



DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
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May 20, 2009

Environmental Section

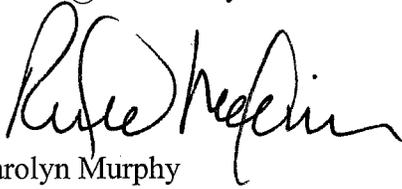
TO ALL INTERESTED PARTIES:

Attached is a Draft Environmental Assessment (EA) addressing the expansion of confined upland dredged material Placement Area No. 4 for the Chocolate Bayou Channel, Brazoria County, Texas. This expanded area will help satisfy capacity needs for long-term channel maintenance. This Draft EA is provided for your information.

Persons desiring to express their views or provide information to be considered in evaluating the impact of this work are requested to mail their comments to:

District Engineer
U.S. Army Engineer District, Galveston
ATTN: CESWG-PE-PR
P.O. Box 1229
Galveston, Texas 77553-1229

The comments should make specific reference to this Draft EA, and must be submitted to the above address on, or before June 22, 2009. Any questions concerning the proposed action may be directed to Mr. Rob Hauch, email at: robert.g.hauch@usace.army.mil.


for Carolyn Murphy
Chief, Environmental Section

Enclosure



**US Army Corps
of Engineers®**
Galveston District

DRAFT ENVIRONMENTAL ASSESSMENT

EXPANSION OF PLACEMENT AREA NO. 4

**GULF INTRACOASTAL WATERWAY,
CHOCOLATE BAYOU CHANNEL
BRAZORIA COUNTY, TEXAS**

U.S. ARMY ENGINEER DISTRICT, GALVESTON

GALVESTON, TEXAS

MAY 2009

DRAFT FINDING OF NO SIGNIFICANT IMPACT

EXPANSION OF PLACEMENT AREA NO. 4

GULF INTRACOASTAL WATERWAY, CHOCOLATE BAYOU CHANNEL BRAZORIA COUNTY, TEXAS

1. Purpose. This document addresses the proposed designation of a new expansion of existing dredged material Placement Area (PA) No. 4 for deposition of material from maintenance dredging of a section of the Chocolate Bayou Channel, Texas. It was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality Regulations to document findings concerning the environmental aspects of the proposed action.

2. Proposed Action. The proposed Federal action is the construction of a 201-acre addition to an existing upland confined PA at the upper reach of the Chocolate Bayou Channel. This addition will be fully confined prior to use for dredged materials from routine periodic maintenance dredging of the project. The expansion of PA 4 would ensure that adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the life of the project. The proposed placement area would also facilitate establishment and management of the nearby marsh habitats created with dredged material.

3. A draft Environmental Assessment (EA) was circulated on *DATE*. *NUMBER* comments on the draft EA were received, and are included in the final EA.

4. The Galveston District has taken every reasonable measure to evaluate environmental, social, and economic impacts of the selected plan. These impacts are described in the EA. Based on the information presented in the EA and coordination with Federal, State, and local agencies, it has been determined that the selected action will have no significant impacts on the environment. The proposed expansion will not effect, or is not likely to adversely affect federally-listed threatened or endangered species. There will be no significant impacts to historic properties, land, water quality, wildlife, fisheries, and/or to the surrounding human population. No hazardous, toxic, or radioactive wastes will be generated by proposed construction. A Section 404(b)(1) Evaluation (short form) of project impacts to water quality indicates the project will not adversely affect water quality. The project has the purpose of improving the quality of the environment in the public interest.

5. Texas Coastal Management Program Consistency. The project has been reviewed for consistency with the goals and policies of the Texas Coastal Management Program (TCMP). Coastal Natural Resource Areas in the project vicinity were identified and evaluated for potential impacts from project activities, with no adverse impacts expected. Based on this analysis, I find that the proposed beneficial use plan is consistent with the goals and policies of the TCMP to the maximum extent practicable. The Coastal Coordination Council also determined that the project is consistent with the Program.

6. Determinations. My analysis of the environmental aspects of the proposed action is based on the accompanying EA. Factors considered in the review were impacts on social resources, wildlife and fisheries, water quality, endangered and threatened species, and historic resources, as well as alternative courses of action and cumulative impacts.

7. Findings. Based on my analysis of the EA and other information pertaining to the proposed project, I find that the proposed action will not have a significant impact on the quality of the human environment. As a result, I have determined that an environmental impact statement is not required under the provisions of NEPA, Section 102, and other applicable regulations of the Corps of Engineers and Council on Environmental Quality.

Date

David C. Weston
Colonel, Corps of Engineers,
District Engineer

DRAFT ENVIRONMENTAL ASSESSMENT

EXPANSION OF PLACEMENT AREA NO. 4

GULF INTRACOASTAL WATERWAY, CHOCOLATE BAYOU CHANNEL BRAZORIA COUNTY, TEXAS

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DRAFT ENVIRONMENTAL ASSESSMENT

EXPANSION OF PLACEMENT AREA NO. 4

GULF INTRACOASTAL WATERWAY, CHOCOLATE BAYOU CHANNEL BRAZORIA COUNTY, TEXAS

1.0 PROPOSED PLAN

1.1 PROJECT DESCRIPTION

The proposed action is the expansion of existing upland confined Placement Area (PA) No. 4 to receive dredged material excavated during routine periodic maintenance dredging along the Chocolate Bayou Channel, a tributary channel of the Gulf Intracoastal Waterway (GIWW). The proposed expanded PA would be designated as PA No. 4, illustrated in Figures 1 and 2.

This Environmental Assessment (EA) only addresses changes in the authorized dredged material placement plan. The work described identifies a modified dredged material placement area to be used for routine maintenance of this federally-maintained navigation project. Maintenance dredging of the Chocolate Bayou Channel was addressed in the Final Environmental Impact Statement (FEIS) for the Gulf Intracoastal Waterway (GIWW) - Chocolate Bayou (USACE, 1978). Additional beneficial use (BU) sites were added to the project as described in the Dredged Material Management Plan (DMMP) (USACE, 2003). In the FEIS and EA, designated areas for the placement of dredged materials were identified. Maintenance dredging of the project is required approximately every four years. The proposed action provides for continued periodic maintenance of the channel to its existing dimensions.

No operations by others are covered by this EA. The Department of the Army permit program regulates all Non-Federal activities.

The proposed expanded placement area is located in Brazoria County, Texas, adjacent to Chocolate Bay, an arm of West (Galveston) Bay. Chocolate Bay is situated about 26 miles west of Galveston and 17 miles east of Freeport. The project impacts addressed in this EA would generally be limited to the footprint of the proposed new PA site. The overall study area consists of Chocolate Bay and immediate environs.

