



JUL 10 2019

## PORT CORPUS CHRISTI

July 10, 2019

Robert Jones, CCRFO, Reg PM  
U.S. Army Corps of Engineers  
Galveston District –  
Corpus Christi Regulatory Field Office  
5151 Flynn Parkway, Suite 306  
Corpus Christi, Texas 78411-4318

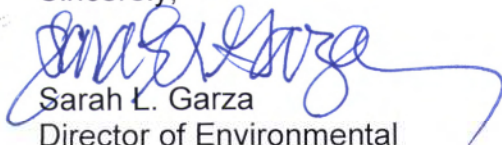
**RE: Port of Corpus Christi Authority  
Harbor Island Berth Construction Project  
Revised Permit Application**

Dear Mr. Jones:

The Port of Corpus Christi Authority is pleased to submit the revised permit application under Section 404 of the Clean Waters Act and Section 10 of the Rivers & Harbors Act in support of the Harbor Island Berth Construction Project. Construction of the proposed project would provide a safe and environmentally sustainable solution for the export of abundant domestic crude oil of the area by providing the facilities necessary to integrate new and existing barge, pipeline, and storage infrastructure maximizing the product handling efficiencies. Enclosed you will find three copies of the referenced revised permit application.

Please direct any communication regarding this project to me at [sarah@pocca.com](mailto:sarah@pocca.com), Sean Strawbridge at [sstrawbridge@pocca.com](mailto:sstrawbridge@pocca.com), Clark Robertson [crobertson@pocca.com](mailto:crobertson@pocca.com), and Dan Koesema at [dan@pocca.com](mailto:dan@pocca.com). Otherwise, if you have any questions or require additional information, please do not hesitate to contact me at (361) 885-6163.

Sincerely,



Sarah L. Garza  
Director of Environmental  
Planning & Compliance

cc: Sean C. Strawbridge, Chief Executive Officer  
Clark Robertson, Chief Operating Officer  
Louis Klusmeyer, PE, Chief of Design Engineering  
Daniel J. Koesema, PE, CFM, Chief of Channel Development  
Beatriz Rivera, PE, Environmental Engineer





# **REVISED APPLICATION FOR A STANDARD DEPARTMENT OF THE ARMY SECTION 10 AND SECTION 404 PERMIT**

Port of Corpus Christi Authority of Nueces County  
Harbor Island Dock Construction  
Nueces and Aransas Counties, Texas  
Project # 6703180051.0002

**Prepared for:**

Port of Corpus Christi Authority of Nueces County  
222 Power Street, Corpus Christi, Texas 78401

**Prepared by:**

Wood Environment & Infrastructure Solutions, Inc.  
285 Davidson Ave., Suite 405  
Somerset, New Jersey 08873  
T: 732-302-9500

**7/8/2019**



## Table of Contents

1.0	Introduction.....	1
1.1	Organization of this Document.....	1
2.0	Project Description.....	3
2.1	Project Purpose.....	4
2.2	Project Construction.....	5
2.2.1	Dredging.....	5
2.2.2	Construction Sequencing and Approaches.....	6
3.0	Description of the Project Area.....	7
3.1	Project Location.....	7
3.2	Ecological Characteristics.....	7
3.2.1	Geology and Soils.....	7
3.2.2	Water Quality.....	8
3.2.3	Sediment Characteristics.....	9
3.2.4	Wetlands.....	10
3.2.5	Biological Resources.....	11
3.2.6	Threatened and/or Endangered Species.....	25
3.2.7	Cultural Resources.....	28
4.0	Permit Evaluation Policies.....	30
4.1	Conservation.....	30
4.2	Economics.....	30
4.3	Aesthetics.....	30
4.4	General Environmental Concerns.....	31
4.5	Wetlands.....	31
4.6	Historic Properties.....	32
4.7	Fish and Wildlife Values.....	32
4.8	Flood Hazards.....	32
4.9	Floodplain Values.....	33
4.10	Land Use.....	33
4.11	Navigation.....	33
4.12	Shore Erosion and Accretion.....	33
4.13	Recreation.....	33
4.14	Water Supply and Conservation.....	34
4.15	Water Quality.....	34
4.16	Energy Needs.....	34
4.17	Safety.....	34
4.18	Food and Fiber Production.....	34
4.19	Mineral Needs.....	34
4.20	Considerations of Property Ownership.....	34
4.21	The Needs and Welfare of the People.....	35
5.0	Avoidance and Minimization Measures.....	35
6.0	References.....	36



### List of Tables

Table 2-1.....	Dredge Material Placement Area Capacity
Table 3-1.....	Essential Fish Habitat Within the Project Area
Table 3-2.....	Potential Migratory Bird Species on or Near the Project Site
Table 3-3.....	Other Potential Bird Species on or Near the Project Site
Table 3-4.....	Potential Reptile and Amphibian Species on or Near the Project Site
Table 3-5.....	Potential Federally Listed Threatened and Endangered Species on or Near the Project Site
Table 3-6.....	Potential State Listed Threatened/Endangered Species on or Near the Project Site
Table 3-7.....	Historical Markers Near the Project Site

### List of Figures

Figure 1 .....	Site Location Map
Figure 2 .....	Project Boundary Map
Figure 3 .....	Impacts Map
Figure 4a and 4b .....	Adjacent Property Owners Map
Figure 5.....	Dredged Material Placement Area Map
Figure 6.....	Wetlands Map



## List of Appendices

Appendix A.....	ENG Form 4345 (Version dated May 2018)
Appendix B .....	Figures
Appendix C .....	Historic Aerial Photographs of Harbor Island
Appendix D.....	Port Aransas Code of Ordinances
Appendix E.....	Site Plans
Appendix F.....	Water and Sediment Sampling and Analysis Report (included on a CD as an insert)
Appendix G.....	Wetlands Delineation Report
Appendix H.....	Consistency with the Texas Coastal Management Program Document
Appendix I.....	Texas Commission on Environmental Quality Tier II 401 Certification Questionnaire and Alternatives Analysis Checklist
Appendix J .....	Protected Natural Resources Information
Appendix K .....	Cultural Resources Information
Appendix L.....	Addresses of Adjoining Property Owners (from Nueces and San Patricio Counties)

## 1.0 Introduction

On behalf of Port of Corpus Christi Authority of Nueces County (PCCA), Wood Environment & Infrastructure Solutions, Inc. (Wood) is submitting this combined Section 10 and Section 404 Permit Application to the United States Army Corps of Engineers (USACE), Galveston District for the construction and dredging of two new marine berths to be constructed on Harbor Island, Corpus Christi, Texas located at the intersection of Aransas Channel and the Corpus Christi Ship Channel (CCSC) (**Figure 1 in Appendix B**).

The Proposed Project includes the following major elements:

- Dredging/excavation to allow for the creation of Berth 1 and Berth 2 to a depth of -60 feet mean lower low water (MLLW) (-54 feet MLLW plus four feet of advanced maintenance and two feet of allowable over dredge);
- Construction of Berth 1 and 2; and
- The placement of the resulting dredge material at one of several potential dredge placement area(s).

### 1.1 Organization of this Document

This narrative is organized as follows:

**Section 1.0** includes an Introduction (corresponding to Box No. 18 of the United States Army Corps of Engineers [USACE] engineering form 4345 (see **Appendix A**) - Application for Department of the Army Permit [ENG4345]).

**Section 2.0** includes a description of the Proposed Project.

**Section 3.0** contains a description of the Proposed Project area (corresponding to Box Nos. 19 to 22 on the ENG4345).

**Section 4.0** contains permit evaluation policies.

**Section 5.0** provides avoidance and minimization measures to be taken (corresponding to Box No. 23 on the ENG4345).

**Section 6.0** contains a list of references.

Figures are included in **Appendix B** of this Section 10 and Section 404 permit application. **Appendix C** presents historic aerial photographs of Harbor Island. **Appendix D** provides a copy of the Code of Ordinances for Port Aransas, while **Appendix E** presents the Site Plans. **Appendix F** includes the Water and Sediment Sampling and Analysis Report on a CD as an insert; and **Appendix G** includes the Wetlands Delineation Report from the Harbor Island project area wetlands delineation. **Appendix H** presents the Consistency with the Texas Coastal Management Program Form, **Appendix I** presents a completed Tier II Certification Questionnaire and

Alternatives Analysis Checklist, **Appendix J** includes information on protected species on or near the site, **Appendix K** presents information on cultural resources, and **Appendix L** provides the names and addresses of adjacent land owners near the Proposed Project dredge and dredge material placement locations.



## 2.0 Project Description

PCCA is proposing the construction of two berths that require dredging and excavation along the southern portion of Harbor Island (the "Proposed Project"). The new docks will be a component of a crude oil export terminal to be constructed in association with the docks. The berth structures will consist of shoreline protection, including articulated block mat, bulkhead, cellular wall, breasting structures, jetty platforms, and access structures, etc. The two berths will be located inset at Harbor Island as depicted in (Site Plans in **Appendix E**). The two berths will be in an area currently occupied by three already-existing berths which are damaged and unusable and, which are in the process of being demolished (**Figure 2** in **Appendix B**). There are no potential adverse impacts expected as a result of construction activities associated with the proposed Project. The new berths will be dredged to a depth of -60 (MLLW) (-54 feet MLLW plus four feet of advanced maintenance and two feet of allowable over dredge) (to match the current authorized channel (corresponding to Box No. 18 on the ENG4345). The signed ENG 4345 is included as **Appendix A**.

Harbor Island has a long history of development and use as an oil terminal, having been utilized as a bulk storage terminal dating back to the 1950s. **Appendix C** contains historic aerials for the Harbor Island area going back to 1955. Harbor Island was formerly a terminal site for Exxon and Fina, but those assets were removed, and the Site cleaned up to commercial/industrial levels. Historic use by Exxon and Fina included tanker and barges visiting the Site. In 1996, PCCA gained ownership of Harbor Island. The two new dock facilities at Harbor Island will replace the aging existing dock infrastructure used in the past to accommodate oil tankers from Panamax to Aframax class vessels.

