWS announced that revision of the critical habitat to include the coastline and offshore waters of the Northeast Ecological Corridor of Puerto Rico may be warranted and that assessment of the need for revisions to critical habitat would be conducted during a future planned status review (76 FR 47133, August 4, 2011).

The leatherback is probably the most wide-ranging of all sea turtle species. It occurs in the Atlantic, Pacific, and Indian oceans; as far north as British Columbia, Newfoundland, Great Britain, and Norway; as far south as Australia, the Cape of Good Hope, and Argentina; and in other water bodies such as the Mediterranean Sea (NFWL, 1980). The leatherback migrates further and ventures into colder water than any other marine reptile. Adults appear to engage in routine migrations between boreal, temperate, and tropical waters, presumably to optimize both foraging and nesting opportunities. During the summer, leatherbacks tend to occur along the east coast of the U.S. from the Gulf of Maine south to the middle of Florida.

Leatherbacks nest primarily in tropical regions; major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica, and Trinidad (Ross, 1982). Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz, 1976). The U.S. Caribbean, primarily Puerto Rico and the U.S. Virgin Islands, and southeast Florida support minor nesting colonies, but represent the most significant nesting activity within the U.S. (NMFS, 2013).

The leatherback sea turtle is mainly pelagic, inhabiting the open ocean, and seldom approaches land except for nesting (Eckert, 1992). It is most often found in coastal waters only when nesting or when following concentrations of jellyfish, when it can be found in inshore waters, bays, and estuaries. It dives almost continuously, often to great depths. Despite their large size, the diet of leatherbacks consists largely of jellyfish and sea squirts. They also consume sea urchins, squid, crustaceans, fish, blue-green algae, and floating seaweed (NFWL, 1980). The leatherback typically nests on beaches with a deepwater approach (Pritchard, 1971).

Its decline is attributable to overexploitation by man and incidental mortality associated with commercial shrimping and fishing activities. Nesting populations of leatherback sea turtles are especially difficult to estimate because the females frequently change nesting beaches; however, Spotila et al. (1996) estimated the 1995 worldwide population of nesting female leatherbacks at 26,000 to 42,000. Major threats include egg collecting and mortality associated with bycatch in

longline, trawl, and gillnet fisheries throughout their range; although they are jeopardized to some extent by harvesting of adult females, destruction or degradation of nesting habitat, and ingestion of floating trash (Nature Serve, 2013). This species is probably more susceptible than other turtles to drowning in shrimp trawlers equipped with turtle extruder devices (TEDs) because adult leatherbacks are too large to pass through the TED exit opening. Because leatherbacks nest in the tropics during hurricane season, a potential exists for storm-generated waves and wind to erode nesting beaches, resulting in nest loss (NMFS and USFWS, 1992).

Apart from occasional feeding aggregations such as the large one of 100 animals reported by Leary (1957) off Port Aransas in December 1956, or possible concentrations in the Brownsville Eddy in winter, leatherbacks are rare along the Texas coast, tending to keep to deeper offshore waters where their primary food source, jellyfish, occurs. In the Gulf, the leatherback is often associated with two species of jellyfish: the cabbagehead (*Stomolophus sp*.) and the moon jellyfish (*Aurelia sp.*) (NMFS and USFWS, 1992). According to USFWS (1981), leatherbacks never have been common in Texas waters. Leatherback nests were recorded on Padre Island in the 1930's to 40's. One leatherback nest was located at PINS in 2008. Since then, no leatherback nests have been located anywhere in Texas (NPS, 2013).

No leatherbacks have been taken by dredging activities in Texas (USACE, 2013). This species is unlikely to occur in either the Brazoria or Sabine regions.

2.7 CORALS

On October 20, 2009, NMFS received a petition from the Center for Biological Diversity to list 83 species of coral as either threatened or endangered under the ESA. On September 10, 2014 (70 FR 53852), NMFS published a final rule listing 20 of the petitioned coral species as threatened under the Endangered Species Act. Of these 20, the following five Caribbean species are listed as threatened on the NMFS list for Texas – lobed star (*Orbicella annularis*), mountainous star (*Orbicella faveolata*), boulder star (*Orbicella franksi*), and elkhorn coral (*Acropora palmata*) retained their listing status as threatened species. Relatively high human population densities and a long history of pervasive human impacts on coral reef systems exist across the Caribbean region (NMFS, 2012). Nearly two-thirds of Caribbean coral reefs are threatened by at least one form of human activity, with continuing threats of region-wide damage due to rising sea temperatures and disease. Additionally, none of the Caribbean's three keystone species indicative of reef health (the corals *Acropora palmata* and *A.cervicornis*, and the urchin *Diadema antillarum*) show significant recovery over decadal time scales. The region is also susceptible to strengthening storms and hurricanes, and suffers mass bleaching events, hampering ecosystem recovery. None of five species listed for Texas are known to occur in the Brazoria or Sabine regions, and their potential

range does not extend into these areas.

2.8 CANDIDATE SPECIES

2.8.1 Sprague's Pipit

The Sprague's pipit (*Anthus spragueii*) is a small passerine endemic to the Northern Great Plains and is one of the few bird species endemic to the North American prairie (75 FR 56028, September 15, 2010). Sprague's pipits are strongly tied to native prairie throughout their life cycle but will utilize nonnative planted grassland. These birds are sensitive to fragmentation and require relatively large grassland patches to form breeding territories.

USFWS initiated a status review in response to a petition filed in 2009 (74 FR 63337, December 3, 2009), which resulted in the Sprague's pipit being considered a Candidate for listing. In 2010, USFWS found that listing was warranted but precluded by higher priority listing actions (75 FR 56028, September 15, 2010).

The Sprague's pipit breeding range extends throughout North Dakota, except for the easternmost counties, northern and central Montana east of the Rocky Mountains, northern portions of South Dakota, northwestern Minnesota, southeastern Alberta, the southern half of Saskatchewan, and into southwest Manitoba. Its wintering range includes south-central and southeast Arizona, Texas, southern Oklahoma, southern Arkansas, northwest Mississippi, southern Louisiana, and northern Mexico. Migration and wintering ecology are poorly known, but migrating and wintering Sprague's pipits are found in both densely and sparsely vegetated grassland and pastures; they are rarely found in fallow cropland. Sprague's pipits exhibit a strong preference for grassland habitat during the winter and an avoidance of areas with too much shrub encroachment. They eat a wide variety of insects during the breeding season and a very small percentage of seeds (74 FR 63337, December 3, 2009).

The primary threats to the Sprague's pipit are habitat fragmentation on the breeding grounds, energy development, roads, and inadequacy of existing regulatory mechanisms. Native prairie is one of the most imperiled habitats worldwide, with loss rates approximating 70 percent in the United States and Canada, and prairie loss is accelerating. There is less specific information available on the wintering grounds, but the data available indicate that large areas of the wintering grounds are being converted from grassland habitat. The 40–year trend in Christmas Bird Count data shows an annual decline of 2.54 percent of this species in Texas. Adequate regulations are not in place at the local, State, or Federal level to adequately minimize the threat of habitat degradation and fragmentation.

While most of the population winters in Mexico, the vast majority of the winter sightings in the U.S. have been in Texas, and the majority of those were on the central and south Texas coastal plain, south of the Brazoria region (USFWS 2014). They prefer native grassland prairie but will use other grasslands if the areas are sufficiently large. They avoid edges between grassland and landscape features that are structurally different than grassland such as wetlands, cropland, trees and shrubs, and burned or mowed areas. The shape of the patch is also important; grassland areas with a low edge-to-area ratio provide optimal habitat and thus, a linear patch may not be suitable.

No native prairie has been identified in either the Brazoria or Sabine project areas, but some pasture and other grassland is present. Many of these areas are regularly grazed, mowed, or cultivated. The landscape is highly fragmented with small patches of grassland, forest, scrub-shrub, and coastal marsh distributed across the landscape in both areas. No large grassland areas have been identified that would be attractive to this species, which appears to prefer large patch sizes and specific grassland structure.

2.8.2 Freshwater Mussels

2.8.2.1 Smooth Pimpleback Clam

USFWS added the smooth pimpleback clam (*Quadrula houstonensis*) to its candidate species list in 2011 (76 FR 62166, October 6, 2011) and subsequently has confirmed that status in annual reviews. The smooth pimpleback is a nearly round, thick-shelled freshwater mussel that generally reaches at least 2.6 inches in length. It has been found in mixed mud, sand, and fine gravel substrate in medium-to-large rivers and some reservoirs throughout its range. Adult freshwater mussels are filter-feeders, siphoning algae, bacteria, detritus, microscopic animals, and dissolved organic matter. Mussels tend to grow relatively rapidly for the first few years, and then slow appreciably at sexual maturity, when energy presumably is being diverted from growth to reproductive activities. They are extremely long lived, living from two to several decades.