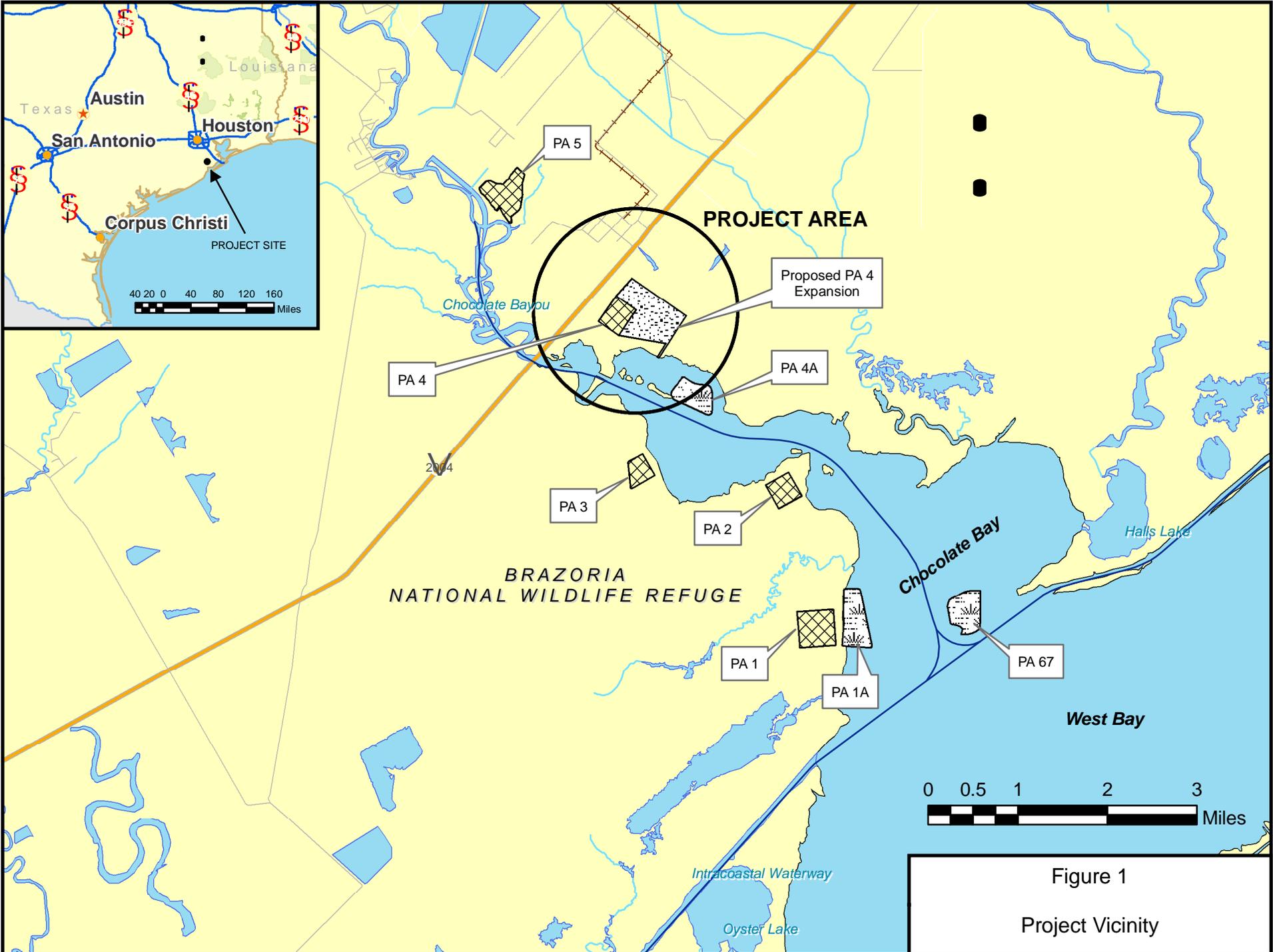
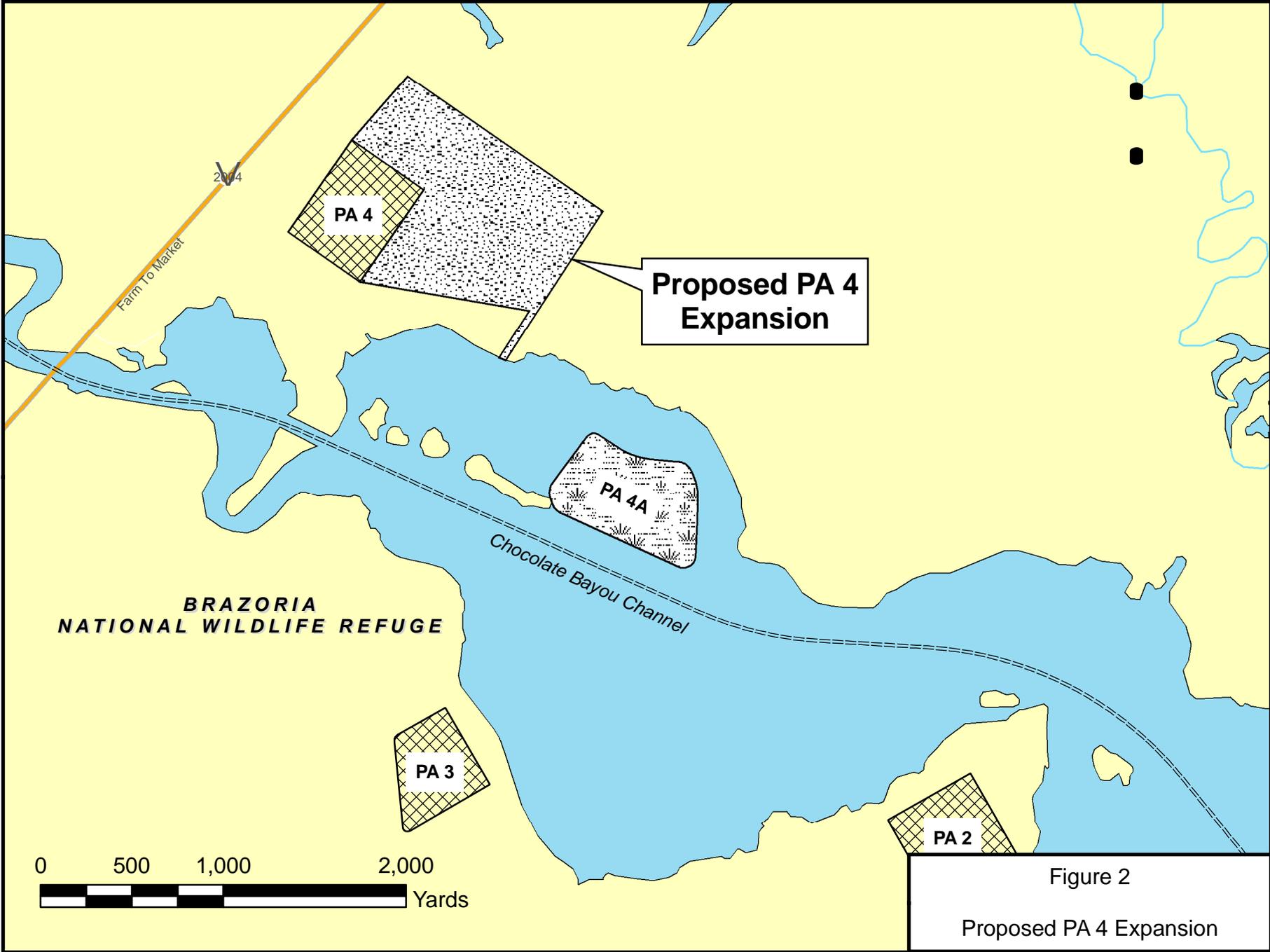