It is noted in addition to having been historically developed and disturbed, Harbor Island is zoned by the Port Aransas for a use consistent with that of an oil export facility. As detailed in the Port Aransas Code of Ordinances (**see Appendix D**), Section 25-121 (Sub-Section 1.b), Harbor Island development is restricted to non-dwelling, non-residential use, and such activities as light manufacturing, marine terminals, storage facilities for oil and gas, and offshore oil/gas support services. The proposed development is consistent with the Port Aransas zoning ordinances.

The Harbor Island terminal will be a full-service crude oil export facility with the ability to load Very Large Crude Carrier (VLCCs) ships. The facility will support a variety of pipeline customers. Crude will enter the facility from the south through incoming pipelines coming into the property from across Highway 361, as well as the right of way to Harbor Island. The crude will be pumped directly to the vessel from facilities located off the property. A large pump facility will load the ships at a flow rate of approximately 80,000 barrels per hour (bbl/hr) using a series of four loading arms. Two additional loading arms will remove vapor from the ships, which will be treated using vapor combustion units (VCUs). Two 50K barrels (bbl) surge tanks will be used for emergency shut off. A fire suppression system consisting of fire water and a foam system will protect the Terminal. The terminal will be controlled through a Distributed Control System (DCS) located in the Operations Building.



The associated proposed berths are referred to as Berths 1 and 2. Berth 1 and Berth 2 are located along the southeastern corner of Harbor Island on PCCA property, inset into the Island on an approximate 45-degree angle to the CCSC. The Proposed Project will generate approximately 6,500,000 CY of dredging and/or excavation including advance maintenance and allowable dredge over depth.

The CCSC currently ranges from 47 feet deep in the Lower Bay segment to 49 feet deep in the entrance channel and is authorized to a depth of 54 feet. The design depths are consistent with those authorized by the USACE and allow for efficient use of vessels planned to call at Harbor Island.

The ships will enter through the Aransas Channel west of Port Aransas, make a left into the CCSC and in front of the terminal will be turned 180 degrees and backed into the berths. Once loaded, the ships will be able to immediately enter the CCSC, line up with the Aransas Channel and exit to the Gulf of Mexico.

The Project area covers approximately 64.8 acres of terminal basin. Approximately 6.5 million cubic yards (CY) of material will be appropriately dredged, through hydraulic and/or mechanical excavation to create the two berths. In addition, a dredge slope of 3 horizontal (H) to 1 vertical (V) (3H:1V) will be required as a transition from the toe of the dredge and daylight on Harbor Island to form the external boundary of the berths. The sloped areas will be protected with articulated block mat (ABM). Additionally, the areas to the north and south will be protected with approximately 725 feet bulkhead and approximately 1,275 feet cellular wall structure, respectively.

Impacts to the waters of the United States (WOTUS) will be permanent. A survey was conducted to evaluate the potential for adverse impacts to aquatic resources as a result of construction activities associated with the proposed Project. Upon desktop review of aerial imagery, bathymetry, and salinities in the Project area, it was determined that the survey area had no potential for special aquatic habitats. However, field sampling was conducted to verify. WOTUS boundaries and habitat impacts, including sample locations for seagrass and oysters, are shown in **Figure 3** in **Appendix B**.

A map showing adjacent property owners is included as **Figure 4a** and **4b** in **Appendix B** (corresponding to Box No 25. on the ENG4345).

## 2.1 Project Purpose

The purpose of the Proposed Project is to provide the necessary dock and berthing facilities to support vessel engagement with the loading, unloading, transportation, and exploring of petroleum and other bulk products via waterborne commerce. Construction of the Proposed Project would provide the facilities necessary to integrate existing and future barge, pipeline, and storage infrastructure to maximize product handling efficiencies (corresponding to Box No. 19 on the ENG4345).

The project is designed to accommodate the safe and efficient transit of vessels. A current authorization will provide two-way marine traffic in the CCSC at a depth of -54 ft MLLW from the Gulf of Mexico to the Ferry landing. The Proposed Project will complement this authorization, providing updated modern marine berths immediately adjacent to the newly deepened navigation channel. This will replace the existing dilapidated berths which are unusable and not sized appropriately for today's vessel fleet. Once completed, the CCSC would be the first Texas port to have a channel and associated marine berths with a depth of over 50 feet. The resulting Proposed Project will provide global access to the crude oil export market, and more efficiency for vessels. The Proposed Project will be fed by product being shipped via existing and future pipeline infrastructure.

Economic efficiency would result from the passage of large ships through the CCSC that previously had to remain offshore and transfer cargo into smaller crude tankers. Vessel delays and the potential for accidents would also be reduced (USACE 2003).

## 2.2 Project Construction

The following section discusses aspects of the Proposed Project construction as it relates to schedule.

### 2.2.1 Dredging

The dredge passes are anticipated to start near the shoreline, and progressively move towards deeper water. The dredged material is anticipated to be primarily sand in texture. A geographical positioning system (GPS) will be used to ensure the proper positioning of the dredging equipment. With each sediment grab, the dredge bucket will be swung directly to a transport barge upon breaking the water surface. Bottom stockpiling, over-filling the dredge bucket, or multiple bites of the dredge will not be performed, and sediment containment measures will be employed to minimize spillage. A turbidity curtain, surface booms, oil-absorbent pads, and similar environmental containment materials and supplies will be kept on site to be immediately deployed as necessary.

All work will be performed during an approved in-water work window as specified by federal and state regulatory agencies.

At the dredged material disposal site, the material will be hydraulically pumped to raise the containment dike, if needed, at the placement area and fill the interior. If needed, rip-rap or other stone may be added to the dike where additional armoring is needed. If not already completed, dike side slopes will be seeded as soon as practicable to promote stability. **Table 2-1** below summarizes the placement capacity of the dredge material placement areas. The total amount of dredge material to place is 6,500,000 CY.



Table 2-1 Dredge Material Placement Area Capacity	
Placement Option	Placement Capacity (CY)
M3	4,328,400
M9	3,500,000
M10	10,933,600
PA6	3,704,900
PA4	3,020,000

### 2.2.2 Construction Sequencing and Approaches

It is anticipated that the construction will be conducted through the completion of the following steps:

- Piles (shore-based, including steel pipe piles for equipment foundations, mooring dolphins, wall anchors, and bulkhead sheet piles);
- Dredging – Executed with dredging vessel that is the same or similar as currently being used for channel maintenance;
- Piles for Loading Platform – barge-mounted or floating pile driving rig;
- Structural steel erection for Loading Platform;
- Erect loading arms;
- Erect and interconnect module piping, electrical, and instrumentation systems; and
- Commissioning and Start-up.



### 3.0 Description of the Project Area

This section presents physical descriptions of the Proposed Project area and the natural resources on and around the Proposed Project area.

#### 3.1 Project Location

PCCA is proposing to construct the new berths located at Harbor Island on property located in Nueces County, Texas. The two berths are located inset into Harbor Island along the entrance channel and lower bay segments of the CCSC between Station 40+00 to Station 70+00.

It is anticipated that the dredged and excavated material generated by this Proposed Project will be placed in one of several potential dredge placement area(s) show on **Figure 5** in **Appendix B** (corresponding to Box No 20. on the ENG4345).

#### 3.2 Ecological Characteristics

The following sections describe the baseline ecological characteristics of the Project Area.

##### 3.2.1 Geology and Soils

The site is located within the Coastal Prairies subprovince to the larger Gulf Coastal Plains Physiographic Province of Texas. The Gulf Coastal Plains Province covers approximately one quarter of the State of Texas, increasing in elevation northward and westward from sea level at the Gulf of Mexico, up to an elevation of about 1,000 feet at its western end. The Coastal Prairies subprovince begins at the Gulf of Mexico shoreline and is composed of young deltaic sands, silts, and clays that erode to nearly flat grasslands, forming almost imperceptible slopes to the southeast. In areas where the subsidence of deltaic sediments occurs along fault lines, minor steeper slopes result from one foot to as much as nine feet high (BEG 1996).

The rock unit at Harbor Island is dominated by predominately fill and spoil. These soils include; (1) fill; material dredged for raising land surface above Alluvium and Barrier Island Deposits and creating land and (2) spoil; dredged material forming islands along waterways. Their properties are highly variable mixed mud, silt, sand, and shell; mud and silt winnowed when reworked (USGS 2019a; USGA 2019b). Areas bordering Harbor Island include the above-mentioned rock unit fill and spoil and also Alluvium. These soils are Alluvium and Low Terrace deposits along streams, sand, silt, clay, and gravel. They were deposited on the lagoon side of barrier islands where they represent lagoon and wind-tidal-flat sand and clay and can range in varying thickness. These soils of clay and silty, clayey fine to very fine quartz sand and shell sand accumulate on alternately dry and flooded barren flats 0.3 meter below to 1 meter above mean sea level (USGA 2019a; USGA 2019c).

The site is mapped to occur on Mustang fine sand (Mu) surficial soils which are surrounded by water (USDA 2019). Mustang fine sand consists of very deep, poorly drained, very low permeable



soils that formed in sandy eolian and storm washover sediments. These nearly level soils are on planar to concave barrier island flats. These soils are subject to occasional flooding by high storm surge from strong tropical storms and are ponded after periods of heavy rainfall. Slope ranges from 0 to 1 percent.