The smooth pimpleback is native to the Brazos and Colorado River basins of central Texas. Within the Brazos River basin, the species historically occurred throughout the length of the mainstem of the Brazos River, as well as in the Clear Fork Brazos, Leon, Navasota, Little Brazos, San Gabriel, Lampasas, and Little Rivers and Yegua Creek (USFWS 2014). The reduction in numbers and range of the smooth pimpleback is primarily the result of the long-lasting effects of habitat alterations caused by impoundments, sedimentation, dewatering, sand and gravel mining, and chemical contaminants. Impoundments occur throughout the range of the species and have far-reaching effects on riverine habitat, both upstream and downstream of the dams. The Colorado and Brazos River systems have experienced a large amount of sedimentation from agriculture, instream mining, and urban development. Sand and gravel mining affects smooth pimpleback habitat by increasing sedimentation and channel instability downstream and by causing

headcutting upstream. Chemical contaminants exceeding the standards developed to support aquatic life have been documented throughout the range of the species and may represent a significant threat to the smooth pimpleback. However, the large populations in the San Saba River, lower Brazos River, Navasota River, Leon River, and Yegua Creek indicate that some smooth pimpleback populations are not currently as vulnerable to habitat loss as others. Climate change could also affect the smooth pimpleback through the combined effects of global and regional climate change, along with the increased probability of long-term drought.

Recent surveys suggest a greater abundance and distribution of the smooth pimpleback in the central and lower Brazos River drainage than was indicated by collections from the past 40 years. The smooth pimpleback historically occurred in the Brazos River system from Haskell and Throckmorton Counties downstream to Austin and Waller Counties, as well as in numerous tributaries. Although not extirpated from the middle Brazos River, the smooth pimpleback occurs only in low numbers. Smooth pimpleback are more numerous in the lower mainstem Brazos River; however, far fewer have been reported from farther downstream in Austin and Fort Bend Counties. None are known to have occurred in Brazoria County.

2.8.2.2 Texas Fawnsfoot Clam

USFWS added the Texas fawnsfoot clam (*Truncilla macrodon*) to its candidate species list in 2011 (76 FR 62166, October 6, 2011) and subsequently has confirmed that status in annual reviews. The Texas fawnsfoot is a small, relatively thin-shelled freshwater mussel that can reach 2.4 inches in length but is usually much smaller. Since Texas fawnsfoot were not found alive for many years, very little information is available about its habitat preferences. In the past only Texas fawnsfoot shells and recently dead individuals were occasionally found along rivers following drought-related dewatering or bank deposition after high floods. These shells and recently dead individuals indicated that the Texas fawnsfoot occurs in flowing water, as it was never found in ponds, lakes, or reservoirs, suggesting that it is intolerant of deep, low-velocity waters created by artificial impoundments. The recently discovered live population in the Brazos River indicates that the species occurs in rivers with soft, sandy sediment with moderate water flow (USFWS 2014).

The Texas fawnsfoot is endemic to the Brazos and Colorado Rivers of central Texas. Until recently, relatively few Texas fawnsfoot have been documented since the species was first described in 1859, and few live individuals have been found in recent decades. It was not until 2008 when the first live population of Texas fawnsfoot was discovered in the Brazos River near its confluence with the Navasota River. In the Brazos River system, the Texas fawnsfoot persists in the mainstem Brazos River, Clear Fork Brazos River, Navasota River, and possibly in Deer Creek. It has also been found further downstream in Austin, Waller and Fort Bend Counties, the

latter being the furthest downstream collection in the mainstem of the Brazos River on record in recent years. There is no record at this time of it being found in Brazoria County.

3 EFFECTS ON LISTED SPECIES

3.1 PIPING PLOVER

On their wintering grounds, piping plovers use beaches, mudflats, sandflats, dunes, and may also use sandflats in existing USACE PAs near the coast. There is one placement area located inside of the existing Freeport HFP levee system where temporary sandflats could be attractive to piping plover. However, the Freeport CSRM project construction right-of-way does not affect this PA. None of the other landscape features attractive to plovers are present in or adjacent to the construction right-of-way. The general area is heavily industrialized with substantial disturbances from ship and roadway traffic, and plant and port activities. The Port Arthur and Orange-Jefferson CSRM project areas are located well inland from the coast and do not contain piping plover habitat, making it highly unlikely that piping plovers would occur in the area.

Construction activities associated with the TSP in both the Sabine and Brazoria regions would not occur in the placement areas; they would be confined to the levee system right-of-way. It is unlikely that piping plovers would frequent the TSP project areas because of the lack of acceptable habitat and extensive urban and industrial disturbances. Therefore, USACE has determined that the TSP would have no effect on piping plovers.

3.2 RED KNOT

The red knot winters along the Texas coast, foraging on beaches, oyster reefs, and exposed bay bottoms and roosting on high sand flats, and reefs, utilizing the same areas as piping plovers. The potential for occurrence in the TSP project areas is the same as that of the piping plover. It is unlikely that red knots would frequent the TSP project areas because of the lack of acceptable habitat and extensive urban and industrial disturbances. Therefore, USACE has determined that the TSP would have no effect on red knots.

3.3 WHOOPING CRANE

Although their primary migration route is to the west, occasionally whooping cranes may pass through the Brazoria region on the way to and from their principal winter habitat in and around the Aransas National Wildlife Refuge in the Texas coastal bend region. They may rest along the way in brackish bays, marshes, and salt flats, feeding primarily on blue crabs, clams, snails and insects. The Freeport CSRM project area is located in upland areas and the levee system surrounds extensive urban and industrial development. The type of coastal marsh system these large birds prefer is not present in the area that would be affected by construction of the TSP. The migratory

route does not extend to the Sabine region. Therefore, USACE has determined that the TSP would have no effect on whooping cranes.

3.4 WEST INDIAN MANATEE

Sightings of West Indian manatees are very rare along the Texas coast. The construction right-of-way in the Sabine and Brazoria regions would cross only three bodies of water where manatees could potentially occur, and these are the locations where surge gates are proposed. The Orange-Jefferson CSRM Plan includes the construction of tidal surge gates on Cow and Adams Bayous, and the Freeport CSRM plan includes construction of a surge gate on the Dow Barge Canal. All other construction right-of-way water crossings are shallow upland ponds or streams to which manatees would not have access. The Dow barge canal does not contain preferred habitat such as seagrass and manatees would have to traverse a heavily utilized, deepwater channel to gain access to the area. To reach the locations of the Cow and Adams Bayou structures, manatees would have to travel more than 30 miles from the Gulf through a pass with high water velocities, and waters without seagrass and preferred habitat. Given these considerations, USACE has determined that the manatee is not likely to occur in the project areas, and that the TSP would have no effect on the West Indian manatee.

3.5 WHALES

Whales occur in offshore waters and none of these species are likely to wander into shallow coastal estuaries. Therefore, USACE has determined that the Sabine and Brazoria TSPs would have no effect on these species.

3.6 SEA TURTLES

The leatherback is the not likely to occur in the project areas due to its preference for deep marine waters. No documented records of hawksbills exist from Brazoria, Jefferson or Orange counties. Green, Kemp's ridley, and loggerhead sea turtles occur in and around the Entrance Channel of the Freeport Harbor Navigation Channel and the Entrance Channel of the Sabine-Neches Waterway, but they are unlikely to occur in the inland channels of either system. They are not likely to occur near the construction rights-of-way for the Freeport, Port Arthur and Orange-Jefferson CSRM plans. Furthermore, project construction will not utilize hopper dredges, which are known to adversely impact sea turtles. Inasmuch as it would be unlikely that sea turtles would visit the area, USACE has determined that the TSP would have no effect on sea turtles.

3.7 CORALS

Corals occur in offshore waters; none of these species occur in the Sabine and Brazoria regions. Therefore, USACE has determined that the TSP would have no effect on these species.

3.8 CANDIDATE SPECIES

3.8.1 Sprague's Pipit

No native prairie, preferred habitat for Sprague's pipits, has been identified in either the Brazoria or Sabine regions, but some pasture and other grassland is present. Many of these areas are regularly grazed, mowed or cultivated. The landscape is highly fragmented with small patches of grassland, forest, scrub-shrub and coastal marsh distributed across the landscape in both regions. No large grassland areas have been identified that might be utilized by this species, which appears to prefer large patch sizes and specific grassland structure. None are known to have utilized the study areas. Therefore, USACE has determined that the TSP would have no effect on wintering Sprague's pipits

3.8.2 Freshwater Mussels

Although they are present farther upstream in the main stem of the Brazos River, neither the smooth pimpleback nor Texas fawnfoot clam has been reported anywhere near the TSP construction area in Brazoria County. The range of these mussels does not extend to the Sabine region. Therefore, USACE has determined that the TSP would have no effect on these species.

4 SUMMARY OF EFFECT

This Biological Assessment has determined that the TSP of the Sabine-Pass to Galveston Bay, Texas DIFR-EIS (specifically the Orange-Jefferson, Port Arthur and Vicinity, and Freeport and Vicinity CSRM Plans) would have no effect on the following listed animal species – piping plover, red knot, whooping crane, the West Indian manatee, four whale species (fin, humpback, sei, and sperm), four sea turtle species (green, Kemp's ridley, loggerhead and hawksbill), and four coral species (lobed star, mountainous star, boulder star and elkhorn). USACE has also determined that the TSP would have no effect on the following Candidate species: Sprague's pipit, and two freshwater mussel species (smooth pimpleback and Texas fawnsfoot).

5 LITERATURE CITED

American Ornithologists' Union (AOU). 1998. Check-list of North American birds. Seventh edition.

Armstrong, N., M. Brody, and N. Funicelli. 1987. The ecology of open-bay bottoms of Texas: a community profile. U.S. Department of the Interior Fish and Wildlife Service. Biological Report 85(7.12).