Figure 1
Project Vicinity



3

**Proposed PA 4
Expansion**

**BRAZORIA
NATIONAL WILDLIFE REFUGE**

Chocolate Bayou Channel

PA 4

PA 4A

PA 3

PA 2

0 500 1,000 2,000 Yards

Figure 2
Proposed PA 4 Expansion

1.2 NEED FOR PROJECT

The U.S. Army Corps of Engineers (USACE) is responsible for maintaining the Chocolate Bayou Channel to authorized dimensions to insure navigability of the waterway. Three of the five historically-used dredged material placement areas are located within the Brazoria National Wildlife Refuge (BNWR), and their continued use conflicted with the management objectives of the Refuge. Consequently, alternatives to these sites were identified and described in USACE (2003). These new sites were designated as BU sites for marsh establishment and nourishment of bird nesting habitat. It was anticipated that the combination of existing upland PAs and new BU sites would provide adequate dredged material capacity for long-term maintenance of this channel. Recent implementation of the BU sites and new information about remaining capacity of the PAs revealed that reliance on these areas to satisfy long-term dredging requirements is not feasible. For example, material excavated during the most recent dredging event depleted the effective capacities of both PAs 4 and 5; so these sites are no longer usable. The expansion of PA 4 is needed so that adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the 20 to 50-year life of the project.

The proposed placement area would also facilitate establishment and management of the nearby marsh habitats being created in PAs 1A, 4A, and 67. The expanded PA 4 would be used in conjunction with marsh creation efforts at these BU sites by providing an area for deposition of dredged material in excess of the volumes needed to achieve desired target elevations. Because the Chocolate Bayou Channel is, foremost, a navigation project rather than an ecosystem creation project, the reason for dredging is to restore navigable depth rather than to provide material for BU. If a relatively small volume of material is all that is needed to achieve the target elevation at a BU site, but that same quantity would not adequately ease draft restrictions, then it is unlikely that dredging would be performed. In other words, dredging would not be performed merely to finish the BU site. Consequently, without additional capacity, the BU objectives would not be realized, and navigation hazards in the channel would continue to exist. Therefore, the proposed expanded PA would help to ensure completion of the BU sites, in addition to providing long-term capacity for maintenance of the channel after the beneficial use sites are completed.

1.3 WORK REQUIRED

Continued maintenance of the Chocolate Bayou Channel requires a dredge to excavate and deposit maintenance material into the placement areas; historically, hydraulic cutterhead dredges were, and continue to be, used for this purpose. During hydraulic dredging, sediments

are excavated as a slurry consisting of approximately 20 percent solids and 80 percent water. The material is then transported to the placement areas by floating and temporary land-based pipelines. Although dredging contractors have different sizes of dredges, it is expected that the dredge used for this project will be a 20-inch (pump discharge flange diameter) or larger cutterhead dredge. Other types of equipment could also be used; however, cutterhead dredges are generally the most economical dredging equipment for this purpose.

Other types of equipment expected to be used during construction operations and routine channel maintenance include bulldozers or low-ground pressure marsh vehicles for earthwork and pipeline handling, including draglines to construct the containment structures, and barges and tow boats to transport pipelines and equipment.

Materials dredged from the Chocolate Bayou Channel consist of sands, silts, and clay. Historical data show average values of 12.4 percent sand, 29.0 percent silt and 58.6 percent clay. Shoaling in the channel is a result of alluvial deposits occurring during high water periods and redistribution of sediments from wind and tidal action in Chocolate Bay. Dredging frequency along this channel is approximately four years. Material excavated during each dredging cycle is approximately 857,600 cubic yards (CY). This results from a shoaling rate of 214,400 CY annually. The proposed expansion is particularly needed for the upper half of the Chocolate Bayou Channel where the dredged volume is about 450,000 CY per cycle or 113,000 CY annually.

Other work required involves the construction and operation of containment levees to retain the dredged material within the site. The material to be used for levee construction would be excavated from the interior of the site, then carefully placed along the levee alignment.

The proposed placement area, to be designated PA No. 4, would be an upland confined site comprising the existing 60-acre PA expanded by an additional 201 acres to create a total area of about 261 acres. This area also includes a 116 ft. x 900 ft. effluent discharge corridor. Prior to use, containment levees would be constructed around the entire area except for the discharge corridor which would contain a drainage ditch that would be excavated to average dimensions of 3 feet deep by 8 feet wide. The existing pipeline corridor would be used for the discharge pipe to convey the dredged material to the PA. The pipeline would be assembled and maneuvered across the shoreline and over land by cranes and bulldozers, or other similar equipment. During dredging operations, the dredged material slurry would be discharged into the PA, then be allowed to flow throughout the remainder of the PA where solids would settle. Entrained water would be decanted over a drop-outlet structure located at the head of the discharge corridor then returned to Chocolate Bay. The quality of the effluent with respect to suspended solids would be

controlled by the number of stoplogs used in the drop-outlet weir. The ponding level can be controlled by the weir; higher ponding levels result in greater capability for fine-grain particles to settle rather than to be released. The final levee elevation for this PA is estimated to be about 23 feet above Mean Low Tide (MLT, Corps of Engineers Datum) or about 13 feet above existing ground level. This would be determined by foundation characteristics and future capacity needs for the site.

2.0 PROJECT ALTERNATIVES

For purposes of ensuring the long-term viability of the Chocolate Bayou Channel, several alternatives were evaluated to satisfy future dredged material capacity requirements. Several criteria were used for this evaluation, and any recommended plan must satisfy the following:

- Must provide long-term capacity;
- Must be cost-effective;
- Must minimize potential adverse environmental impacts.

The following table contains a matrix that shows each alternative that was considered and the screening criteria that were met for each alternative. The recommended plan is the only alternative that satisfied all of the criteria. Each alternative is discussed in the following sections.