### 3.2.2 Water Quality

According to TCEQ (2016), the Texas Surface Water Quality Standards, as codified by rule in the Texas Administrative Code (TAC), Title 30, Chapter 307, were developed and are administered in conformance with requirements of the Federal Water Pollution Control Act (33 U.S.C. §1251 et seq.), also called the Clean Water Act (CWA), and pursuant to the Texas Water Code (TWC). These Surface Water Quality Standards establish antidegradation policies, designate water uses, define and apply stream classifications, and develop water quality criteria for the purpose of maintaining water quality in the State consistent with public health and enjoyment, propagation and protection of terrestrial and aquatic life, and the operation of existing industries, taking into consideration economic development of the State.

The waters along the southern and southeastern shores of Harbor Island are contained within the geographic extent of the State's classified "Corpus Christi Bay" segment, which extends from the CCSC east to Pelican Island, from Pelican Island south to Demit Island including the La Quinta Channel and the CCSC (TCEQ 2016).

The bays surrounding the Proposed Project area, including Corpus Christi Bay, Redfish Bay, Nueces Bay, and Aransas Bay, have been designated for Primary Contact Recreation 1 activities, which are activities presumed to involve a significant risk of ingestion of water (e.g., wading by children, swimming, water skiing, diving, tubing, surfing, handfishing as defined by Texas Parks and Wildlife (TPWD) Code, §66.115, and the following whitewater activities: kayaking, canoeing, and rafting). They have also been qualified as belonging in the both Exceptional Aquatic Life Use and Oyster Waters category (TCEQ 2018).

The habitat characteristics of waters that qualify within the Exceptional Aquatic Life Use category have outstanding natural variability, with exceptionally high species diversity and species richness, and an exceptional or unusual species assemblage with a balanced trophic structure. Sensitive species may also be abundant in Exceptional Aquatic Life Use category waters. The criteria set forth for these waters include a mean dissolved oxygen level of 5.0 milligrams per liter (mg/L), a pH range of 6.5 to 9.0, a mean indicator bacterium count of 35/14 bacteria per 100 milliliters (mL) of water (in terms of colony forming units or other applicable reporting measures), and a maximum temperature of 95 degrees Fahrenheit (°F). The characteristics of waters that qualify as oyster waters have waters producing edible species of clams, oysters, or mussels. (TCEQ 2018).

Section 303(d) of the CWA requires states to prepare a list of impaired waters based on Total Maximum Daily Loads (TMDLs) of pollutants and to specify corrective actions. Based on the 303(d) list for Texas, there are several impaired areas in Nueces County, including Corpus Christi Bay (southwest of the Proposed Project area) for high levels of bacteria in their recreational beaches.



Nueces Bay and Corpus Christi Inner Harbor have also been classified as impaired due to high levels of copper in the water (TCEQ 2016). Temporary degraded surface water quality in the area has intermittently resulted from urban runoff/storm serves, non-point source pollution, municipal point source discharges, drought-related impacts, and point source pollution (TCEQ, 2014). Channel construction and channelization of natural waterways have also facilitated saltwater moving further inland than what has occurred historically, or what would occur under natural conditions (USACE 2018b).

In addition, the CCSC has undergone several modifications and maintenance-dredging operations. Channel dredging occurred in 1926 to deepen the channel to 25 feet, in 1930 to deepen the channel 30 feet, in 1936 to deepen the channel to 32 feet, in 1943 to deepen the channel to 34 feet, in 1965 to deepen the channel to 40 feet, and in 1976 to deepen the channel to 45 feet (USACE 2018a). Historically, the maintenance-dredging frequency for the CCSC is approximately 2.1 years, with an average of approximately 1,377,887 CY (USACE 2008). The CCSC has a draft of 47 feet and is authorized and permitted for 54 feet below MLLW from the Gulf of Mexico to Harbor Island. The Corpus Christi Ship Channel Improvement Project is the Congressionally authorized project to deepen and widen the Port's 47-foot channel to a depth of 54 feet from the Gulf of Mexico to the Viola Turning Basin in the Inner Harbor, and to extend the existing 47 foot La Quinta Ship Channel 1.4 miles at a depth of 43 feet to the Port's La Quinta Multi-Purpose Facility, which was completed in 2012 (PCC 2019).

### 3.2.3 Sediment Characteristics

In February 2019, Wood implemented a sediment characterization study. Sediment samples were collected for submerged aquatic vegetation, grain size, total organic carbon (TOC), and benthic macroinvertebrates to characterize local substrate. Water measurements and sampling consisted of current water velocity and water quality data. Plankton samples were collected. The plankton sample results identified the abundances and diversity of adult and larval marine species found within the water column. Oyster and seagrass surveys were also conducted to determine presence or absence of these habitats, and the extent of them if present.

The sediment sampled was visually characterized as predominantly fine sand with silt and clay present. The color of the sediment was predominantly gray with some samples containing a black clay and had no odor. Shell hash was also observed in several samples.

Coarse gravel ranged from 0.0% to 1.2%, fine gravel from 0.0% to 59.6%, coarse sand from 0.0% to 8.9%, medium sand from 0.1% to 6.8%, fine sand from 32.1% to 95.6%, silt from 2.0% to 53.1%, and clay from 1.5% to 16.3%. Sediment samples from three locations (not geographically close) were the only samples to contain gravel which was identified in the field as shell or shell hash.

The full Water and Sediment Sampling and Analysis Report can be found in **Appendix F**.



### 3.2.4 Wetlands

The CWA defines wetlands as:

*"those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

Using that definition, wetlands are defined based on certain characteristics of plants, soils, and hydrology. For vegetation, the majority of the plant species must be categorized as hydrophytic or adapted to living in saturated areas. Soils are considered hydric if they meet the criteria defined by the National Technical Committee for Hydric Soils. Hydrology is determined based on having a sufficient amount of water, whether saltwater, brackish, or fresh, that the soil is saturated during long periods of the vegetative growing season.

The most common means of characterizing wetlands is under the system developed by the United States Fish and Wildlife Service (USFWS). As described in their Classification of Wetlands and Deepwater Habitats of the United States (USFWS 1992), wetland types can be broken down into five basic categories. These categories include marine, estuarine, riverine, lacustrine and palustrine wetlands. The major categories or systems are based mostly on the hydrologic base for the wetlands. Each of these systems can be further broken down into subsystems, classes, subclasses, and dominance types based on the type of vegetation present and/or the bottom substrate for the wetlands.

According to the USFWS' National Inventory Mapper (NWI) website (USFWS 2019a), there is a palustrine, emergent, persistent (temporary flooded, diked/impound) wetland community located in the central portion on Harbor Island. The waterways surrounding the island (e.g., the Aransas Channel, Lydian Ann Channel, and the CCSC), however, are classified as estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL) communities by the USFWS.

A field wetland delineation was performed by Wood on March 19, 2019. The results of this delineation indicated the presence of two small wetland communities (**Figure 6 in Appendix B**). These wetland communities are dominated by cone-cup spikerush (*Eleocharis tuberculosa*) and torpedo grass (*Panicum repens*) in the herb layer. It is anticipated that the Proposed Project will disturb two delineated wetlands along the north central portion of the terminal area boundary. The first wetland is described as a palustrine emergent wetland that is a small drainage depression adjacent to a parking area, approximately 0.0184 acres in size. The second wetland is described as a palustrine emergent wetland approximately 0.312 acres in size. No other wetlands are anticipated to be disturbed by the project. The Wetlands Delineation Report is included in **Appendix G**.

As mentioned in **Section 2.0**, based on a desktop review, it was determined that the survey area for the proposed Project had no potential for special aquatic habitat. Approximately 6.5 million CY of material will be dredged and/or mechanically excavated (corresponding to Box No. 22 on the ENG4345).



### 3.2.5 Biological Resources

This section describes the biological resources on and around the Proposed Project area.

#### 3.2.5.1 Marine Resources (Fish, Shellfish, and EFH)

The area around the Proposed Project contains numerous islands, saltwater marshes, channels and shallow flats. Common fish species within this area include: alligator gar (*Atractosteus spatula*), Atlantic needlefish (*Strongylura marina*), bigmouth sleeper (*Gobiomorus dormitor*), blue catfish (*Ictalurus furcatus*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), gizzard shad (*Dorosoma cepedianum*), hardhead catfish (*Ariopsis fleis*), hogchoker (*Trinectes maculatus*), inland silverside (*Menidia beryllina*), largemouth bass (*Micropterus salmoides*), mountain mullet (*Agonostomus monticola*), rainwater killifish (*Lucania parva*), red shiner (*Cyprinella lutrensis*), sheepshead minnow (*Cyprinodon variegatus*), and yellow bullhead (*Ameiurus natalis*). Popular areas for fishing in the Texas Coastal Bend include the Corpus Christi Bay, Redfish Bay, Estes Flats, Lighthouse Lakes, Aransas Channel, and CCSC. The shallow, grassy flats of Estes flats are well known for trout (Salmonidae) and redfish, also known as red drum, year-round. Lydia Ann Channel and the CCSC are known spots for flounder (Pleuronectoidei) during their fall migration. The Aransas Channel contains fish species such as redfish, trout, flounder, drum (Sciaenidae), sand trout (*Cynoscion arenarius*), and sheepshead. Lighthouse Lakes is a series of open flats, channels, and sloughs known for trout, flounder, and schools of redfish. Common species at the Port Aransas south jetty are trout, redfish, pompano (*Trachinotus* sp.), black drum (*Pogonias cromis*), Spanish mackerel (*Scomberomorus maculatus*), sharks (Euselachii), jack crevalle (*Caranx hippos*), tarpon (*Megalops* sp.), and sheepshead.

The fishing resources of this bay system include many fish species preferred by sport fishermen (TSG 2016). Common species present include spotted seatrout (*Cynoscion nebulosus*), various flounders (*Paralichthys* spp.), redfish (*Sciaenops ocellatus*), snappers (*Lutjanidae* spp.), king mackerel (*Scomberomorus cavalla*), black drum (*Pogonias cromis*), and Spanish mackerel.