Balazs, G. 1980. Synopsis of biological data on the green turtle in the Hawaiian Islands. NOAA Technical Memorandum. NMFS-SWFC-7.

Bartlett, R.D., and P.P Bartlett. 1999. A field guide to Texas reptiles and amphibians. Gulf Publishing Company. Houston.

Blakenship, R. 2005. Texas Parks and Wildlife Department, Coastal Fisheries Division. Personal communication to Erik Huebner, PBS&J, 12 May.

Campbell, L. 1995. Endangered and threatened animals of Texas, their life history and management. Texas Parks and Wildlife Department, Resource Protection Division, Endangered Resources Branch, Austin.

Dixon, J.R. 2000. Amphibians and reptiles of Texas. Second edition. Texas A&M University Press, College Station.

Eckert, S.A. 1992. Bound for deepwater. Natural History, March 1992, pp. 28–35.

Ernst, C.H., and R.W. Barbour. 1972. Turtles of the United States. University of Kentucky Press, Lexington.

Gould, F.W., G.O. Hoffman, and C.A. Rechenthin. 1960. Vegetational Areas of Texas. Texas A&M University, Texas Agricultural Experiment Station Leaflet No. 492.

Hirth, H.F. 1997. Synopsis of the biological data on the green turtle *Chelonia mydas* (Linnaeus 1758). Biological Report 97 (1). U.S. Fish and Wildlife Service, Washington, D.C.

Iverson, J.B. 1986. A checklist with distribution maps of the turtles of the world. Paust Printing, Richmond, Indiana.

Leary, T. 1957. A schooling of leatherback turtles, *Dermochelys coriacea coriacea*, on the Texas coast. Copeia 3:232.

Mortimer, J.A. 1982. Feeding ecology of sea turtles. In: Biology and conservation of sea Turtles (K. Bjorndal, ed.), 103–109. Smithsonian Institution Press, Washington, D.C.

National Fish and Wildlife Laboratory (NFWL). 1980. Selected vertebrate endangered species of the seacoast of the United States. U.S. Fish and Wildlife Service, Biological Services Program, Washington, D.C. FWS/OBS-80/01.

NMFS (National Marine Fisheries Service) .1979. Designated Critical Habitat; Determination of Critical Habitat for the Leatherback Sea Turtle (44 FR 17710, March 23, 1979).

_____.1998. Designated Critical Habitat; Green and Hawksbill Sea Turtles (63 FR 46693, September 2, 1998).

_____. 2012. Management Report for 82 Corals Status Review under the Endangered Species Act: Existing Regulatory Mechanisms and Conservation Efforts. Pacific Islands Regional Office.

_____. 2013. Office of Protected Species – Green Turtle (*Chelonia mydas*). http://www.nmfs.noaa.gov/pr/species/turtles/green.htm (accessed June 6, 2013).

_____. 2013. Office of Protected Species – Kemp's Ridley Turtle (*Lepidochelys kempii*). http://www.nmfs.noaa.gov/pr/species/turtles/kempsridley.htm (accessed June 6, 2013).

_____. 2013. Office of Protected Species – Loggerhead Turtle (*Caretta caretta*). http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm (accessed June 6, 2013).

_____. 2013. Office of Protected Species – Hawksbill Turtle (*Eretmochelys imbricata*). http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm (accessed June 6, 2013).

_____. 2013. Office of Protected Species – Leatherback Turtle (*Dermochelys coriacea*). http://www.nmfs.noaa.gov/pr/species/turtles/leatherback.htm (accessed June 6, 2013).

_____. 2013f. Office of Protected Species – Threats to Marine Turtles. http://www.nmfs.noaa.gov/pr/species/turtles/threats.htm (accessed June 6, 2013).

_____.2014. Endangered and Threatened Wildlife and Plants: Final Listing Determinations on Proposal to List 66 Reef Building Coral Species and to Reclassify Elkhorn and Staghorn Corals (70 FR 53852).

_____.2015. Texas' Threatened and Endangered Species. NOAA Fisheries, Southeast Region, Protected Resources Division. http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/texas.pdf (accessed May 21, 2015).

National Marine Fisheries Service and U.S. Fish and Wildlife Service (NMFS and USFWS). 1991. Recovery plan for U.S. population of Atlantic green turtle. National Marine Fisheries Service, Washington, D.C.

———.1991. Recovery plan for U.S. population of loggerhead turtle. National Marine Fisheries Service, Washington, D.C.

———.1992. Recovery plan for leatherback turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C.

_____.1998. Designated Critical Habitat; Green and Hawksbill Sea Turtles (63 FR 46693, September 2, 1998).

_____. 2003. Endangered Species Act, Section 7 Consultation, Biological Opinion for Dredging of Gulf of Mexico Navigation Channels and Sand Mining (Borrow) Areas Using Hopper Dredges by COE Galveston. Issued November 19, 2003.

_____. 2011. Endangered and Threatened Species; Determination of Nine Distinct Population Segments of Loggerhead Sea Turtles as Endangered or Threatened, (76 FR 58858, September 22, 2011).

National Park Service (NPS). 2012. Sea Turtle Nesting Season 2012, Padre Island National Seashore, Texas. ttp://www.nps.gov/pais/naturescience/nesting2012.htm (accessed on June 6, 2013).

_____. 2013. The Kemp's Ridley Sea Turtle. http://www.nps.gov/pais/naturescience/kridley.htm (accessed June 6, 2013).

_____. 2013. The Loggerhead Sea Turtle. http://www.nps.gov/pais/naturescience/loggerhead.htm. (accessed June 6, 2013).

_____. 2013. The Hawsbill Sea Turtle. http://www.nps.gov/pais/naturescience/hawksbill.htm (accessed June 6, 2013).

_____. 2013. The Leatherback Sea Turtle. http://www.nps.gov/pais/naturescience/leatherback.htm (accessed June 6, 2013).

National Research Council (NRC). 1990. Decline of the sea turtles: causes and prevention. National Academy Press, Washington, D.C.

NatureServe. 2013. *Trichechus manatus* (West Indian Manatee) in NatureServe Explorer: An online encyclopedia of life. Accessed on the internet on June 4, 3013. http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Trichechus+manatus+

_____. 2013. *Calidris canutus rufa* (Red Knot – rufa subspecies) in NatureServe Explorer: An online encyclopedia of life. Accessed on the internet on June 4, 2013. http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Calidris+canutus+rufa

_____. 2013. *Dermochelys coriacea* (Leatherback) in NatureServe Explorer: An online encyclopedia of life. Accessed on the internet on June 4, 3013. http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dermochelys+coriacea

_____.2015. Grus Americana (Whooping Crane) in NatureServe Explorer: An online encyclopedia of life. http://explorer.natureserve.org/servlet/NatureServe?searchName=Grus+americana (accessed on May 27, 2015).

Pritchard, P.C.H. 1971. The leatherback or leathery turtle *Dermochelys coriacea*. IUCN Monograph No. 1. International Union for Conservation of Nature and Natural Resources, Morges, Switzerland.

Pritchard, P.C.H. and R. Marquez. 1973. Kemp's ridley turtle or Atlantic ridley, *Lepidochelys kempi*. IUCN Monograph 2, Morges, Switzerland.

Rebel, T.P. 1974. Sea turtles and the turtle industry of the West Indies, Florida, and the Gulf of Mexico. Rev. Ed. University of Miami Press, Coral Gables, Florida.

Ross, J.P. 1982. Historical decline of loggerhead, ridley, and leatherback sea turtles. In: Biology and conservation of sea turtles (K. Bjorndal, ed.), 189–195. Smithsonian Institution Press, Washington, D.C.

Schmidley, D. J. 2004. The mammals of Texas, revised edition. University of Texas Press, Austin.

Schwartz, F. 1976. Status of sea turtles, Cheloniidae and Dermochelidae, in North Carolina. Abstr. in Proceedings and abstracts from the 73rd meeting of the North Carolina Academy of Science, Inc., April 2–3, 1976, at the Univ. N. Carolina, Wilmington, N. Carolina. J. Elisha Mitchell Sci. Soc. 92(2):76–77.

Sea Turtle, Inc. 2008. http://www.seaturtleinc.com/ (accessed February 11, 2008).

Sea Turtle Stranding and Salvage Network (STSSN). 2013. http://www.sefsc.noaa.gov/STSSN/STSSNReportDriver.jsp (accessed June 6, 2013).

Shaver, D.J. 1991. Feeding ecology of wild and head-started Kemp's ridley sea turtles in south Texas waters. Journal of Herpetology 25(3):327–334.

Shaver, D.J. and A. Amos. 1988. Sea Turtle Nesting on Texas Beaches in 1987. *Marine Turtle Newsletter* 42:7-9

Spotila, J.R., A.E. Dunham, A.J. Leslie, A.C. Steyermark, P.T. Plotkin, and F.V. Paladino. 1996. Worldwide population decline of *Dermochelys coriacea*: are leatherback turtles going extinct? Chelonian Conservation and Biology 2(2):209–222.

Stutzenbaker, C.D., and M.W.Weller. 1989. "The Texas Coast" in Habitat Management for Migrating and Wintering Waterfowl in North America, L.M. Smith, R. Pederson and R. Kaminski (eds). Texas Tech University Press, Lubbock.