TABLE 1
Alternative Screening Matrix

Alternative	Criteria		
	Provides Long-Term Capacity	Cost-Effective	Minimize Environ. Impacts
No Action		✓	✓
Additional BU	✓		✓
Use of BNWR PAs		✓	✓
Open-water PA	✓	✓	
New Upland PA	✓		
Expansion of PA 4	✓	✓	✓

2.1 NO ACTION ALTERNATIVE

The No Action Alternative involves implementation of the plan described in the existing DMMP (USACE, 2003). This plan is to implement Beneficial Uses at PA Nos. 1A, 4A and an additional site at GIWW PA No. 67. This plan also specifies use of existing upland PA Nos. 4 and 5. In order to maximize dredging efficiency and avoid long pumping distances, PA Nos. 4, 4A, and 5 were to receive dredged material from the upper half of the project, while PA Nos. 1A and 67 would be used for the lower half.

Construction of BU sites 1A and 4A began during the 2006 dredging event. Difficulties encountered during construction and use of these sites indicated that capacities would be more limited than anticipated during their design. During dredging, upland confined PA Nos. 4 and 5 were filled to capacity and are no longer available for long-term maintenance of the channel. Additionally, the effective capacity of PA 4A was nearly depleted. During the next dredging cycle, only the volume of material needed to achieve the BU target elevation will be deposited into PA 4A. As a result, this site will be full, and future efforts will be devoted only to repairs or deposition of small quantities of dredged material, as needed, to adjust the marsh elevation. Such adjustments would be needed to restore the target elevation as the substrate becomes compacted and consolidated over time. When needed, this volume will only be a fraction of the total sediment quantity required to be dredged. There are no other available PAs along the upper reach to accommodate the remaining material from that cycle, or future cycles.

Dredged material from the lower half of the Chocolate Bayou Channel will be deposited into BU sites at PA 1A and PA 67. These sites are designated as joint-use areas to also receive dredged material from the segment of the Gulf Intracoastal Waterway (GIWW) that crosses the mouth of Chocolate Bay. If the proposed expansion of PA 4 is not constructed, the material from the upper half would have to be pumped long distances, of up to seven miles, to the available remaining capacity at PA 1A or 67. Consequently, the total capacity of the PAs used for the lower channel would be prematurely depleted.

For these reasons, the PAs described in the DMMP cannot be relied upon to provide the capacity required for the long-term maintenance of the Chocolate Bayou Channel Project.

2.2 CONSTRUCTION OF ADDITIONAL BENEFICIAL USE SITES

During the alternatives analyses for the existing DMMP, attempts were made to identify all feasible beneficial uses. Although other BU possibilities exist, they are not located in the immediate vicinity of the project, resulting in longer pumping distances and greatly increased

costs. Therefore, no other feasible alternatives were identified. All of the feasible BU alternatives were included in the DMMP.

2.3 USE OF AREAS IN THE BRAZORIA NATIONAL WILDLIFE REFUGE

This alternative involves continued use of the three existing upland, confined placement areas located within the BNWR. Continued use of these sites, together with the BU sites would help satisfy long-term project needs; however, their continued use is in conflict with the management objectives of the Refuge. So, this alternative cannot be relied upon to provide the capacity required for the long-term maintenance of the Chocolate Bayou Channel Project. If the U.S. Fish and Wildlife Service (USFWS) determines that future placement of dredged material into any or all of these formally-used PAs would be beneficial to their purposes, the BNWR will make them available for use.

2.4 ESTABLISHMENT OF OPEN-WATER PLACEMENT AREAS

The use of unconfined, open-water PAs in Chocolate Bay would be cost-effective because sites would be located near the channel and would minimize pumping distances. The physical characteristics of the channel sediments suggest that mounding would be insignificant, so would provide long-term capacity. However, Chocolate Bay is shallow and contains numerous oyster reefs that would be unacceptably adversely affected. Use of open-water PAs outside of Chocolate Bay could avoid impacts to oyster resources, but would entail long pumping distances.

2.5 CREATION OF NEW UPLAND CONFINED PLACEMENT AREAS

This alternative evaluated the creation of new areas north and east of Chocolate Bay. Such areas would not be situated within the BNWR. However, the vicinity of the lower bay is surrounded by marsh. Uplands are located a significant distance from the channel, and it would not be feasible to pump the dredged material these distances. Furthermore, this would require dredge pipeline to traverse the marsh areas to access the upland sites. Along the upper reaches of the channel, uplands are present at reasonable distances to the project. Creation of new areas would result in impacts that were not previously experienced at these locales.

2.6 EXPANSION OF PLACEMENT AREA NO. 4

This is the preferred alternative described in previous sections. Under this alternative, BU would continue to be implemented, and use of the expanded PA 4 would help ensure success of the BU sites. Several different sizes were considered under this alternative. The 100-ac expansion would not provide sufficient long-term capacity. A 150-ac site would provide slightly more than 20 years of capacity, but the 201-ac site is the preferred size because it would provide the most capacity and would better provide for the long-term needs of the project.

Although this alternative is similar to the Creation of New Upland Confined Placement Areas alternative, it is located near the channel adjacent to an area where impacts were previously experienced, namely existing PA 4. If a totally new PA were to be established, the required area of impact would be greater than the Preferred Alternative.

3.0 AFFECTED ENVIRONMENT

3.1 PHYSICAL DESCRIPTION

Chocolate Bay, which is an arm of West Galveston Bay, is located in Brazoria County on the upper coast of Texas. This area lies in the Texas Coastal Plain, which varies from 30 to 60 miles in width along the entire Gulf shoreline of the State. The area is typified by a relatively flat, featureless terrain containing barrier islands and peninsulas, inland bays and bayous, and a mainland area of prairie grassland crossed by wooded streams and rivers (USACE, 1978). Within the Chocolate Bayou watershed, more than 90 percent of the surface has been modified from original coastal prairie habitat to agricultural land, including cultivated land, orchards and local silage crops for grazing (GURC, 1974). The immediate project area was previously used for rice cultivation, as is much of the surrounding region, but currently supports cattle grazing.

Chocolate Bay is irregularly-shaped and varies in width from 0.6 miles in the upper portion near the mouth of Chocolate Bayou to 3.7 miles along the GIWW. Chocolate Bay has a surface area of approximately 9 square miles. Natural water depths vary from 1 to 5 feet, except for the dredged 12-foot depth of the Chocolate Bayou Channel, which bisects the bay. The length of the bay from the Chocolate Bayou entrance to the GIWW is approximately 5 miles. Prevailing winds from the south and southeast result in wave action that stirs up bottom sediments in the bay much of the time. The bay shoreline is low tidal marsh and has an approximate length of 16 miles. In addition to Chocolate Bayou, several smaller tributaries contribute freshwater flows into the bay.