The shellfish resources of this estuary system include the following species (CBBEP 2003)

- Blue crab (*Callinectes sapidus*),
- American oyster (*Crassostrea virginica*),
- Dwarf surf clam (*Mulinia lateralis*),
- White shrimp (*Litopenaeus setiferus*),
- Brown shrimp (*Farfantepenaeus aztecus*), and
- Pink shrimp (*Farfantepenaeus duorarum*).

Oyster reefs are found in both Corpus Christi Bay and Redfish Bay; however, most oyster reefs in Corpus Christi Bay were found to be dead (CCNEP 1996). None are known to exist within the dredge area.

Amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) were enacted by Congress in 1996, which established procedures for identifying



Essential Fish Habitat (EFH) and required interagency coordination to further the conservation of federally managed fisheries. These habitats are necessary for spawning, breeding, feeding, or growth of the species, and are managed under Regional Fishery Management Councils, as described in a series of Fishery Management Plans (FMPs).

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) EFH mapper (NOAA, 2019) was consulted to determine which fish species habitat is mapped within the Proposed Project area boundaries to assess the potential of being affected by the Proposed Project. It was determined that the EFH within the Proposed Project area is managed under five separate FMPs regulated by the Gulf of Mexico Fishery Management Council. Those management plans were reviewed to determine which specific species and life stages have the potential to be found within the Proposed Project boundaries. The results of this review are listed in **Table 3-1** below:

<b>Common Name</b>	<b>Scientific Name</b>	<b>Likely to be Present in Project Area</b>	<b>Life Stage(s) Present in Project Area</b>	<b>Habitat(s) Used in Project Area</b>	<b>Managed Under</b>
Red drum	<i>Sciaenops ocellatus</i>	Yes	Larvae, juvenile	Soft bottom and/or water column	Red Drum FMP
Gray triggerfish	<i>Balistes capriscus</i>	No	NA	NA	Reef Fish FMP
Greater amberjack	<i>Seriola dumerili</i>	No	NA	NA	Reef Fish FMP
Lesser amberjack	<i>Seriola fasciata</i>	No	NA	NA	Reef Fish FMP
Almaco jack	<i>Seriola rivoliana</i>	No	NA	NA	Reef Fish FMP
Banded rudderfish	<i>Seriola zonata</i>	No	NA	NA	Reef Fish FMP
Hogfish	<i>Lachnolaimus maximus</i>	No	NA	NA	Reef Fish FMP
Queen snapper	<i>Etelis oculatus</i>	No	NA	NA	Reef Fish FMP
Mutton snapper	<i>Lutjanus analis</i>	No	NA	NA	Reef Fish FMP
Schoolmaster snapper	<i>Lutjanus apodus</i>	Yes	Juvenile, adult	Soft bottom	Reef Fish FMP
Blackfin snapper	<i>Lutjanus buccanella</i>	No	NA	NA	Reef Fish FMP
Red snapper	<i>Lutjanus campechanus</i>	No	NA	NA	Reef Fish FMP

Table 3-1 Essential Fish Habitat Within the Project Area					
Common Name	Scientific Name	Likely to be Present in Project Area	Life Stage(s) Present in Project Area	Habitat(s) Used in Project Area	Managed Under
Cubera snapper	<i>Lutjanus cyanopterus</i>	No	NA	NA	Reef Fish FMP
Gray (mangrove) snapper	<i>Lutjanus griseus</i>	Yes	Juvenile, adult	Soft bottom, sand/shell and/or water column	Reef Fish FMP
Dog snapper	<i>Lutjanus jocu</i>	Yes	Juvenile, adult	Water column	Reef Fish FMP
Mahogany snapper	<i>Lutjanus mahogoni</i>	No	NA	NA	Reef Fish FMP
Lane snapper	<i>Lutjanus synagris</i>	Yes	Larvae, juvenile	Soft bottom, sand/shell and/or water column	Reef Fish FMP
Silk snapper	<i>Lutjanus vivanus</i>	No	NA	NA	Reef Fish FMP
Yellowtail snapper	<i>Ocyurus chrysurus</i>	No	NA	NA	Reef Fish FMP
Wenchman	<i>Pristipomoides aquilonaris</i>	No	NA	NA	Reef Fish FMP
Vermilion snapper	<i>Rhomboplites aurorubens</i>	No	NA	NA	Reef Fish FMP
Goldface tilefish	<i>Caulolatilus chrysops</i>	No	NA	NA	Reef Fish FMP
Blackline tilefish	<i>Caulolatilus cyanops</i>	Yes	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Anchor tilefish	<i>Caulolatilus intermedius</i>	No	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Blueline tilefish	<i>Caulolatilus microps</i>	No	NA	NA	Reef Fish FMP
(Golden) Tilefish	<i>Lopholatilus chamaeleonticeps</i>	No	NA	NA	Reef Fish FMP

JUL 10 2019

**Table 3-1**  
**Essential Fish Habitat Within the Project Area**

Common Name	Scientific Name	Likely to be Present in Project Area	Life Stage(s) Present in Project Area	Habitat(s) Used in Project Area	Managed Under
Dwarf sand perch	<i>Diplectrum bivittatum</i>	Yes	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Sand perch	<i>Diplectrum formosum</i>	No	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Rock hind	<i>Epinephelus adscensionis</i>	Yes	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Speckled hind	<i>Epinephelus drummondhayi</i>	No	NA	NA	Reef Fish FMP
Yellowedge grouper	<i>Epinephelus flavolimbatus</i>	No	NA	NA	Reef Fish FMP
Red hind	<i>Epinephelus guttatus</i>	Yes	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Goliath grouper	<i>Epinephelus itajara</i>	Yes	Juvenile	Water column	Reef Fish FMP
Red grouper	<i>Epinephelus morio</i>	No	NA	NA	Reef Fish FMP
Misty grouper	<i>Epinephelus mystacinus</i>	No	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Warsaw grouper	<i>Epinephelus nigritus</i>	No	NA	NA	Reef Fish FMP
Snowy grouper	<i>Epinephelus niveatus</i>	No	NA	NA	Reef Fish FMP
Nassau grouper	<i>Epinephelus striatus</i>	Yes	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Marbled grouper	<i>Epinephelus inermis</i>	No	Larvae, juvenile, adult	Soft bottom and/or water column	Reef Fish FMP
Black grouper	<i>Mycteroperca bonaci</i>	No	NA	NA	Reef Fish FMP



**Table 3-1**  
**Essential Fish Habitat Within the Project Area**

Common Name	Scientific Name	Likely to be Present in Project Area	Life Stage(s) Present in Project Area	Habitat(s) Used in Project Area	Managed Under
Yellowmouth grouper	<i>Mycteroperca interstitialis</i>	No	NA	NA	Reef Fish FMP
Gag	<i>Mycteroperca microlepis</i>	No	NA	NA	Reef Fish FMP
Scamp	<i>Mycteroperca phenax</i>	No	NA	NA	Reef Fish FMP
Yellowfin grouper	<i>Mycteroperca venenosa</i>	No	NA	NA	Reef Fish FMP
King mackerel	<i>Scomberomorus cavalla</i>	No	NA	NA	Coastal Migratory Pelagic Resources (Mackerels)
Spanish mackerel	<i>Scomberomorus maculatus</i>	No	NA	NA	Coastal Migratory Pelagic Resources (Mackerels)
Cobia	<i>Rachycentron canadum</i>	Yes	Eggs, larvae	Water column	Coastal Migratory Pelagic Resources (Mackerels)
Brown shrimp	<i>Penaeus aztecus</i>	Yes	Larvae, juvenile, sub-adult	Soft bottom, sand/shell and/or water column	Shrimp FMP
White shrimp	<i>Penaeus setiferus</i>	Yes	Eggs, larvae, juvenile, adult	Soft bottom and/or water column	Shrimp FMP
Pink shrimp	<i>Penaeus duorarum</i>	Yes	Larvae, juvenile, adult	Soft bottom, sand/shell and/or water column	Shrimp FMP
Royal Red shrimp	<i>Pleoticus robustus</i>	No	NA	NA	Shrimp FMP
Bull shark	<i>Carcharhinus leucas</i>	Yes	Neonate, juvenile, adult	Water column	Highly Migratory FMP
Spinner shark	<i>Carcharhinus brevipinna</i>	Yes	Neonate	Water column	Highly Migratory FMP

**Table 3-1**  
**Essential Fish Habitat Within the Project Area**

Common Name	Scientific Name	Likely to be Present in Project Area	Life Stage(s) Present in Project Area	Habitat(s) Used in Project Area	Managed Under
Lemon shark	<i>Negaprion brevirostris</i>	Yes	Neonate, juvenile	Water column	Highly Migratory FMP
Sailfish	<i>Istiophorus albicans</i>	Yes	Juvenile, adult	Water column	Highly Migratory FMP
Scalloped hammerhead shark	<i>Sphyrna lewini</i>	Yes	Neonate	Water column	Highly Migratory FMP
Blacktip shark (Gulf of Mexico stock)	<i>Carcharhinus limbatus</i>	Yes	Neonate	Water column	Highly Migratory FMP
Atlantic sharpnose shark (Gulf of Mexico stock)	<i>Rhizoprionodon terraenovae</i>	Yes	Neonate, juvenile, adult	Water column	Highly Migratory FMP
Bonnethead shark (Gulf of Mexico stock)	<i>Sphyrna tiburo</i>	Yes	Neonate, juvenile, adult	Water column	Highly Migratory FMP
Finetooth shark	<i>Carcharhinus isodon</i>	Yes	Neonate, juvenile, adult	Water column	Highly Migratory FMP

There were no Habitat Areas of Particular Concern (HAPCs) found within the Proposed Project area boundaries (NOAA 2019).