Texas Parks and Wildlife Department (TPWD). 2013. Texas Gulf Ecological Management Sites (GEMS). http://www.tpwd.state.tx.us/landwater/water/conservation/txgems/index.phtml (accessed on June 30, 2013).

_____. 2013. J.D. Murphree Wildlife Management Area. http://www.tpwd.state.tx.us/huntwild/hunt/wma/find_a_wma/list/?id=40 (accessed on June 30, 2013).

———**.**2015. Lower Neches Wildlife Management Area. https://tpwd.texas.gov/huntwild/hunt/wma/find_a_wma/list/?id=58 (accessed on January 3, 2015)

_____.2015. Tony Houseman Wildlife Management Area. https://tpwd.texas.gov/huntwild/hunt/wma/find_a_wma/list/?id=38 (accessed on January 3, 2015)

U.S. Army Corps of Engineers (USACE)

——**———.**1998. Environmental assessment for a change in location of the Neches River and tributaries, saltwater barrier at Beaumont, Texas. U.S. Army Engineer District, Galveston, Texas.

_____. 2013. Sea Turtle Data Warehouse. http://el.erdc.usace.army.mil/seaturtles/list.cfm?Code=Project&Step=2&Type=SWG (accessed June 6, 2013).

_____. 2015. Analysis of Cow and Adams Bayous in Orange County, Texas using Desktop Off-Channel Wetland Salinity Mitigation Model (DOWSMM) by B. Gunkel and G. Brown. ERDC-CHL, Vicksburg.

U.S. Fish and Wildlife Service (USFWS). 1967. Native Fish and Wildlife; Endangered Species (32 FR 4001, March 11, 1967).

_____.1970. Conservation of Endangered Species and Other Fish or Wildlife. (35 FR 84952, June 2, 1970).

_____.1978. Endangered and Threatened Wildlife and Plants; Listing and Protecting Loggerhead Sea Turtles as “Threatened Species” and Populations of Green and Olive Ridley Sea Turtles as Threatened Species or “Endangered Species.” (43 FR 32808, July 28, 1978).

_____.1978. Endangered and Threatened Wildlife and Plants; Determination of Critical Habitat for the Leatherback Sea Turtle (43 FR 43688, September 26, 1978).

_____.1981 . Endangered species assessments and surveys in Hidalgo and Willacy counties, Texas. Final report to USACE, Galveston by USFWS, Denver Wildlife Research Center.

_____.1985. Determination of Endangered and Threatened Status for Piping Plover; 50 FR 50726 (December 11, 1985).

_____. 1995. Threatened and Endangered Species of Texas. USFWS, Austin.

_____. 2001. Endangered and Threatened Wildlife and Plants; Final Determination of Critical Habitat for Wintering Piping Plovers, 66 FR 36038 (July 10, 2001).

_____. 2001. Florida manatee (*Trichechus manatus latirostris*), third revision. USFWS, Atlanta.

_____. 2008. Texas Chenier Plain Refuge Complex Final Environmental Impact Statement, Comprehensive Conservation Plan, and Land Protection Plan. Prepared by the Division of Planning, National Wildlife Refuge System, Southwest Region, Albuquerque.

_____. 2008. Confirmed Sea Turtle Nests on South Padre Island and Boca Chica Beaches, Texas, 1999-2007. Unpublished Data.

_____. 2008. Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions, Notice of Review, 73 FR 75176 (December 10, 2008).

_____. 2009. Piping Plover (*Charadrius melodus*): Spotlight Species Action Plan for the threatened Atlantic Coast and Northern Great Plains populations. Prepared by Endangered Species Program, Northeast Region.

_____. 2009. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Wintering Population of the Piping Plover (*Charadrius melodus*), 74 FR 23476 (May 19, 2009).

_____. 2009. Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Sprague's Pipit as Threatened T or Endangered, 74 FR 63337, December 3, 2009.

_____. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List Sprague's Pipit as Endangered or Threatened Throughout Its Range, 75 FR 56028 (September 15, 2010).

_____. 2011. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form "*Calidris canutus ssp. rufa*". Accessed on the internet (6/4/2013) http://ecos.fws.gov/docs/candidate/assessments/2012/r5/B0DM_V01.pdf

_____.2011. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List Texas Fatmucket, Golden Orb, Smooth Pimpleback, Texas Pimpleback and Texas Fawnsfoot as Threatened or Endangered; Proposed Rule (76 FR 62166, October 6, 2011).

_____. 2011. Endangered and Threatened Wildlife and Plants; 90-Day Finding and 12-Month Determination on a Petition to Revise Critical Habitat for the Leatherback Sea Turtle (76 FR 47133, August 4, 2011).

_____. 2012. Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions, Notice of Review, 77 FR 69994 (November 12, 2012).

_____.2012. Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service. http://www.fws.gov/refuges/realty/archives/pdf/2012_Annual_Report_of_LandsDataTable11162012.pdf (accessed June 30, 2013).

_____. 2013. National Wildlife Refuge System. http://www.fws.gov/southwest/refuges/statemaps/texas.html (accessed on June 30, 2013).

_____. 2013. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Northwest Atlantic Ocean Distinct Population Segments of the Loggerhead Sea Turtle (*Caretta caretta*); Proposed Rule (78 FR 17999, March 25, 2013).

_____.2014. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Rufa Red Knot. Final Rule (79 FR 73706, December 11, 2014).

_____. 2014. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form (*Anthus spragueii*, Sprague's Pipit). Prepared by Region 6 (Mountain-Prairie Region), dated 8/29/2014. Accessed on May 22, 2015 at http://ecos.fws.gov/docs/candidate/assessments/2014/r6/B0GD_V01.pdf

_____. 2014. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form (*Quadrula houstonensis,* Smooth Pimpleback). Prepared by Region 6 (Southwest Region), dated5/30/2014. Accessed on May 22, 2015 at http://ecos.fws.gov/docs/candidate/assessments/2014/r2/F04G_I01.pdf

_____. 2014. U.S. Fish and Wildlife Service Species Assessment and Listing Priority Assignment Form (*Truncilla macrodon,* Texas Fawnsfoot). Prepared by Region 6 (Southwest Region), dated5/30/2014. Accessed on May 22, 2015 at http://ecos.fws.gov/docs/candidate/assessments/2014/r2/F04E_I01.pdf

_____. 2015. Brazoria National Wildlife Refuge. http://www.fws.gov/refuge/brazoria/ (accessed on January 3, 2015).

_____. 2015. San Bernard National Wildlife Refuge. http://www.fws.gov/refuge/san_bernard/ (accessed on January 4, 2015).

_____.2015. Personal communication with USFWS on manatee in Trinity Bay.

U.S. Fish and Wildlife Service and National Marine Fisheries Service (USFWS and NMFS). 1992. Recovery plan for the Kemp's ridley sea turtle (*Lepidochelys kempii*). National Marine Fisheries Service, St. Petersburg, Florida.

Witzell, W.N. 1983. Synopsis of biological data on the hawksbill turtle *Eretmochelys imbricata* (Linnaeus, 1766). FAO Fisheries Synopsis No. 137. FIR/S137, SAST – Hawksbill Turtle – 5.31 (07) 017.01. Food and Agriculture Organization (FAO) of the United Nations, Rome, Italy.

APPENDIX A
NMFS AND USFWS SPECIES LISTS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TX 77058
PHONE: (281)286-8282 FAX: (281)488-5882
URL: www.fws.gov/southwest/es/TexasCoastal/;
www.fws.gov/southwest/es/ES_Lists_Main2.html

Consultation Code: 02ETTXX0-2015-SLI-0415 May 21, 2015
Event Code: 02ETTXX0-2015-E-00460
Project Name: Sabine Pass to Galvestion Bay

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

To Whom It May Concern:

The U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: http://www.fws.gov/southwest/es/TexasCoastal/Map.html. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 6300 Ocean Drive, Unit 5837, Corpus Christi, Texas 78412.

The enclosed species list identifies federally threatened, endangered, and proposed to be listed species; designated critical habitat; and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list is provided by the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information from updated surveys, changes in the abundance and distribution of species, changes in habitat conditions, or other factors could change the list. 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. The Service recommends that verification be completed by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation for updates to species list and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Candidate species have no protection under the Act but are included for consideration because they could be listed prior to the completion of your project. The other species information should help you determine if suitable habitat for these listed species exists in any of the proposed project areas or if project activities may affect species on-site, off-site, and/or result in "take" of a federally listed species.

"Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. In addition to the direct take of an individual animal, habitat destruction or modification can be considered take, regardless of whether it has been formally designated as critical habitat, if the activity results in the death or injury of wildlife by removing essential habitat components or significantly alters essential behavior patterns, including breeding, feeding, or sheltering.

Section 7

Section 7 of the Act requires that all Federal agencies consult with the Service to ensure that actions authorized, funded or carried out by such agencies do not jeopardize the continued existence of any listed threatened or endangered species or adversely modify or destroy critical habitat of such species. It is the responsibility of the Federal action agency to determine if the proposed project may affect threatened or endangered species. If a "may affect" determination is made, the Federal agency shall initiate the section 7 consultation process by writing to the office that has responsibility for the area in which your project occurs.