The entire expanse of land bordering Chocolate Bay to the southwest is part of the Brazoria National Wildlife Refuge. Grassland that occupies the coastal flats contains coastal cordgrass vegetation. Marshlands surrounding the Chocolate Bay area are characterized by salt to brackish marsh vegetation. These marshes border about one-half of the 16 miles of Chocolate Bay shoreline and are interspersed with converted cordgrass prairie in the upper reaches of the bay (GURC, 1974). Low marsh vegetation consists of dense stands of smooth cordgrass (*Spartina alterniflora*) and grades into high marsh vegetation, including marsh-hay cordgrass (*S. patens*), shoregrass (*Monanthochloe littoralis*), bullrush (*Scirpus* sp.), and glasswort (*Salicornia* sp.) as the land elevation increases. The marshes are highly productive of organic materials, which form the basis of the marine food chain in the bay and provide good quality waterfowl habitat (USACE, 1978).

3.2 TIDES

Tidal interchange between Chocolate Bay and the Gulf of Mexico occurs primarily through San Luis Pass. The tidal range near the mouth of Chocolate Bayou has a mean diurnal variation from 0.25 to 1.0 feet during ordinary conditions. The water level in Chocolate Bay is affected by winds. Prolonged north winds in the winter season have depressed the water surface as much as 3 feet below mean low tide. Storm surges associated with tropical storms or hurricanes can raise water levels as much as 15 feet above mean low tide. Prevailing onshore winds during 10 months of the year maintain a mean water level about 0.5 feet higher in upper Chocolate Bay than at San Luis Pass (GURC, 1975 as reported in USACE, 1978).

3.3 WETLANDS

Vegetation along much of Chocolate Bay is brackish marsh with virtually no woody vegetation. Gulf cordgrass is the dominant vegetation. Other common taxa are black rush (*Juncus roemerianus*) and marsh-hay cordgrass (Board of Trustees, Galveston Wharves and Pelican Terminal Company, 1979). The marsh plant community provides habitat for a great variety of birds and marine life (White and Paine, 1992; White *et al.*, 1993). It usually produces 6 to 9 tons of detritus per acre, which comes mostly from decaying smooth cordgrass. Oysters, crabs, and many species of fish depend on this marsh plant community to supply nutrients. Post-larval shrimp utilize smooth cordgrass as a nursery area (Crenwelge *et al.*, 1981).

3.4 WILDLIFE

The project area lies within the Gulf prairies and marshes region of Texas (Gould, 1975) and within the Texan biotic province as described by Blair (1950). The project area is, however, very close to the western edge of the Austroriparian biotic province.

The Chocolate Bay area provides feeding and nesting habitat for numerous species of waterfowl and shore birds. The Texas coast is a terminus or stopover for many migratory waterfowl and other birds traversing the Mississippi or Central Flyways. Migratory waterfowl, such as ducks and other species, visit the Chocolate Bay area regularly, stopping to use ponded water for resting areas rather than as permanent feeding or nesting habitat. Among species of ducks and geese commonly observed in the area are white-fronted goose (*Anser albifrons*), snow goose (*Chen hyperborea*), blue goose (*C. caerulescens*), pintail (*Anas acuta*), gadwall (*A. strepera*), green-winged teal (*A. carolinensis*), mallard (*A. platyrhynchos*), mottled ducks (*A. fulvigula*), scaup (*Aythya* spp.), and American wigeon (*Mareca americana*). Clapper rail (*Rallus longirostris*), seaside sparrow (*Ammodramus maritima*), and willet (*Catoptrophorus semipalmatus*) are typical residents of the salt marshes. Other shore and wading birds that nest and feed along the bay shore include herons, egrets, terns, black skimmer (*Rynchops niger*), ibis, roseate spoonbill (*Ajaia ajaja*), and double-crested cormorant (*Phalacrocorax auritus*) (GURC, 1974). Pelicans (*Pelecanus* spp.) and gulls (*Larus* spp.) are also common in this area.

There are 46 species of mammals known to frequent the Chocolate Bay area. Mainland terrestrial and aquatic habitats support a variety of wildlife species, including the opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), northern rice rat (*Oryzomys palustris*), hispid cotton rat (*Sigmodon hispidus*), roof rat (*Rattus rattus*), nutria (*Myocaster coypus*), and eastern cottontail (*Sylvilagus floridanus*) (GURC, 1974).

In the Chocolate Bayou watershed, there are 62 different species of reptiles and 22 species of amphibians. Of the amphibians, there are 16 species of toads and frogs, five salamanders, and one newt. In the reptilian group, there are 16 turtles, 10 lizards, and 35 snake species (GURC, 1974).

3.5 FISHERIES

There are numerous oyster reefs and scattered areas of oysters throughout Chocolate Bay. However, the entire area north of the GIWW is closed to harvesting because of high levels of coliform bacteria in the bay. No commercial-sized reefs exist in Chocolate Bay. Some small reefs have developed on old submerged dredged material mounds along the Chocolate Bayou

Channel. The only significant oyster resources in the immediate proximity of the proposed action are located adjacent to PA No. 4A.

Large portions of adjacent marshes are tidally influenced, creating estuarine environments important to a variety of fish, shrimp and crabs, as well as other life forms higher on the food chain that feed on such organisms. These estuaries are very productive communities and are vital to the life cycle of many marine species. Principal marine species in Chocolate Bay include blue crab (*Callinectes sapidus*), penaeid shrimp, spotted seatrout (*Cynoscion nebulosus*), sand seatrout (*C. arenarius*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), black drum (*Pogonias cromis*), red drum (*Sciaenops ocellatus*), southern flounder (*Paralichthys lethostigma*), striped mullet (*Mugil cephalus*), Gulf menhaden (*Brevoortia patronus*), bay anchovy (*Anchoa mitchilli*), and sheepshead (*Archosargus probatocephalus*) (USACE, 1978). The shoreline, shallow water, and marshes are used primarily as nursery areas for early life stages of fishes and crustaceans, as feeding areas for the above-mentioned species, and as breeding areas, primarily for spotted seatrout.

The Chocolate Bay area supports a diverse population of benthic organisms. Benthic organisms occupy an intermediate role in the food chain. Benthic populations in Chocolate Bay have been classified as river-influenced, low-salinity bay and enclosed bay assemblages (Fisher *et al.*, 1972). Important taxonomic groups of benthos occurring in these assemblage types include gastropoda, pelecypoda, echinodermata, crustacea, polychaeta, and scaphopoda.

Benthic organisms are also important to the estuarine food web because: (1) they mineralize organic matter, releasing important nutrients to be reused by primary producers; (2) they act as trophic links between primary producers and primary consumers; and (3) they can also aggregate dissolved organics within estuarine waters, which are another source of particulate matter for consumers (Peterson and Peterson, 1979).