Although there is fish species habitat mapped within the Proposed Project boundaries, the surrounding area is periodically dredged. The Proposed Project will not have adverse long-term environmental impacts to fish or shellfish species, or their habitat. Any behavioral responses by wildlife (e.g., startle response and/or brief avoidance behavior) generated from the Proposed Project are expected to be temporary in nature and a return to baseline behavior is expected immediately following exposure.

### 3.2.5.2 Birds

The USFWS' online Information, Planning, and Conservation (IPaC) system (USFWS 2019b) was consulted to determine which migratory birds, protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA), could potentially be moving

through the dredge location or the dredge material placement area(s). The results indicated the presence of the following 40 species (see **Table 3-2** below and **Appendix J**):

<b>Table 3-2</b> <b>Potential Migratory Bird Species On or Near the Project Site</b>	
Common Name	Scientific Name
American Golden Plover	<i>Pluvialis dominica</i>
American Oystercatcher	<i>Haematopus palliatus</i>
Black Skimmer	<i>Rynchops niger</i>
Black-Legged Kittiwake	<i>Rissa tridactyla</i>
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Buff-Breasted Sandpiper	<i>Calidris subruficollis</i>
Clapper Rail	<i>Rallus crepitans</i>
Common Loon	<i>Gavia immer</i>
Common Tern	<i>Sterna hirundo</i>
Double-Crested Cormorant	<i>Phalacrocorax auritus</i>
Dunlin	<i>Calidris alpina arctica</i>
Gull-Billed Tern	<i>Gelochelidon nilotica</i>
Herring Gull	<i>Larus argentatus</i>
Hudsonian Godwit	<i>Limosa haemastica</i>
King Rail	<i>Rallus elegans</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>
Least Tern	<i>Sterna antillarum</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Long-Billed Curlew	<i>Numenius americanus</i>
Magnificent Frigatebird	<i>Fregata magnificens</i>
Marbled Godwit	<i>Limosa fedoa</i>
Nelson's Sparrow	<i>Ammodramus nelsoni</i>
Northern Gannet	<i>Morus bassanus</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>
Red-Breasted Merganser	<i>Mergus serrator</i>



**Table 3-2**  
**Potential Migratory Bird Species On or Near the Project Site**

Common Name	Scientific Name
Red-Necked Phalarope	<i>Phalaropus lobatus</i>
Reddish Egret	<i>Egretta rufescens</i>
Ring-Billed Gull	<i>Larus delawarensis</i>
Royal Tern	<i>Thalasseus maximus</i>
Ruddy Turnstone	<i>Arenaria interpres morinella</i>
Seaside Sparrow	<i>Ammodramus maritimus</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Short-Billed Dowitcher	<i>Limnodromus griseus</i>
Swallow-tailed Kite	<i>Elanoides forficatus</i>
Whimbrel	<i>Numenius phaeopus</i>
White-winged Scoter	<i>Melanitta fusca</i>
Willet	<i>Tringa semipalmata</i>
Wilson's Plover	<i>Charadrius wilsonia</i>

**Table 3-3** below lists bird species that are considered common for one or more seasons at the nearby Mustang Island State Park (TPWD 2010).

**Table 3-3**  
**Other Potential Bird Species On or Near the Project Site**

Common Name	Scientific Name
American Avoset	<i>Recurvirostra americana</i>
American Coot	<i>Fulica americana</i>
American Kestrel	<i>Falco sparverius</i>
American Pipit	<i>Anthus rubescens</i>
American Wigeon	<i>Mareca americana</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Baltimore Oriole	<i>Icterus galbula</i>
Bank Swallow	<i>Riparia</i>
Barn Swallow	<i>Hirundo rustica</i>

**Table 3-3**  
**Other Potential Bird Species On or Near the Project Site**

Common Name	Scientific Name
Black-And-White Warbler	<i>Mniotilta varia</i>
Black-Bellied Plover	<i>Pluvialis squatarola</i>
Black-Necked Stilt	<i>Himantopus mexicanus</i>
Black Tern	<i>Chlidonias niger</i>
Black-Throated Green Warbler	<i>Setophaga virens</i>
Blue-Gray Gnatcatcher	<i>Poliophtila caerulea</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Blue-Winged Teal	<i>Anas discors</i>
Brown-Headed Cowbird	<i>Molothrus ater</i>
Bufflehead	<i>Bucephala albeola</i>
Caspian Tern	<i>Hydroprogne caspia</i>
Cattle Egret	<i>Bubulcus ibis</i>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Dickcissel	<i>Spiza americana</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Eastern Kingbird	<i>Tyrannus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
European Starling	<i>Sturnus vulgaris</i>
Forster's Tern	<i>Sterna forsteri</i>
Gadwall	<i>Anas strepera</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>



**Table 3-3**  
**Other Potential Bird Species On or Near the Project Site**

Common Name	Scientific Name
Great-Tailed Grackle	<i>Quiscalus mexicanus</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Green Heron	<i>Butorides virescens</i>
Green-Winged Teal	<i>Anas carolinensis</i>
House Sparrow	<i>Passer domesticus</i>
Indigo Bunting	<i>Passerina cyanea</i>
Killdeer	<i>Charadrius vociferus</i>
Laughing Gull	<i>Leucophaeus atricilla</i>
Least Flycatcher	<i>Empidonax minimus</i>
Least Sandpiper	<i>Calidris minutilla</i>
Lesser Scaup	<i>Aythya affinis</i>
Lincoln's Sparrow	<i>Melospiza lincolnii</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Long-Billed Dowitcher	<i>Limnodromus scolopaceus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Marsh Wren	<i>Cistothorus palustris</i>
Mottled Duck	<i>Anas fulvigula</i>
Mourning Dove	<i>Zenaida macroura</i>
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>
Northern Harrier	<i>Circus hudsonius</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Northern Rough-Winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>
Orange-Crowned Warbler	<i>Vermivora celata</i>
Orchard Oriole	<i>Icterus spurius</i>
Osprey	<i>Pandion haliaetus</i>
Pied-Billed Grebe	<i>Podilymbus podiceps</i>
Piping Plover	<i>Charadrius melodus</i>

**Table 3-3**  
**Other Potential Bird Species On or Near the Project Site**

Common Name	Scientific Name
Purple Marten	<i>Progne subis</i>
Redhead	<i>Aythya americana</i>
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>
Red Knot	<i>Calidris canutus</i>
Rock Pigeon	<i>Columba livia</i>
Roseate Spoonbill	<i>Platalea ajaja</i>
Ruby-Crowned Kinglet	<i>Regulus calendula</i>
Ruby-Throated Hummingbird	<i>Archilochus colubris</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Sanderling	<i>Calidris alba</i>
Sandwich Tern	<i>Thalasseus sandvicensis</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Scissor-Tailed Flycatcher	<i>Tyrannus forficatus</i>
Sedge Wren	<i>Cistothorus stellaris</i>
Snowy Egret	<i>Egretta thula</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Spotted Sandpiper	<i>Actitis macularius</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Tennessee Warbler	<i>Leiothlypis peregrina</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Tricolored Heron	<i>Egretta tricolor</i>
Turkey Vulture	<i>Cathartes aura</i>
Virginia Rail	<i>Rallus limicola</i>
Western Sandpiper	<i>Calidris mauri</i>
White-Tailed Hawk	<i>Geranoaetus albicaudatus</i>
Wilson's Snipe	<i>Gallinago delicata</i>
Wilson's Warbler	<i>Cardellina pusilla</i>
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>



**Table 3-3**  
**Other Potential Bird Species On or Near the Project Site**

Common Name	Scientific Name
Yellow-Breasted Chat	<i>Icteria virens</i>
Yellow-Rumped Warbler	<i>Setophaga coronata</i>
Yellow Warbler	<i>Setophaga petechia</i>

Although these bird species have the possibility of occurring near the Proposed Project area, the Proposed Project boundaries, dredge location or the dredge material placement area(s), and Harbor Island in general, the Proposed Project boundaries provide no suitable foraging, resting, nesting, watering, or breeding habitat for birds. The dredge site is located within open water containing the CCSC which is frequently used by commercial ships. The island land use is entirely industrial; therefore, the only birds likely to be found within the Proposed Project boundaries are those adapted to utilizing areas affected by frequent human disturbance, such as the herring, ring-billed, and laughing gulls.

### 3.2.5.3 Mammals

The Texas Gulf Coast is home to white-tailed deer (*Odocoileus virginianus*), badger (*Taxidea taxus*), jackrabbit (*Lepus californicus*), the bottle nosed porpoise (*Tursiops truncatus*), coyote (*Canis latrans*), marsh rice rat (*Oryzomys palustris*), muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), mink (*Neovison vison*), river otter (*Lontra canadensis*), raccoon (*Procyon lotor*), swamp rabbit (*Sylvilagus aquaticus*), eastern cottontail (*Sylvilagus floridanus*), and feral hog (*Sus scrofa*) (TPWD 2009).

Although these species have the possibility of occurring near the Proposed Project area, dredge location or the dredge material placement area(s), the Proposed Project boundaries provide no suitable foraging, denning, watering, or breeding habitat for mammals. The island land use is entirely industrial, therefore, the only mammals likely to be found within the Proposed Project boundaries are those adapted to utilizing areas affected by frequent human disturbance, such as brown rat (*Rattus rattus*).

### 3.2.5.4 Reptiles and Amphibians

Nueces County is home to an array of 12 species of turtles, 2 species of salamanders, 14 anurans (frogs and toads), 13 species of lizards, and 29 species of snakes. Some of the common species are listed in **Table 3-4** below. Nueces County also includes a population of the American alligator (*Alligator mississippiensis*) (HOT 2019).