Is not likely to adversely affect – the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The Federal agency or the designated non-Federal representative should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

Is likely to adversely affect – adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires the Federal action agency to initiate formal section 7 consultation with this office.

No effect – the proposed action will not affect federally listed species or critical habitat (i.e., suitable habitat for the species occurring in the project county is not present in or adjacent to the action area). No further coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel

conducting the evaluation, habitat conditions, site photographs, and any other related articles.

Please be advised that while a Federal agency may designate a non-Federal representative to conduct informal consultations with the Service, assess project effects, or prepare a biological assessment, the Federal agency must notify the Service in writing of such a designation. The Federal agency shall also independently review and evaluate the scope and contents of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Act requirements for your projects at: http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf

Section 10

If there is no federal involvement and the proposed project is being funded or carried out by private interests and/or non-federal government agencies, and the project as proposed may affect listed species, a section 10(a)(1)(B) permit is recommended. The Habitat Conservation Planning Handbook is available at http://www.fws.gov/midwest/endangered/permits/hcp/hcphandbook.html.

Service Response

Please note that the Service strives to respond to requests for project review within 30 days of receipt, however, this time period is not mandated by regulation. Responses may be delayed due to workload and lack of staff. Failure to meet the 30-day timeframe does not constitute a concurrence from the Service that the proposed project will not have impacts to threatened and endangered species.

Candidate Species

Several species of freshwater mussels occur in Texas and five are candidates for listing under the ESA. The Service is also reviewing the status of six other species for potential listing under the ESA. One of the main contributors to mussel die offs is sedimentation, which smothers and suffocates mussels. To reduce sedimentation within rivers, streams, and tributaries crossed by a project, the Service recommends that that you implement the best management practices found at: http://www.fws.gov/southwest/es/TexasCoastal/FreshwaterMussels.html.

Candidate Conservation Agreements (CCAs) or Candidate Conservation Agreements with Assurances (CCAAs) are voluntary agreements between the Service and public or private entities to implement conservation measures to address threats to candidate species. Implementing conservation efforts before species are listed increases the likelihood that simpler, flexible, and more cost-effective conservation options are available. A CCAA can provide participants with assurances that if they engage in conservation actions, they will not be required to implement additional conservation measures beyond those in the agreement. For additional information on CCAs/CCAAs please visit the Service's website at http://www.fws.gov/endangered/what-we-do/cca.html.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Many may nest in trees, brush areas or other suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals or eggs. If project activities must be conducted during this time, we recommend surveying for active nests prior to commencing work. A list of migratory birds may be viewed at http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtandx.html.

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the Act on August 9, 2007. Both the bald eagle and the goden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For more information on bald and golden eagle management guidlines, we recommend you review information provided at http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf

The construction of overhead power lines creates threats of avian collision and electrocution. The Service recommends the installation of underground rather than overhead power lines whenever possible. For new overhead lines or retrofitting of old lines, we recommend that project developers implement, to the maximum extent practicable, the Avian Power Line Interaction Committee guidelines found at http://www.aplic.org/.

Meteorological and communication towers are estimated to kill millions of birds per year. We recommend following the guidance set forth in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Constructions, Operation and Decommissioning, found online at: http://www.fws.gov/habitatconservation/communicationtowers.html, to minimize the threat of avian mortality at these towers. Monitoring at these towers would provide insight into the effectiveness of the minimization measures. We request the results of any wildlife mortality monitoring at towers associated with this project.

We request that you provide us with the final location and specifications of your proposed towers, as well as the recommendations implemented. A Tower Site Evaluation Form is also available via the above website; we recommend you complete this form and keep it in your files. If meteorological towers are to be constructed, please forward this completed form to our office.

More information concerning sections 7 and 10 of the Act, migratory birds, candidate species, and landowner tools can be found on our website at: http://www.fws.gov/southwest/es/TexasCoastal/ProjectReviews.html.

Wetlands and Wildlife Habitat

Wetlands and riparian zones provide valuable fish and wildlife habitat as well as contribute to

ﬂood control, water quality enhancement, and groundwater recharge. Wetland and riparian vegetation provides food and cover for wildlife, stabilizes banks and decreases soil erosion. These areas are inherently dynamic and very sensitive to changes caused by such activities as overgrazing, logging, major construction, or earth disturbance. Executive Order 11990 asserts that each agency shall provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands in carrying out the agency's responsibilities. Construction activities near riparian zones should be carefully designed to minimize impacts. If vegetation clearing is needed in these riparian areas, they should be re-vegetated with native wetland and riparian vegetation to prevent erosion or loss of habitat. We recommend minimizing the area of soil scarification and initiating incremental re-establishment of herbaceous vegetation at the proposed work sites. Denuded and/or disturbed areas should be re-vegetated with a mixture of native legumes and grasses. Species commonly used for soil stabilization are listed in the Texas Department of Agriculture's (TDA) Native Tree and Plant Directory, available from TDA at P.O. Box 12847, Austin, Texas 78711. The Service also urges taking precautions to ensure sediment loading does not occur to any receiving streams in the proposed project area. To prevent and/or minimize soil erosion and compaction associated with construction activities, avoid any unnecessary clearing of vegetation, and follow established rights-of-way whenever possible. All machinery and petroleum products should be stored outside the ﬂoodplain and/or wetland area during construction to prevent possible contamination of water and soils.

Wetlands and riparian areas are high priority fish and wildlife habitat, serving as important sources of food, cover, and shelter for numerous species of resident and migratory wildlife. Waterfowl and other migratory birds use wetlands and riparian corridors as stopover, feeding, and nesting areas. We strongly recommend that the selected project site not impact wetlands and riparian areas, and be located as far as practical from these areas. Migratory birds tend to concentrate in or near wetlands and riparian areas and use these areas as migratory ﬂyways or corridors. After every effort has been made to avoid impacting wetlands, you anticipate unavoidable wetland impacts will occur; you should contact the appropriate U.S. Army Corps of Engineers office to determine if a permit is necessary prior to commencement of construction activities.

If your project will involve filling, dredging, or trenching of a wetland or riparian area it may require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). For permitting requirements please contact the U.S. Corps of Engineers, District Engineer, P.O. Box 1229, Galveston, Texas 77553-1229, (409) 766-3002.

Beneficial Landscaping

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping (42 C.F.R. 26961), where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The Service also recommends the use of native trees, shrubs, and herbaceous species that are adaptable, drought tolerant and conserve water.

State Listed Species

The State of Texas protects certain species. Please contact the Texas Parks and Wildlife Department (Endangered Resources Branch), 4200 Smith School Road, Austin, Texas 78744 (telephone 512/389-8021) for information concerning fish, wildlife, and plants of State concern or visit their website at: http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/texas_rare_species/listed_species/.

If we can be of further assistance, or if you have any questions about these comments, please contact 281/286-8282 if your project is in southeast Texas, or 361/994-9005 if your project is in southern Texas. Please refer to the Service consultation number listed above in any future correspondence regarding this project.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Sabine Pass to Galvestion Bay

Official Species List

Provided by:

Texas Coastal Ecological Services Field Office
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TX 77058
(281) 286-8282
http://www.fws.gov/southwest/es/TexasCoastal/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

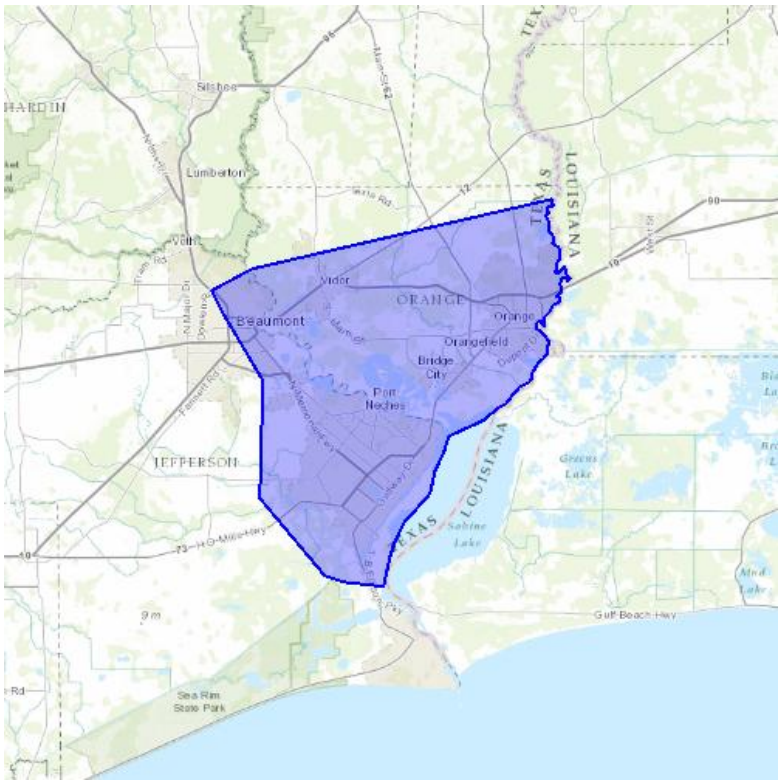
Consultation Code: 02ETTXX0-2015-SLI-0415
Event Code: 02ETTXX0-2015-E-00460

Project Type: ** OTHER **

Project Name: Sabine Pass to Galvestion Bay
Project Description: Coastal storm risk management study for Beaumont/Orange Tx region.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Jefferson, TX | Orange, TX