3.5.1 Essential Fish Habitat

Essential fish habitat (EFH) consists of those habitats 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 (MSFCMA). The Gulf of Mexico Fishery Management Council (GMFMC) has identified habitats in the project area as EFH for larval, juvenile, subadult, and adult red drum; juvenile and adult Spanish mackerel (*Scomberomorus maculatus*); and post-larval, juvenile, and subadult white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*).

In addition to EFH designated for red drum, Spanish mackerel, and shrimp, the project area wetlands provide nursery and foraging habitat that supports various forage species and recreationally important marine fishery species such as spotted seatrout, flounder, Atlantic croaker, black drum, Gulf menhaden, striped mullet, and blue crab. These estuarine-dependent organisms also serve as prey for other fisheries managed under the MSFCMA by the GMFMC (e.g., red drum, mackerels, snappers, and groupers) and highly migratory species managed by the National Marine Fisheries Service (NMFS) (e.g., billfishes and sharks).

Essential fish habitat for managed species occurs in the project vicinity; however, the proposed PA expansion would occur entirely within an upland area, so EFH would not be directly affected.

This EA continues EFH consultation under the MSFCMA that was initiated in the Public Notice issued for this action. The NMFS will review this EA and provide comments regarding compliance with the requirements of this Act. The result of this consultation will be included in Appendix G.

3.6 THREATENED AND ENDANGERED SPECIES

3.6.1 *Federally Listed Species*

The project area is in the coastal vicinity of Brazoria County, Texas. The USFWS and NMFS consider the endangered or threatened species contained in Table 2 as possibly occurring in this county. Only those species listed as endangered or threatened by the USFWS or NMFS are afforded complete Federal protection under the Endangered Species Act (ESA). It should be noted that inclusion on the following lists does not imply that a species is known to occur in the study area, but only acknowledges the potential for occurrence. No designated or proposed critical habitat, or other species under their jurisdictions were identified as possibly occurring in the project vicinity. Federally-listed species that could possibly be observed in the immediate project area include the brown pelican and whooping crane. The bald eagle was recently delisted, but is included here because the protections provided by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act remain in effect. All federally-listed species possibly occurring in Brazoria County are discussed in detail in the Biological Assessment located at Appendix B.

TABLE 2
Federally-Listed Threatened, Endangered, and Species of Concern
for Brazoria County, Texas

Common Name	Scientific Name	Listing Status
BIRDS		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted with Monitoring
Brown Pelican	<i>Pelecanus occidentalis</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
FISH		
Smalltooth Sawfish	<i>Pristis pectinata</i>	Endangered
Dusky Shark	<i>Carcharhinus obscurus</i>	Species of Concern
Sand Tiger Shark	<i>Odontaspis taurus</i>	Species of Concern
Night Shark	<i>Carcharhinus signatus</i>	Species of Concern
Speckled Hind	<i>Epinephelus drummondhayi</i>	Species of Concern
Saltmarsh Topminnow	<i>Fundulus jenkinsi</i>	Species of Concern
Warsaw Grouper	<i>Epinephelus nigritus</i>	Species of Concern
Largetooth sawfish	<i>Pristis pristis</i>	Species of Concern
White Marlin	<i>Tetrapturus albidus</i>	Species of Concern
INVERTEBRATES		
Ivory Bush Coral	<i>Oculina varicosa</i>	Species of Concern
MARINE MAMMALS		
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Finback Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Sei Whale	<i>Balaenoptera borealis</i>	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered
REPTILES		
Green Sea Turtle	<i>Chelonia mydas</i>	Threatened
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	Endangered
Loggerhead Sea Turtle	<i>Caretta caretta</i>	Threatened

Common Name	Scientific Name	Listing Status
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	Endangered
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered

Source: US Fish & Wildlife Service, letter dated July 27, 2008 and National Marine Fisheries Service, letter dated August 15, 2008

3.6.2 State Listed Species

Table 3 is a list of additional species considered threatened or endangered by the Texas Parks and Wildlife Department (TPWD) as potentially occurring in Brazoria County. This list also includes other State species of concern. State-listed species are not protected under the ESA, but are included to provide a more complete assessment of potential impacts to all sensitive species.

TABLE 3
Texas Annotated County List of Rare Species for Brazoria County

Common Name	Scientific Name	Listing Status
BIRDS		
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Endangered
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Black Rail	<i>Laterallus jamaicensis</i>	Species of Concern
Brown Pelican	<i>Pelecanus occidentalis</i>	Endangered
Eskimo Curlew	<i>Numenius borealis</i>	Endangered
Henslow's Sparrow	<i>Ammodramus henslowi</i>	Species of Concern
Piping Plover	<i>Charadrius melodus</i>	Threatened
Reddish Egret	<i>Egretta rufescens</i>	Threatened
Snowy Plover	<i>Charadrius alexandrinus</i>	Species of Concern
Sooty Tern	<i>Sterna fuscata</i>	Threatened
Southeastern Snowy Plover	<i>Charadrius alexandrinus</i>	Species of Concern
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	Species of Concern
White-faced Ibis	<i>Plegadis chihi</i>	Threatened

Common Name	Scientific Name	Listing Status
White-tailed Hawk	<i>Buteo albicaudatus</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Wood Stork	<i>Mycteria americana</i>	Threatened
FISH		
American Eel	<i>Anguilla rostrata</i>	Species of Concern
Sharpnose Shiner	<i>Notropis oxyrhynchus</i>	Species of Concern
MAMMALS		
Jaguarundi	<i>Herpailurus yaguarondi</i>	Endangered
Louisiana Black Bear	<i>Ursus americanus luteolus</i>	Threatened
Ocelot	<i>Leopardus pardalis</i>	Endangered
Plains Spotted Skunk	<i>Spilogale putorius interrupta</i>	Species of Concern
Red Wolf	<i>Canis rufus</i>	Endangered
West Indian Manatee	<i>Trichechus manatus</i>	Endangered
MOLLUSKS		
False Spike Mussel	<i>Quincuncina mitchelli</i>	Species of Concern
Pistolgrip	<i>Tritogonia verrucosa</i>	Species of Concern
Rock Pocketbook	<i>Arcidens confragosus</i>	Species of Concern
Smooth Pimpleback	<i>Quadrula houstonensis</i>	Species of Concern
Texas Fawnsfoot	<i>Truncilla macrodon</i>	Species of Concern
REPTILES		
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	Threatened
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 caretta</i>	Threatened
Texas Diamondback Terrapin	<i>Malaclemys terrapin littoralis</i>	Species of Concern

Common Name	Scientific Name	Listing Status
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	Threatened
Gulf Saltmarsh Snake	<i>Nerodia clarkii</i>	Species of Concern
Timber/Canebrake Rattlesnake	<i>Crotalus horridus</i>	Threatened
VASCULAR PLANTS		
Coastal Gay-Feather	<i>Liatris bracteata</i>	Species of Concern
Giant Sharpstem Umbrella- Sedge	<i>Cyperus cephalanthus</i>	Species of Concern
Texas Meadow-Rue	<i>Thalictrum texanum</i>	Species of Concern
Texas Windmill-Grass	<i>Chloris texensis</i>	Species of Concern
Threeflower Broomweed	<i>Thurovia triflora</i>	Species of Concern

Source: TPWD (2008)

The **American Peregrine Falcon** is a year-round resident and local breeder in west Texas, where it nests in tall cliff eyries. This species is also a migrant across the State from more northern breeding areas in U.S. and Canada, and winters along the coast and farther south. This falcon occupies a wide range of habitats during migration, including urban areas. Concentrations of migrants can be observed along coastal areas and barrier islands. This falcon is a possible migrant to the area.