**Table 3-4**  
**Potential Reptile and Amphibian Species On or Near the Project Site**

Common Name	Scientific Name
Diamond-Backed Terrapin	<i>Malaclemys terrapin</i>
Eastern Mud Turtle	<i>Kinosternon subrubrum</i> ,
Green Sea Turtle	<i>Chelonia mydas</i>
Hawksbill Sea Turtle	<i>Eretmochelys imbricate</i>
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>
Loggerhead Sea Turtle	<i>Caretta caretta</i>
Ornate Box Turtle	<i>Terrapene ornata</i>
Pond Slider	<i>Trachemys scripta</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Spiny Softshell Turtle	<i>Apalone spinifera</i> ,
Texas Tortoise	<i>Gopherus berlandieri</i>
Yellow Mud Turtle	<i>Kinosternon flavescens</i>
Checkered Gartersnake	<i>Thamnophis marcianus</i>
Coachwhip	<i>Masticophis flagellum</i>
Common Kingsnake	<i>Lampropeltis splendida</i>
Cottonmouth	<i>Agkistrodon piscivorus</i>
Dekay's Brownsnake	<i>Storeria dekayi</i>
Diamond-Backed Watersnake	<i>Nerodia rhombifer</i>
Eastern Hog-Nosed Snake	<i>Heterodon platirhinos</i>
Eastern Patch-Nosed Snake	<i>Salvadora grahamiae</i>
Eastern Racer	<i>Coluber constrictor</i>
Eastern Ratsnake	<i>Pantherophis obsoletus</i>
Flat-Headed Snake	<i>Tantilla gracilis</i>
Glossy Snake	<i>Arizona elegans</i>
Gophersnake	<i>Pituophis catenifer</i>
Great Plains Ratsnake	<i>Pantherophis emoryi</i>
Groundsnake	<i>Sonora semiannulata</i>
Indigo Snake	<i>Drymarchon m. erebennus</i>
Long-Nosed Snake	<i>Rhinocheilus lecontei</i>



**Table 3-4**  
**Potential Reptile and Amphibian Species On or Near the Project Site**

Common Name	Scientific Name
Milksnake	<i>Lampropeltis triangulum</i>
Plain-Bellied Watersnake	<i>Nerodia erythrogaster</i>
Plains Threadsake	<i>Leptotyphlops dulcis</i>
Prairie Kingsnake	<i>Lampropeltis calligaster</i>
Red-Bellied Mudsnake	<i>Farancia abacura</i>
Ribbonsnake	<i>Thamnophis proximus</i>
Rough Earthsnake	<i>Virginia striatula</i>
Rough Greensnake	<i>Opheodrys aestivus</i>
Schott's Whipsnake	<i>Masticophis schotti</i>
Southern Watersnake	<i>Nerodia fasciata</i>
Texas Coral Snake	<i>Micrurus tener</i>
Western Diamond-Backed Rattlesnake	<i>Crotalus atrox</i>
Lesser Siren	<i>Siren intermedia</i>
Texas Black-Spotted Newt	<i>Notophthalmus meridionalis</i>
Couch's Spadefoot	<i>Scaphiopus couchii</i>
Great Plains Narrow-Mouthed Toad	<i>Gastrophryne olivacea</i>
Green Toad	<i>Bufo debilis</i>
Green Treefrog	<i>Hyla cinerea</i>
Gulf Coast Toad	<i>Bufo nebulifer</i>
Hurter's Spadefoot	<i>Scaphiopus hurterii</i>
Northern Cricket Frog	<i>Acris crepitans</i>
Rio Grande Chirping Frog	<i>Eleutherodactylus cystignathoides</i>
Rio Grande Leopard Frog	<i>Rana berlandieri</i>
Sheep Frog	<i>Hypopachus variolosus</i>
Southern Leopard Frog	<i>Rana sphenoccephala</i>
Spotted Chorus Frog	<i>Pseudacris clarkii</i>
Squirrel Treefrog	<i>Hyla squirella</i>
Texas Toad	<i>Bufo speciosus</i>
Brown Anole	<i>Anolis sagrei</i>

**Table 3-4**  
**Potential Reptile and Amphibian Species On or Near the Project Site**

Common Name	Scientific Name
Green Anole	<i>Anolis carolinensis</i>
Ground Skink	<i>Scincella lateralis</i>
Keeled Earless Lizard	<i>Holbrookia propinqua</i>
Mediterranean House Gecko	<i>Hemidactylus turcicus</i>
Prairie Lizard	<i>Sceloporus undulatus</i>
Rose-Bellied Lizard	<i>Sceloporus variabilis</i>
Six-Lined Racerunner	<i>Aspidoscelis sexlineata</i>
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>
Spot-Tailed Earless Lizard	<i>Holbrookia lacerata</i>
Texas Horned Lizard	<i>Phrynosoma cornutum</i>
Texas Spiny Lizard	<i>Sceloporus olivaceus</i>
Texas Spotted Whiptail	<i>Aspidoscelis gularis</i>

Although these species have the possibility of occurring near the Proposed Project area, dredge location or the dredge material placement area(s), the island land use is entirely industrial, therefore, the only reptiles and amphibians likely to be found within the Proposed Project boundaries are those adapted to utilizing areas affect by frequent human disturbance. Although there may be some avoidance of the construction area by transient wildlife as a result of increased noise and human activity, these impacts are not considered significant and will be temporary in nature.

### 3.2.6 Threatened and/or Endangered Species

A species list was obtained using the USFWS IPaC to determine if federally-listed species and other federal-trust resources may be on or near the Site. A response letter received from USFWS on July 8, 2019 indicated the presence of the following federally listed threatened and endangered species that may occur on the site, or that may be affected by the Proposed Project (**Table 3-5** below and **Appendix J**):

**Table 3-5**  
**Potential Federally Listed Threatened and Endangered Species On or Near the Project Site**

Common Name	Scientific Name	Federal Status
Gulf Coast Jaguarundi	<i>Herpailurus yagouaroundi cacomitli</i>	Endangered



**Table 3-5**  
**Potential Federally Listed Threatened and Endangered Species On or Near the Project Site**

Ocelot	<i>Leopardus pardalis</i>	Endangered
West Indian manatee	<i>Trichechus manatus</i>	Threatened
Least tern	<i>Sterna antillarum</i>	Endangered
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	Endangered
Piping plover	<i>Charadrius melodus</i>	Threatened
Red knot	<i>Calidris canutus rufa</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Loggerhead sea turtle	<i>Caretta</i>	Threatened
Slender Rush-pea	<i>Hoffmannseggia tenella</i>	Endangered
South Texas Ambrosia	<i>Ambrosia cheiranthifolia</i>	Endangered

The USFWS response letter indicated that there were no critical habitats documented within the Proposed Project area.

In Texas, animal or plant species of conservation concern may be listed as threatened or endangered under the authority of State law. The State has listed 32 species found in Nueces County as threatened or endangered. The TPWD website was consulted to determine if any of the species on or near the Proposed Project site are State-listed as threatened or endangered. **Table 3-6** below presents those sensitive species on or near the site that are protected within the State of Texas (TPWD 2019).

**Table 3-6**  
**Potential State Listed Threatened and Endangered Species On or Near the Project Site**

Common Name	Scientific Name	State Status
Black-spotted newt	<i>Notophthalmus meridionalis</i>	Threatened
Sheep frog	<i>Hypopachus variolosus</i>	Threatened
Reddish Egret	<i>Egretta rufescens</i>	Threatened
White-faced Ibis	<i>Plegadis chihi</i>	Threatened
Wood Stork	<i>Mycteria americana</i>	Threatened
White-tailed Hawk	<i>Buteo albicaudatus</i>	Threatened

**Table 3-6**  
**Potential State Listed Threatened and Endangered Species On or Near the Project Site**

Common Name	Scientific Name	State Status
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	Endangered
Peregrine Falcon	<i>Falco peregrinus</i>	Threatened
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Eskimo Curlew	<i>Numenius borealis</i>	Endangered
Sooty Tern	<i>Onychoprion fuscatus</i>	Threatened
Texas Botteri's Sparrow	<i>Peucaea botterii texana</i>	Threatened
Opossum pipefish	<i>Microphis brachyurus</i>	Threatened
Smalltooth sawfish	<i>Pristis pectinata</i>	Endangered
Southern yellow bat	<i>Dasypterus ega</i>	Threatened
Red wolf	<i>Canis rufus</i>	Endangered
White-nosed coati	<i>Nasua narica</i>	Threatened
Ocelot	<i>Leopardus pardalis</i>	Endangered
West Indian manatee	<i>Trichechus manatus</i>	Endangered
Loggerhead sea turtle	<i>Caretta caretta</i>	Threatened
Green sea turtle	<i>Chelonia mydas</i>	Threatened
Atlantic hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Texas tortoise	<i>Gopherus berlandieri</i>	Threatened
Texas horned lizard	<i>Phrynosoma cornutum</i>	Threatened
Texas scarlet snake	<i>Cemophora coccinea lineri</i>	Threatened
Texas indigo snake	<i>Drymarchon melanurus erebennus</i>	Threatened
South Texas ambrosia	<i>Ambrosia cheiranthifolia</i>	Endangered
Slender rushpea	<i>Hoffmannseggia tenella</i>	Endangered

In addition, there are 34 species that are on the rare species list for Nueces County. Rare species are those species native to Texas that are considered imperiled throughout a significant portion



of the range but are not yet protected by State or Federal law. The TPWD actively tracks these rare species and promotes their conservation to prevent future endangerment. The brown pelican, the Texas diamondback terrapin (*Malaclemys terrapin littoralis*), the American eel (*Anguilla rostrata*), the Texas pipefish (*Syngnathus affinis*), Keeled earless lizard (*Holbrookia propinqua*), Plains gumweed (*Grindelia oolepis*), Cory's croton (*Croton coryi*), and Velvet spurge (*Euphorbia innocua*) are species that are potentially present on or near the site and are considered to be rare in the State of Texas (TPWS 2019b). There are a large number of threatened and endangered species within the vicinity of Harbor Island. There is the potential for species to be present; however, to date there has been no identification of threatened and endangered species on Harbor Island.