Endangered Species Act Species List

There are a total of 9 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 3 of these species should be considered only under certain conditions. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	**Status**	**Has Critical Habitat**	**Condition(s)**
Least tern *(Sterna antillarum)* Population: interior pop.	Endangered		Wind related projects within migratory route.
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Threatened	Final designated	Wind related projects within migratory route.
Red Knot *(Calidris canutus rufa)*	Threatened		Wind related projects within migratory route.
Mammals			
West Indian Manatee *(Trichechus manatus)* Population: Entire	Endangered	Final designated	
Reptiles			
Green sea turtle *(Chelonia mydas)* Population: Except where endangered	Threatened	Final designated	
Hawksbill sea turtle *(Eretmochelys imbricata)*	Endangered	Final designated	

Population: Entire			
Kemp's Ridley sea turtle *(Lepidochelys kempii)* Population: Entire	Endangered		
Leatherback sea turtle *(Dermochelys coriacea)* Population: Entire	Endangered	Final designated	
Loggerhead sea turtle *(Caretta caretta)* Population: Northwest Atlantic Ocean DPS	Threatened	Proposed, Final designated	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TX 77058
PHONE: (281)286-8282 FAX: (281)488-5882
URL: www.fws.gov/southwest/es/TexasCoastal/;
www.fws.gov/southwest/es/ES_Lists_Main2.html

Consultation Code: 02ETTXX0-2015-SLI-0103 May 21, 2015
Event Code: 02ETTXX0-2015-E-00459
Project Name: Sabine Pass to Galveston Bay - Freeport

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: http://www.fws.gov/southwest/es/TexasCoastal/Map.html. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 6300 Ocean Drive, Unit 5837, Corpus Christi, Texas 78412.

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New information from updated surveys, changes in the abundance and distribution of species, changes in habitat conditions, or other factors could change the list. 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. The Service recommends that verification be completed by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation for updates to species list and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

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Section 10

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The construction of overhead power lines creates threats of avian collision and electrocution. The Service recommends the installation of underground rather than overhead power lines whenever possible. For new overhead lines or retrofitting of old lines, we recommend that project developers implement, to the maximum extent practicable, the Avian Power Line Interaction Committee guidelines found at http://www.aplic.org/.

Meteorological and communication towers are estimated to kill millions of birds per year. We recommend following the guidance set forth in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Constructions, Operation and Decommissioning, found online at: http://www.fws.gov/habitatconservation/communicationtowers.html, to minimize the threat of avian mortality at these towers. Monitoring at these towers would provide insight into the effectiveness of the minimization measures. We request the results of any wildlife mortality monitoring at towers associated with this project.

We request that you provide us with the final location and specifications of your proposed towers, as well as the recommendations implemented. A Tower Site Evaluation Form is also available via the above website; we recommend you complete this form and keep it in your files. If meteorological towers are to be constructed, please forward this completed form to our office.

More information concerning sections 7 and 10 of the Act, migratory birds, candidate species, and landowner tools can be found on our website at: http://www.fws.gov/southwest/es/TexasCoastal/ProjectReviews.html.

Wetlands and Wildlife Habitat

Wetlands and riparian zones provide valuable fish and wildlife habitat as well as contribute to

ﬂood control, water quality enhancement, and groundwater recharge. Wetland and riparian vegetation provides food and cover for wildlife, stabilizes banks and decreases soil erosion. These areas are inherently dynamic and very sensitive to changes caused by such activities as overgrazing, logging, major construction, or earth disturbance. Executive Order 11990 asserts that each agency shall provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands in carrying out the agency's responsibilities. Construction activities near riparian zones should be carefully designed to minimize impacts. If vegetation clearing is needed in these riparian areas, they should be re-vegetated with native wetland and riparian vegetation to prevent erosion or loss of habitat. We recommend minimizing the area of soil scarification and initiating incremental re-establishment of herbaceous vegetation at the proposed work sites. Denuded and/or disturbed areas should be re-vegetated with a mixture of native legumes and grasses. Species commonly used for soil stabilization are listed in the Texas Department of Agriculture's (TDA) Native Tree and Plant Directory, available from TDA at P.O. Box 12847, Austin, Texas 78711. The Service also urges taking precautions to ensure sediment loading does not occur to any receiving streams in the proposed project area. To prevent and/or minimize soil erosion and compaction associated with construction activities, avoid any unnecessary clearing of vegetation, and follow established rights-of-way whenever possible. All machinery and petroleum products should be stored outside the ﬂoodplain and/or wetland area during construction to prevent possible contamination of water and soils.

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If your project will involve filling, dredging, or trenching of a wetland or riparian area it may require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). For permitting requirements please contact the U.S. Corps of Engineers, District Engineer, P.O. Box 1229, Galveston, Texas 77553-1229, (409) 766-3002.

Beneficial Landscaping

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping (42 C.F.R. 26961), where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The Service also recommends the use of native trees, shrubs, and herbaceous species that are adaptable, drought tolerant and conserve water.

State Listed Species

The State of Texas protects certain species. Please contact the Texas Parks and Wildlife Department (Endangered Resources Branch), 4200 Smith School Road, Austin, Texas 78744 (telephone 512/389-8021) for information concerning fish, wildlife, and plants of State concern or visit their website at: http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/texas_rare_species/listed_species/.

If we can be of further assistance, or if you have any questions about these comments, please contact 281/286-8282 if your project is in southeast Texas, or 361/994-9005 if your project is in southern Texas. Please refer to the Service consultation number listed above in any future correspondence regarding this project.

Attachment

Official Species List

Provided by:

Texas Coastal Ecological Services Field Office
17629 EL CAMINO REAL, SUITE 211
HOUSTON, TX 77058
(281) 286-8282
http://www.fws.gov/southwest/es/TexasCoastal/
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

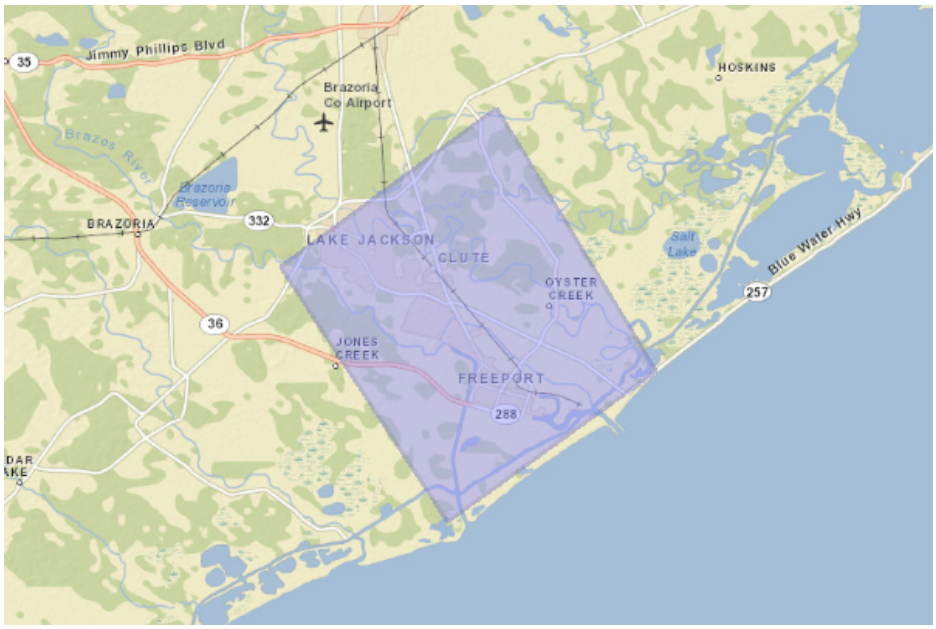
Consultation Code: 02ETTXX0-2015-SLI-0103
Event Code: 02ETTXX0-2015-E-00459

Project Type: ** OTHER **

Project Name: Sabine Pass to Galveston Bay - Freeport
Project Description: The Sabine Pass to Galveston Bay feasibility study is evaluating coastal storm risk management (CSRM) and ecosystem restoration (ER) problems in in two separate areas on the upper Texas coast - Orange-NW Jefferson counties and the Freeport area in Brazoria County. This official species list request is for the Freeport area only.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-95.4867573 29.0253992, -95.3624744 29.1166206, -95.2704639 28.9653712, -95.3906269 28.8788264, -95.4867573 29.0253992)))

Project Counties: Brazoria, TX

Endangered Species Act Species List

There are a total of 12 threatened, endangered, or candidate species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	**Status**	**Has Critical Habitat**	**Condition(s)**
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Threatened	Final designated	
Red Knot *(Calidris canutus rufa)*	Threatened		
Sprague's Pipit *(Anthus spragueii)*	Candidate		
Whooping crane *(Grus americana)* Population: except where EXPN	Endangered	Final designated	
Clams			
Smooth Pimpleback *(Quadrula houstonensis)*	Candidate		
Texas Fawnsfoot *(Truncilla macrodon)*	Candidate		
Mammals			
West Indian Manatee *(Trichechus manatus)* Population: Entire	Endangered	Final designated	
Reptiles			
Green sea turtle *(Chelonia mydas)*	Threatened	Final designated	