The **Arctic Peregrine Falcon** has been federally delisted, but maintains the State listing status. This species migrates throughout the State from its far northern breeding range. It winters along the coast and farther south, and occupies a wide range of habitats during migration, including urban areas. Concentrations of migrants can be observed along coastal areas and barrier islands. This falcon is a possible migrant to the area.

The **Black Rail** can usually be found in salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps. It nests in or along the edges of marsh, sometimes on damp ground, but usually on mats of previous year's dead grasses. The nests are usually hidden in marsh grass or at the base of *Salicornia spp.* It is possible that this species occurs in the project area, but preferred habitat does not exist in the immediate project site.

The **Eskimo Curlew** nests in treeless tundra in Alaska and the Northwest Territories, Canada and overwinters in Argentina, South America, 15,000 miles from their breeding grounds. The range of the Eskimo curlew in the United States is Alaska, Montana, North Dakota, South Dakota, Kansas, Nebraska, Oklahoma, and Texas. Historical observations on Galveston Island suggest that Eskimo curlews fed over wide areas of sand flats, shallow ponds, and grassy patches, as well as well-drained, gently rolling grazed pastures with grass about three to four inches high. This species is now nearly extinct or perhaps extinct. Due to the rarity of this species, it is unlikely that transient individuals would be found in the project area.

Henslow's Sparrow winters in Texas and individuals are found in weedy fields or cut-over areas where bunch grasses occur along with vines and brambles. A key component is bare ground for running and walking. It is possible that this species occurs in the project area.

The **Reddish Egret** is a resident of the Texas Gulf Coast that favors brackish marshes, shallow salt ponds, and tidal flats. It nests on the ground or in trees or bushes, generally on dry coastal islands in brushy thickets of yucca and prickly pear. It is possible that this species occurs in the project area.

The **Snowy Plover** is a wintering migrant generally found along the Texas Gulf Coast beaches and bayside mud or salt flats. Only transient individuals may occur in the project vicinity, but preferred habitat does not exist in the immediate project site.

The **Sooty Tern** is a bird of the tropical oceans, breeding on islands throughout the equatorial zone. This is not a diving bird, rather it plucks small fish and squid from the surface of the water as it flies or hovers over water. This bird spends most of its time in the air and rarely comes to land except to breed. Sooty Terns breed in colonies with nests consisting of a ground scrape or hole on rocky or coral islands. This species is not likely to be found in the project vicinity.

The **Southeastern Snowy Plover** is a potential wintering migrant generally found along the Gulf Coast beaches and bayside mud or salt flats. It breeds along the Gulf Coast east of Louisiana, along beaches, dry mud or salt flats, sandy shores of rivers, lakes, and ponds. It is a ground nester on broad open beaches or salt or dry mud flats, where vegetation is sparse or absent. Transient individuals may occur in the project vicinity, but preferred habitat does not exist in the immediate project site.

The **Western Snowy Plover** is a potential wintering migrant generally found along the Gulf Coast beaches and bayside mud or salt flats. It breeds along beaches, dry mud or salt flats,

sandy shores of rivers, lakes, and ponds along the Pacific Coast and is also an uncommon breeder in the Texas Panhandle. It is a ground nester on broad open beaches or salt or dry mud flats, where vegetation is sparse or absent. Transient individuals may occur in the project vicinity, but preferred habitat does not exist in the immediate project site.

The **White-Faced Ibis** prefers fresh marshes, sloughs, and irrigated rice fields, but will utilize brackish and saltwater habitats. It nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats. It is possible that this species occurs in the project area, but preferred habitat does not exist in the immediate project site.

The **White-Tailed Hawk** can be found on prairies, cordgrass flats, and scrub-live oak near coasts. Farther inland it prefers prairies, mesquite and oak savannas, and mixed savanna-chaparral. It is possible that this species may be found in the project vicinity.

The **Wood Stork** forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt water. It usually roosts communally in tall snags, sometimes in association with other wading birds (e.g., in active heronries). It breeds in Mexico, and birds move into the Gulf states in search of mud flats and other wetlands, even those associated with forested areas. The wood stork formerly nested in Texas, but no breeding has been noted since 1960. It is possible that this species occurs in the project area.

American Eels can be found in most aquatic habitats with access to ocean. This species spawns January-February in the ocean, the larvae then move to coastal waters to metamorphose. The females then move into freshwater, including muddy bottoms, still waters, large streams, or lake sand. These eels have the ability to travel overland in wet areas. The males move into brackish estuaries. This species could possibly be found in the project vicinity.

The **Sharpnose Shiner** is endemic to Brazos River drainage, and is also naturally found in the Red River drainage. The Colorado River also supports an introduced population. Preferred habitat is the main stem of the river; but also enters smaller tributaries. It is usually found in areas with sand substrate where there are moderate current velocities and depths. This species has high thermal, low dissolved oxygen, and high salinity tolerances and does not exhibit significant migration. This species is not likely to be found in the project vicinity.

The **Jaguarundi** is a small, slender bodied, unspotted cat, slightly larger than a domestic cat. They occur in the dense thorny shrublands of the Rio Grande Valley. Typical habitat consists of mixed thornscrub species such as spiny hackberry, brasil, desert yaupon, wolfberry,

lotebush, amargosa, whitebrush, catclaw, blackbrush, lantana, guayacan, cenizo, elbowbush, and Texas persimmon. Interspersed trees such as mesquite, live oak, ebony, and hackberry may also harbor this species. Riparian habitats along rivers or creeks are sometimes used by jaguarundis. Texas counties where Jaguarundis occurred during the past 30 years include Cameron and Willacy. This species is not likely to be found in the project vicinity. Habitat for this species does not exist in the project vicinity.