### 3.2.7 Cultural Resources

There are no historical properties, districts, or markers located on the Site. Site file research was completed using the online Texas Archaeological Site Atlas, maintained by the Texas Historical Commission (THC). The Site file research revealed that no previously recorded archaeological sites, identified historic properties, historic markers, or National Register properties are located within the current Proposed Project area. However, the results did reveal that there is one historical property and one historical district currently listed on the National Register of Historic Places (NRHP) within three miles of the Proposed Project (**Appendix K**). The historical property is located 0.6 miles southeast of the site, and is listed as the Tarpon Inn, a historical hotel dating to 1885. The historical district is located 0.91 miles northeast of the site and is listed as the Aransas Pass Light Station, dating back to the mid-1800s (THC 2019). There are seven historical markers located within one mile of the site (**Table 3-7**).

Table 3-7 Historical Markers Near the Project Site		
Marker Name / Number	Marker Significance	Distance (miles) and Direction from Site
Aransas Pass Light Station / #184	The marker was placed to acknowledge the location of one of the original Texas stations of U.S. Lighthouse Service lighthouses which dates back to 1855 and had significance during the Civil War and the 1919 hurricane.	0.91 northeast
World War II Coastal Defenses at the Aransas Pass / #15267	The marker was placed to acknowledge locations along the gulf coast utilized as military defense sites in the 19 <sup>th</sup> century and later. Officially designated as Temporary Harbor Defense at Aransas Pass, this coastal defense complex just south of the south jetty closed in July 1944, after enemy naval threats in the gulf were no longer a concern.	0.27 south
Aransas Pass, C.S.A / #185	Aransas Pass was a critical strategic site for the confederate army during the Civil War.	0.27 south

**Table 3-7  
Historical Markers Near the Project Site**

<b>Marker Name / Number</b>	<b>Marker Significance</b>	<b>Distance (miles) and Direction from Site</b>
United States Coast Guard on Mustang Island / #15257	The first Aransas Life Saving Station on Mustang Island was erected in 1878. This structure came to house the U.S. Coast Guard which continues to safeguard lives and provide security.	0.27 south
Tarpon Inn / #5194	The Tarpon Inn was opened in 1886. It was rebuilt after the 1919 hurricane and has housed famous patrons along with serving as headquarters for the Red Cross, Salvation Army, and Military.	0.43 south
The Mercer Family on Mustang Island / #16851	The Mercer family arrived in 1855. Members of the family held notable Nueces County positions including, wreck master, bar pilots, and the first keeper of the Aransas Life Saving Station.	0.69 south
Mustang Island / #15857	Named for the wild horses which once populated the island, Port Aransas is located on Mustang Island, one of seven Texas barrier islands. The island was original home to the Karankawas and was first settled by Europeans in 1855. The settlement was abandoned during the Civil War. By 1920, tourism became the basis of the island's economy.	0.77 south

Based on the results of the archival research outlined, the property's industrial background and historical land disturbance, and geological characteristics associated with the Proposed Project area, there is low potential for undiscovered historic properties within the Proposed Project boundaries.



## 4.0 Permit Evaluation Policies

The public interest review is used to evaluate applications under all authorities administered by the USACE. This section discusses the following public review factors that the USACE considers during the review of a permit application.

### 4.1 Conservation

The Proposed Project will require the removal of approximately 6,500,000 CY of urban industrial land and submerged bottom sediment. Therefore, the Proposed Project will have unavoidable impacts to some upland and the bay bottom. However, the land proposed for removal is currently characterized by bare exposed soil, impervious surfaces, and/or disturbed upland areas dominated by short grasses or ruderal plant species. Upland vegetated areas that are not removed for the creation of the berths, but which are damaged during construction, will be seeded with stabilizing grasses and forbs, as necessary, and allowed to set seed for several years without mowing. The established seed bank and presence of ground stabilizing native grasses adjacent to the Proposed Project site will help mitigate the unavoidable impacts of construction to vegetation. Although the impacts to the WOTUS will be permanent, the bay bottom has been modified through maintenance-dredging operations. In addition, there are no known submerged aquatic vegetation areas in or near the Proposed Project area that would be impacted by Proposed Project activities. The Harbor Island area adjacent to the CSCC has been historically maintained as a terminal.

### 4.2 Economics

The Proposed Project is not expected to have an impact, adverse or beneficial, on race, gender, age class, or the area schools. However, the construction of the Proposed Project will support full and part-time construction-related jobs over the course of 13 months. During the construction period, jobs are anticipated to be filled by local area union construction workers from around the Aransas Pass, Port Aransas, and Corpus Christi metropolitan area. Due to the large available local labor pool, supplemental short-term labor needs are not likely to require an influx of temporary workers relocating to Nueces County during the Proposed Project's construction phase. PCCA anticipates that the addition of temporary construction workers during this phase will have a positive short-term effect on the local economy through their subsequent spending at nearby restaurants, hardware stores, and other local businesses. PCCA's long-term fiscal benefits to the area include that of PCCA's purchasing more products and services from local vendors for operations and maintenance of their expanded operations. Additionally, the facility will provide significant local, regional, and national economic benefits through development of facilities that allow export of domestic crude.

### 4.3 Aesthetics

The creation of the two marine berths will increase the flow of vessel traffic in and out of the Proposed Project area for the purpose of loading crude oil. Harbor Island historically operated as



an oil terminal, the new infrastructure associated with the Proposed Project will allow vessels to be loaded more efficiently, thereby reducing the total number of vessel trips required to fully load each vessel. The increase in vessel traffic represents a small fraction of the overall marine vessel traffic within the surrounding area.

#### 4.4 General Environmental Concerns

As it stands, the waterways surrounding the Proposed Project area may potentially be subject to degraded surface water quality from oil spills, leaks, and contamination from other nearby oil production and transport facilities (e.g., active wells, pipelines, petrochemical shipping), aerial deposits of airborne contaminants from area refineries, point source pollution from upstream facilities such as landfills, and non-point source pollution from storm water run-off from municipal and industrial developments (USACE 2018b). However, with the use of Best Management Practices (BMPs) (as mentioned in **Section 2.2.1**) and engineering controls, the impact to water quality from construction of the vessel berths will be minimal and considered to be within background regional conditions. The terminal itself will be a modern version of what existed previously, including, advance pollution control technology.

#### 4.5 Wetlands

The Proposed Project will result in unavoidable disturbances to some estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL) communities during construction. However, these disturbances are necessary to implement the Proposed Project. However, compensatory mitigation is not proposed as there will be no net loss of estuarine habitat as a result of dredging. In addition, this Proposed Project will effectively increase the amount of open water habitat available for use by aquatic species by removing upland soils and creating a wider channel floor. The construction activities will not significantly impact biological resources (i.e., plants, fish, and wildlife) due to the limited construction footprint and the planned protective measures (i.e. sediment and erosion control) that will be enacted during construction.

The effects on the open water communities surrounding the Site from construction of the new berths are considered to be within background levels of those created from the Federal dredging projects historically conducted within the waterways and approved to occur in the near future. In addition, the creation of a stabilized shoreline from construction of a sheet-pile bulkhead will reduce the risk of shoreline erosion and help protect the estuary from the effects of sedimentation.

It is anticipated that the Proposed Project will disturb two delineated wetlands along the north central portion of the terminal area boundary. The first wetland is described as a palustrine emergent wetland that is a small drainage depression adjacent to a parking area, approximately 0.0184 acres in size. The second wetland is described as a palustrine emergent wetland approximately 0.312 acres in size. No other wetlands are anticipated to be disturbed by the project.



#### 4.6 Historic Properties

There are no documented historic or prehistoric archaeologically significant sites located within the Proposed Project area. Therefore, there will be no adverse effect on historic properties that are listed, or are eligible for listing, in the NRHP during construction. If an inadvertent discovery of previously unrecorded cultural resources occurs during the construction phase, work will be halted immediately, the THC will be contacted to determine the appropriate management actions to address such a situation.

#### 4.7 Fish and Wildlife Values

The construction of the berths will not have adverse long-term environmental impacts to fish or shellfish species, or their habitat. In fact, the Proposed Project will increase the amount of available submerged aquatic benthic habitat. The use of stone and rock for stabilization along the dredge slope will become hard surface habitat, useful for a wide variety of invertebrates and fish. The artificial reefs created around each steel platform piling and along the dredge slope will allow for attachment of sessile invertebrates (e.g., oysters and mussels), increase feeding areas for mobile invertebrates (e.g., crabs and shrimp), and add structure and feeding areas for fish. The Proposed Project area is composed predominantly of a clay and silt bottom that provides habitat only for organisms adapted to life buried in the sediment and those organisms that feed on them. The addition of artificial habitat will attract and/or produce commercially and recreationally important fish and shellfish species.

In addition, the planned shoreline protection measures will act to reduce shoreline erosion. The reduction of erosion will protect fish eggs from being smothered during spawning. There will be no conversion of existing water bodies to that of a different salinity regime under the proposed alternative that could affect species assemblage within the estuary.

Although there may be some minor sediment disruption of fish and/or shellfish habitat during the initial dredging, these impacts are not considered significant and will be temporary in nature as any sediments that do not immediately settle back to the estuary floor are expected to be swept away in currents and/or tidal flow and diluted to undetectable levels. In addition, these disturbances are expected to be equivalent to background conditions as all of the local waterways surrounding the Proposed Project site are periodically dredged to aid in ship navigation.

#### 4.8 Flood Hazards

The Proposed Project is not located in an area mapped by the Federal Emergency Management Agency (FEMA). Therefore, the flood zone category and base flood elevation data for the site are not available. Although flooding is a potential issue associated with the Proposed Project location, construction plans will take flood hazards into consideration.