Population: Except where endangered			
Hawksbill sea turtle *(Eretmochelys imbricata)* Population: Entire	Endangered	Final designated	
Kemp's Ridley sea turtle *(Lepidochelys kempii)* Population: Entire	Endangered		
Leatherback sea turtle *(Dermochelys coriacea)* Population: Entire	Endangered	Final designated	
Loggerhead sea turtle *(Caretta caretta)* Population: Northwest Atlantic Ocean DPS	Threatened	Final designated	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

NOAA FISHERIES
Southeast Region
Protected Resources Division

Texas' Threatened and Endangered Species

For more information on listed species please visit:
http://www.nmfs.noaa.gov/pr/species/esa/listed.htm
http://sero.nmfs.noaa.gov/protected_resources/index.html

Marine Mammal Species	Scientific Name	Status
fin whale	*Balaenoptera physalus*	Endangered
humpback whale	*Megaptera novaeangliae*	Endangered
sei whale	*Balaenoptera borealis*	Endangered
sperm whale	*Physeter macrocephalus*	Endangered
Sea Turtle Species		
green sea turtle	*Chelonia mydas*	Threatened[1]
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
leatherback sea turtle	*Dermochelys coriacea*	Endangered
loggerhead sea turtle	*Caretta caretta*	Threatened[2]
Invertebrate Species		
lobed star coral	*Orbicella annularis*	Threatened
mountainous star coral	*Orbicella faveolata*	Threatened
boulder star coral	*Orbicella franksi*	Threatened
elkhorn coral	*Acropora palmata*	Threatened[3]

Critical Habitat Designations

For final rules, maps, and GIS data please visit:
http://sero.nmfs.noaa.gov/maps_gis_data/protected_resources/critical_habitat/index.html

Loggerhead sea turtle: There are 38 designated marine areas that occur throughout the Southeast Region.

[1] Florida's breeding population is listed as endangered.
[2] Northwest Atlantic distinct population segment.
[3] Colonies located at Flower Garden Banks National Marine Sanctuary.

NOAA FISHERIES
Southeast Region
Protected Resources Division

Species Proposed for Listing Under the Endangered Species Act

Federal action agencies are encouraged to include species proposed for listing under the Endangered Species Act (ESA) in their Section 7 consultation requests. Species that are proposed for listing are those which have been found to warrant federal protection under the ESA, but a final rule formally listing the species has not yet published. By including these species in your Section 7 consultation, reinitiating consultation after the ESA listing is finalized may not be necessary.

For more information on species proposed for listing under the ESA, please visit:
http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm#proposed

Candidate and Proposed Species Under the Endangered Species Act (ESA)

Candidate species are any species that are undergoing a status review that we have announced in a *Federal Register* notice, whether or not they are the subject of a petition. For detailed definitions and explanations, please refer to the 2006 **Candidate Species Definition** (71 FR 61022, 10/17/2006).

Proposed species are those candidate species that were found to warrant listing as either threatened or endangered and were officially proposed as such in a *Federal Register* notice after the completion of a status review and consideration of other protective conservation measures. We always seek public comment on a proposal to list species under the ESA. We generally have one year after a species is proposed for listing under the ESA to make a final determination whether to list a species as threatened or endangered.

Candidates for Listing (25 candidate "species")

Species	Year	*Federal Register* notice
Fishes		
2 bony fish species • **grouper, comb** (*Mycteroperca fusca*) • **grouper, Gulf** (*Mycteroperca jordani*)	2014	79 FR 10104
clownfish, orange (*Amphiprion percula*)	2014	79 FR 52276
cusk (*Brosme brosme*)	2007	72 FR 10710
ray, Caribbean electric (*Narcine bancroftii*)	2014	79 FR 4877
seahorse, dwarf (*Hippocampus zosterae*)	2012	77 FR 26478
shad, Alabama (*Alosa alabamae*)	2013	78 FR 57611
shark, common thresher (*Alopias vulpinus*)	2015	80 FR 11379
shark, porbeagle (*Lamna nasus*)	2015	80 FR 16356
8 shark species • **Daggernose** (*Isogomphodon oxyrhynchus*) • **Striped smooth-hound** (*Mustelus fasciatus*) • **Narrownose smooth-hound** (*Mustelus schmitti*) • **Sawback angelshark** (*Squatina aculeata*) • **Argentine angelshark** (*Squatina argentina*) • **Angular angel shark** (*Squatina guggenheim*) • **Smoothback angelshark** (*Squatina oculata*) • **Common angel shark** (*Squatina squatina*)	2013	78 FR 69376
4 skate & ray species • **guitarfish** (*Rhinobatos rhinobatos*) • **guitarfish, blackchin** (*Rhinobatos cemiculus*) • **guitarfish, Brazilian** (*Rhinobatos horkelii*) • **skate, greytail** (*Bathyraja griseocauda*)	2014	79 FR 10104

Marine Mammals		
2 marine mammal species • **dolphin, common bottlenose** (1 candidate DPS) (*Tursiops truncatus*) ◦ Fiordland • **dolphin, Hector's** (*Cephalorhynchus hectori)*	2014	**79 FR 9880**
seal, Pacific harbor (1 candidate DPS) (*Phoca vitulina richardii*) ◦ Iliamna Lake	2013	**78 FR 29098**
whale, Bryde's (1 candidate DPS) (*Balaenoptera edeni*) ◦ Gulf of Mexico	2015	**80 FR 18343**

Proposed for Listing (23 proposed "species")

Species	Year Proposed	Status
Fishes		
cardinalfish, Banggai (*Pteropogon kauderni)*	2014	**proposed threatened**
coelacanth, African (1 DPS) (*Latimeria chalumnae)* • Tanzanian DPS	2015	**proposed threatened**
grouper, Nassau (*Epinephelus striatus*)	2014	**proposed threatened**
shark, Harrisson's dogfish (*Centrophorus harrissoni)*	2014	**proposed threatened**
Marine Invertebrates		
3 coral species • (***Cantharellus noumeae***) • (***Siderastrea glynni***) • (***Tubastraea floreana***)	2014	**proposed endangered**
Marine Mammals		
whale, humpback (4 DPSs) (*Megaptera novaeangliae)* • Central America • Western North Pacific	2015	**proposed threatened**
• Arabian Sea • Cape Verde Islands/Northwest Africa		**proposed endangered**
Marine Reptiles		
sea snake, dusky (*Aipysurus fuscus)*	2014	**proposed endangered**
sea turtle, green (11 DPSs) (*Chelonia mydas)* • Central North Pacific • East Indian-West Pacific • East Pacific • North Atlantic • North Indian • South Atlantic • Southwest Indian	2015	**proposed threatened**
• Central South Pacific • Central West Pacific • Mediterranean		**proposed endangered**

Endangered and Threatened Species Under NMFS' Jurisdiction:

- **All Endangered and Threatened Species under NMFS Jurisdiction**
  - » **Marine Mammals**
  - » **Sea Turtles**
  - » **Fish (Marine & Anadromous)**
  - » **Marine Invertebrates & Plants**

Additional Species:

- **Species Petitioned for Listing under the ESA** (awaiting 90-day findings)
- **Candidates for ESA Listing**
- **Species Proposed for ESA Listing**
- **Species with "Not Warranted" 12-month findings** (we reviewed the status, but determined that listing was not warranted)
- **Delisted Species and Species Under Review or Proposed for Delisting**

Updated: May 11, 2015

ATTACHMENT B

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
4444 Corona Drive, Suite 215
Corpus Christi, TX 78411
Phone: (281) 286-8282 Fax: (281) 488-5882

In Reply Refer To:
Project Code: 2022-0029016
Project Name: S2G Port Arthur Contract 3b

August 03, 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 U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: http://www.fws.gov/southwest/es/TexasCoastal/Map.html. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; P.O. Box 81468; Corpus Christi, Texas 78468-1468. For projects located in six counties in southern Texas (Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata) please write: Santa Ana NWR, ATTN: Ecological Services Sub Office, 3325 Green Jay Road, Alamo, Texas 78516.

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
- 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:

Texas Coastal Ecological Services Field Office
4444 Corona Drive, Suite 215
Corpus Christi, TX 78411
(281) 286-8282

Project Summary

Project Code: 2022-0029016
Project Name: S2G Port Arthur Contract 3b
Project Type: Levee / Dike - New Construction
Project Description: Contract 3b - Staging, haul routes, levee, and T-wall.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.86660855,-93.936820374995,14z

Counties: Jefferson County, Texas

Endangered Species Act Species

There is a total of 11 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.

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

Mammals

NAME	STATUS
West Indian Manatee *Trichechus manatus*	Threatened

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

Birds

NAME	STATUS
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
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population 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/758	Endangered

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
Hawksbill Sea Turtle *Eretmochelys imbricata* 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/3656	Endangered
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

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

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

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
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

NAME	BREEDING SEASON
Brown Pelican *Pelecanus occidentalis* 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/6034	Breeds Jan 15 to Sep 30
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Common Loon *gavia immer* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/4464	Breeds Apr 15 to Oct 31
Dickcissel *Spiza americana* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 5 to Aug 31
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
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Ring-billed Gull *Larus delawarensis* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds elsewhere
Royal Tern *Thalasseus maximus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Apr 15 to Aug 31
Ruddy Turnstone *Arenaria interpres morinella* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Sandwich Tern *Thalasseus sandvicensis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31

NAME	BREEDING SEASON
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
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

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.

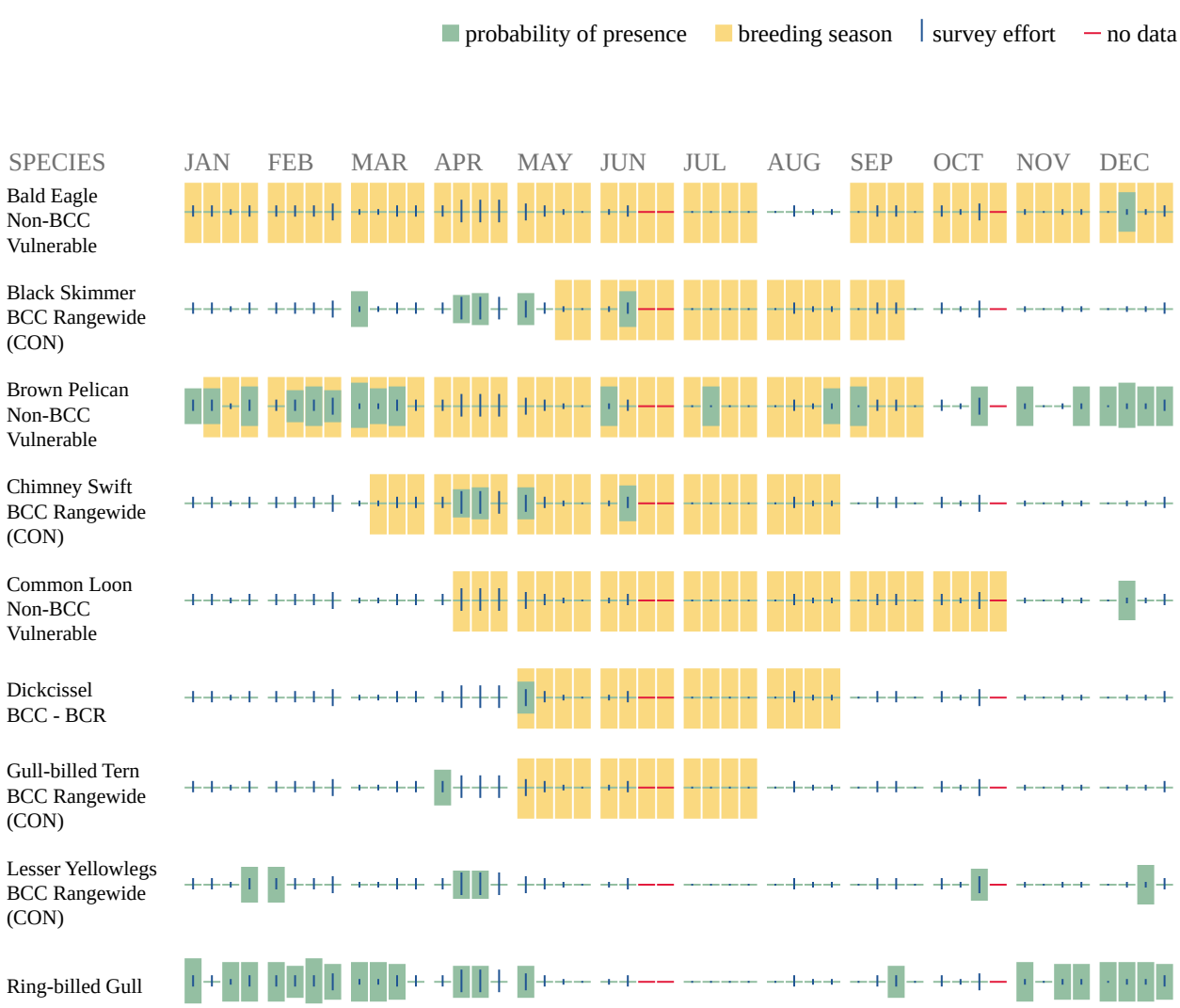
Breeding Season (■)

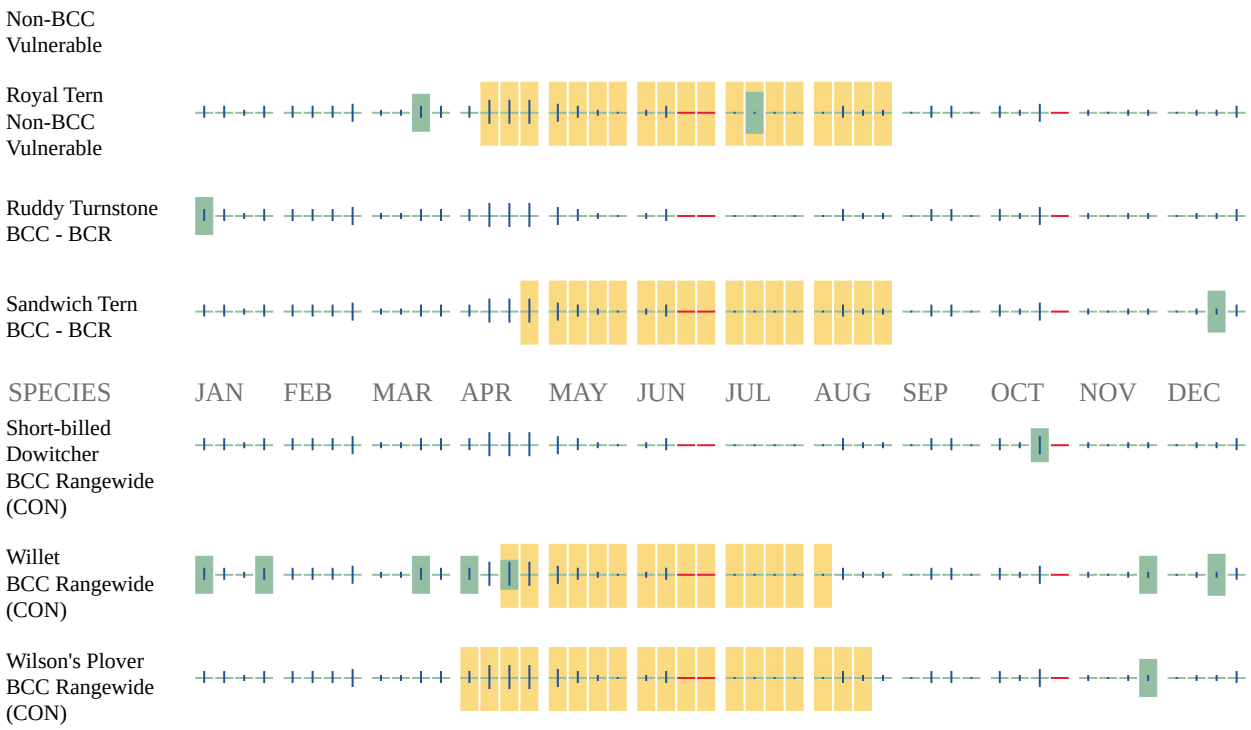
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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

Migratory Birds FAQ

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

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

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

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

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

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

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

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

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

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

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

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

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

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

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.

FRESHWATER EMERGENT WETLAND

- Palustrine

IPaC User Contact Information

Agency:	Army Corps of Engineers
Name:	Justyss Watson
Address:	819 Taylor Street
Address Line 2:	Room 3A12
City:	Fort Worth
State:	TX
Zip:	76102
Email	justyss.a.esquivel@usace.army.mil
Phone:	8178861828

ATTACHMENT C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
4444 Corona Drive, Suite 215
Corpus Christi, TX 78411
Phone: (281) 286-8282 Fax: (281) 488-5882

In Reply Refer To:
Project Code: 2022-0063389
Project Name: PAV03C

August 03, 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 U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: http://www.fws.gov/southwest/es/TexasCoastal/Map.html. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; P.O. Box 81468; Corpus Christi, Texas 78468-1468. For projects located in six counties in southern Texas (Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata) please write: Santa Ana NWR, ATTN: Ecological Services Sub Office, 3325 Green Jay Road, Alamo, Texas 78516.

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
- 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:

Texas Coastal Ecological Services Field Office
4444 Corona Drive, Suite 215
Corpus Christi, TX 78411
(281) 286-8282

Project Summary

Project Code: 2022-0063389
Project Name: PAV03C
Project Type: Mixed-Use Construction
Project Description: Staging area/pipeline relocation for PAV03C
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.84661235,-93.95501606068134,14z

Counties: Jefferson County, Texas

Endangered Species Act Species

There is a total of 11 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.

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

Mammals

NAME	STATUS
West Indian Manatee *Trichechus manatus*	Threatened

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

Birds

NAME	STATUS
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
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population 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/758	Endangered

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
Hawksbill Sea Turtle *Eretmochelys imbricata* 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/3656	Endangered
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

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

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

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
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

NAME	BREEDING SEASON
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Dickcissel *Spiza americana* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 5 to Aug 31
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
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
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
Sandwich Tern *Thalasseus sandvicensis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31
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
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

Probability Of Presence Summary

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

Probability of Presence (■)

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

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

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

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

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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

▪ probability of presence ▪ breeding season | survey effort – no data

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

Additional information can be found using the following links:

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What are the levels of concern for migratory birds?

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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.

FRESHWATER EMERGENT WETLAND

- Palustrine

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