## 4.9 Floodplain Values

The Proposed Project is not located in an area mapped by the FEMA. Therefore, the flood zone category and base flood elevation data for the site are not available. Although flooding is a potential issue associated with the Proposed Project location, construction plans will take floodplain values into consideration.

## 4.10 Land Use

Harbor Island is designated for urban industrial land use and is currently characterized by bare exposed soil, impervious surfaces, and/or disturbed upland areas dominated by short grasses or ruderal plant species. Due to the historical operations that occurred, the Site is deed recorded for property use limited to commercial industrial land use. The construction of the berths will require the removal of approximately 6,500,000 CY of material will be dredged and/or mechanically excavated. Impacts to land use are not considered to be adverse as the land proposed to be removed is flat industrial land with no sensitive terrestrial wildlife habitat. In addition, the construction of the two marine berths are consistent with the industrial nature of the surrounding properties.

## 4.11 Navigation

The construction phase of the Proposed Project would require construction personnel to travel along local roads leading to the site, such as SH-361 and Harbor Island Road. The use of local roads by the construction crew would be minor and temporary, and the resulting increase in traffic on local infrastructure, capable of handling over 4,000 cars per day, would not be significant. In addition, the use of a maximum of three construction barges or support vessels for the Proposed Project construction represents a small fraction of overall marine vessel traffic within the surrounding estuary. Therefore, the baseline marine traffic is not expected to change significantly as a result of Proposed Project activities and any effects will be temporary in nature.

## 4.12 Shore Erosion and Accretion

The shoreline protection measures along the length of each of the two berths will reduce the possibility of shoreline erosion from the wake of passing ships and strong tidal surges.

## 4.13 Recreation

Harbor Island is an industrial landscape, not used by visitors for wildlife-dependent activities in the Proposed Project area. Therefore, the Proposed Project would not result in adverse impacts on regional recreation activities. It is possible that minor impacts on sport fishing may occur during construction due to the anticipated temporary movement of fish outside the Proposed Project boundaries. However, these impacts will be minor and temporary.



#### **4.14 Water Supply and Conservation**

The Proposed Project does not affect public water supply.

#### **4.15 Water Quality**

The construction of the berths will result in localized movement of bottom sediments. The impacts on water quality in the area immediately surrounding the Site activities will be minimal and temporary, as subsequent deposition of the suspended sediment will allow the estuary to maintain the ecosystems they support.

The use of turbidity barriers and other BMPs to complete the various stages of work necessary for this Proposed Project will aid in effectively reducing the amount of soils or sediments suspended from construction activities. As such, the effects on water quality from the removal of soil and sediment within the Proposed Project boundaries are considered to be within the background conditions created from Federal deepening projects conducted within the waterways since 1912, and the proposed deepening project scheduled to occur in the near future.

#### **4.16 Energy Needs**

Energy needs will be satisfied by the creation of these two new berths, capable of handling larger deep-draft vessels, in response to the demands to export oil from the Permian and Eagle Ford Basins.

#### **4.17 Safety**

Safety will be mitigated by BMPs including, but not limited to, adherence to Federal regulations, ship crew education, and hazardous material spill engineering designs and procedures.

#### **4.18 Food and Fiber Production**

The Proposed Project does not affect food and fiber production.

#### **4.19 Mineral Needs**

The Proposed Project does not require the use of minerals and will have no effect on mineral needs.

#### **4.20 Considerations of Property Ownership**

The land portion of the Proposed Project is located on Harbor Island and is owned by PCCA. The water portion of the Proposed Project will be located within open waters regulated by the USACE. The CCSC is federally authorized to be dredged in the vicinity of this Proposed Project to a depth of -54 feet. A map showing adjacent property owners is included as **Figure 4a** and **4b** in **Appendix B** (corresponding to Box No 25. on the ENG4345).

#### 4.21 The Needs and Welfare of the People

The purpose of the Proposed Project is to provide the necessary berthing facilities to support vessel engagement for the loading, unloading, transportation, and exporting of petroleum and other bulk products via waterborne commerce. Construction of the Proposed Project would provide the facilities necessary to integrate new and existing barge, pipeline, and storage infrastructure to maximize product handling efficiencies. The Proposed Project will restore inoperable shipping berths to productive use and add to the industrial tax base. By allowing better access for vessels, the resulting Proposed Project will help the United States better compete globally in the crude oil export market.

### 5.0 Avoidance and Minimization Measures

This Proposed Project is designed to meet the needs of the demand for safety and efficiency of the growing crude oil export industry. This Proposed Project is also located in a commercial vessel transit area that is routinely dredged.

Sediment suspension will be minimized by avoiding bottom stockpiling and over-filling of the dredge bucket, and not taking multiple bites with the dredge. A turbidity curtain, surface booms, oil-absorbent pads, and similar environmental containment materials and supplies will be kept on site to be immediately deployed as necessary. The work will also be performed during an approved in-water work window as specified by federal and state regulatory agencies (corresponding to Box No. 23 on the ENG4345).



## 6.0 References

- BEG (Bureau of Economic Geology). 1996. Physiographic Map of Texas. The University of Texas at Austin.
- CBBEP (Coastal Bend Bays & Estuaries Program) 2003. Bay Shrimping in the Coastal Bend: A Summary of Current Conditions. Available online at: <http://www.cbbep.org/publications/virtuallibrary/2008table/0106.pdf>.
- HOT (Herps of Texas). 2019. Website available at: <http://www.herpsoftexas.org/>.
- PCC (Port Corpus Christi). 2019. Intercoastal Waterways. Website available at: <http://portofcc.com/capabilities/logistics/intercoastal-waterways/>.
- NOAA (National Oceanic and Atmospheric Administration). 2019. National Marine Fisheries Service. Essential Fish Habitat Mapper. Available at: <https://www.habitat.noaa.gov/protection/efh/efhmapper/>.
- TCEQ (Texas Commission on Environmental Quality). 2014. 2014 Texas Integrated Report – Potential Sources of Impairments and Concerns. Available at: [https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014\\_source\\_s.pdf](https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_source_s.pdf).
- TCEQ (Texas Commission on Environmental Quality). 2016. Draft 2016 Texas Integrated Report – Texas 303(d) List (Category 5). Available at: [https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016\\_303d.pdf](https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016_303d.pdf).
- TCEQ (Texas Commission on Environmental Quality). 2018. Chapter 307. Texas Surface Water Quality Standards.
- THC (Texas Historical Commission). 2019. Texas Historical Sites Atlas. Website available at: <https://atlas.thc.state.tx.us/Map>
- TPWD (Texas Parks and Wildlife Department). 2009. Gulf Coast. Website available at: [https://tpwd.texas.gov/publications/pwdpubs/media/pwd\\_lf\\_k0700\\_0139q.pdf](https://tpwd.texas.gov/publications/pwdpubs/media/pwd_lf_k0700_0139q.pdf).
- TPWD (Texas Parks and Wildlife). 2010. Birds of Mustang Island Statepark and Vicinity. [https://tpwd.texas.gov/publications/pwdpubs/media/pwd\\_bk\\_p4000\\_0432.pdf](https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_p4000_0432.pdf)
- TPWD (Texas Parks and Wildlife). 2019. Rare, Threatened, and Endangered Species of Texas. Website available at: <https://tpwd.texas.gov/gis/rtest/>.
- TSG (Texas Sea Grant) 2016. Ropicki, A, Hanselka, D., Dudensing, R. 2016. The Economic Impacts of Recreational Fishing in the Corpus Christi Bay System. Available online at: [http://texasseagrant.org/assets/uploads/resources/16-514\\_The\\_Economic\\_Impacts\\_of\\_Recreational\\_Fishing\\_in\\_the\\_Corpus\\_Christi\\_Bay\\_System.pdf](http://texasseagrant.org/assets/uploads/resources/16-514_The_Economic_Impacts_of_Recreational_Fishing_in_the_Corpus_Christi_Bay_System.pdf)

- USACE (United States Army Corps of Engineers). 2003. Corpus Christi Ship Channel, Texas Channel Improvement Project. Volume I. Final Feasibility Report and Final Environmental Impact Statement.
- USACE (United States Army Corps of Engineers). 2008. Corpus Christi Ship Channel, Texas Site Management Plan for the Maintenance Dredging Ocean Dredged Material Disposal Site.
- USACE (United States Army Corps of Engineers). 2018a. Corpus Christi Ship Channel Improvement Project, USACE Galveston District, Winter 2018 Stakeholder Partnering Forum.
- USACE (United States Army Corps of Engineers). 2018b. Jefferson County Ecosystem Restoration Feasibility Study. Draft Integrated Feasibility Report and Environmental Assessment. USACE Southwest Division/Galveston District.
- USDA (United States Department of Agriculture). 2019. Natural Resources Conservation Service Web Soil Survey. Interactive map available at:  
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
- USFWS (United States Fish and Wildlife Service). 2019a. National Wetlands Inventory Wetlands Mapper. Website available at: <https://www.fws.gov/wetlands/data/Mapper.html>.
- USFWS (United States Fish and Wildlife Service). 2019b. IPaC Information for Planning and Consulting. Project planning tool. Website available at: <https://ecos.fws.gov/ipac/>
- USGS (United States Geological Survey). 2019a. Interactive map. Website available at: <https://txpub.usgs.gov/txgeology/>
- USGS (United States Geological Survey). 2019b. Fill and spoil. Datasheet available at: <https://mrdata.usgs.gov/geology/state/sgmc2-unit.php?unit=TXHfs;0>
- USGS (United States Geological Survey). 2019c. Alluvium. Datasheet available at: <https://mrdata.usgs.gov/geology/state/sgmc2-unit.php?unit=TXQal;0>