Louisiana Black Bears typically inhabit bottomland hardwood forests but also utilize other types of forested habitats. Other documented habitat types used include brackish and freshwater marshes, salt domes, wooded levees along canals and bayous, and agricultural fields. Remoteness is also an important spatial feature of black bear habitat. Their last strongholds in eastern Texas were in the swamps and thickets of the Big Thicket Region of southeast Texas. Presently the Louisiana black bear primarily occurs within the boundaries of the state of Louisiana. The largest concentrations are in the Atchafalaya and Tensas River Basins. There are occasional movements, primarily of solitary juvenile males, into western Mississippi, and eastern Texas. This species is not likely to be found in the project vicinity. Preferred habitat for this species does not exist in the project vicinity.

The **Ocelot** is a medium-sized spotted cat with body dimensions similar to the bobcat. In Texas, ocelots occur in the dense thorny shrub lands of the Lower Rio Grande Valley and Rio Grande Plains. Typical habitat consists of mixed brush species such as spiny hackberry, brasil, desert yaupon, wolfberry, lotebush, amargosa, whitebrush, catclaw, blackbrush, lantana, guayacan, cenizo, elbowbush, and Texas persimmon. Interspersed trees such as mesquite, live oak, ebony, and hackberry may also harbor this species. Texas counties that contain areas identified as occupied habitat are: Cameron, Duval, Hidalgo, Jim Wells, Kenedy, Kleberg, Live Oak, McMullen, Nueces, San Patricio, Starr, Willacy, and Zapata. This species is not likely to be found in the project vicinity. Preferred habitat for this species does not exist in the project vicinity.

The **Plains Spotted Skunk** is a generalist in habitat preference and may be found in open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands. However, it prefers wooded, brushy areas and tallgrass prairie. This species is likely to be found in the project vicinity.

Red wolf formerly ranged throughout the eastern half of Texas but their numbers and range quickly declined under pressure of intensive land use in the region. Red wolves inhabited brushy and forested areas, as well as the coastal prairies. Food items consisted of rabbits, deer,

native rats and mice, prairie chickens, fish and crabs as well as upon domestic livestock, especially free-ranging pigs. This species is believed to be extirpated in Texas.

West Indian Manatees can occasionally wander into waters along the Texas Gulf coast and bay systems. When observed, the occurrence is usually limited to a single individual. These are opportunistic, aquatic herbivores. This species is not likely to occur in the project area.

The **False Spike Mussel** is a fresh water bivalve that prefers cobble and mud substrates, with water lilies present. The historic range includes the Rio Grande, Brazos, Colorado, and Guadalupe river basins. Habitat for this species does not exist in the project vicinity.

The **Pistolgrip** is a fresh water bivalve that prefers stable substrate, such as rock or hard mud, but also can be found in soft bottoms, where it is often deeply buried. Habitat ranges from east and central Texas, Red through San Antonio River basins. Habitat for this species does not exist in the project vicinity.

The **Rock Pocketbook** is a fresh water mussel found in mud, sand, and gravel substrates of medium to large rivers in standing or slow flowing water, but may tolerate moderate currents. It can be also be found in some reservoirs in east Texas, ranging from the Red through Guadalupe River basins. Habitat for this species does not exist in the project vicinity.

The **Smooth Pimpleback** is a fresh water bivalve that can be prefers substrates of mixed mud, sand, or fine gravel but not scoured bedrock substrates, or shifting sand bottoms. It is found in small to moderate streams and rivers as well as reservoirs of moderate size, and tolerates very slow to moderate flow rates, but doesn't seem to tolerate dramatic water level fluctuations. Occurrence is believed to be in the Brazos and Colorado River basins, and possibly in the lower Trinity. Habitat for this species does not exist in the project vicinity.

The **Texas Fawnsfoot** is a freshwater bivalve about which little is known. It possibly inhabits rivers and larger streams, but is intolerant of impoundment. It may also be found in flowing rice irrigation canals with moderate flows. Possible substrate preferences include sand, gravel, and sandy-mud bottoms. Most likely occurrence is in the Brazos and Colorado River basins. Habitat for this species does not exist in the project vicinity.

The **Alligator Snapping Turtle** resides in deep water of rivers, canals, lakes, and oxbows, as well as swamps, bayous, and ponds near deep running water and abundant aquatic vegetation. It may migrate several miles along a river, and is most active in March-October. It

breeds April-October. It is possible that this species may occur within freshwater lakes in the project vicinity.

The **Texas Diamondback Terrapin** prefers coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches. It is also found in brackish and salt water. It burrows into mud when inactive and may venture into lowlands at high tide. This species may possibly occur within the project vicinity.

The **Texas Horned Lizard** is generally found in open arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees. Preferred soils may vary in texture from sandy to rocky. The horned lizard burrows into soil, enters rodent burrows, or hides under rock when inactive. It breeds between March and September. Preferred habitat for this species does not exist in the project vicinity.

The **Gulf Saltmarsh Snake** resides in saline flats, coastal bays, and brackish river mouths. This species could possibly be found in the project vicinity.

The **Timber/Canebrake Rattlesnake** favors swamps, floodplains, upland pine, and deciduous woodlands, riparian zones, abandoned farmland, limestone bluffs, and sandy soil or black clay. It prefers dense ground cover such as grapevines or palmetto. This species may possibly occur within the project vicinity.

The **Coastal Gay-Feather** is found in black clay soils and sandy loams. It can be found in Coastal prairies, and along roadsides and railroads. Flowering occurs in fall. This species may possibly occur within the project vicinity.

The **Giant Sharpstem Umbrella-Sedge** is an uncommon species in remnant coastal prairies in poorly to moderately drained sites. The scarcity of *Cyperus cephalanthus* in the United States and its disjunct distribution suggest it might be naturalized rather than native. It was collected early in the nineteenth century in Louisiana and has been treated as a variety of the widespread, polymorphic South American *C. laetus*. This species is not likely to occur in the project area.

Texas Meadow-Rue is endemic to Texas where it grows in mesic woodlands or forests, including wet ditches on partially shaded roadsides. The flowering period is March-May. This species is not likely to occur in the project area.

Texas Windmill-Grass is endemic to Texas and occurs in sandy to sandy loam soils in open to sometimes barren areas in prairies and grasslands, including ditches and roadsides. Flowering takes place in autumn. This species may possibly occur within the project vicinity.

Threeflower Broomweed is endemic to black clay soils of remnant grasslands. It is less commonly found in sandy loam, coastal flats and shallow banks, "slick spots" in coastal prairie grasslands, upper margins of boundary between salty prairies and tidal flats, and openings in thickets. Flowering occurs from September through November. This species may possibly occur within the project vicinity.

3.7 HISTORIC RESOURCES

Archival and historical research was recently conducted to develop a baseline level of knowledge for prehistoric and historic period cultural developments and to identify archeological and historical sites previously recorded in the proposed project area. Records indicate that the proposed 260-acre project area has never been surveyed for the presence of cultural resources. Because of the disturbance of the area for agricultural purposes, it is believed that no useful data could be obtained. No properties eligible for, or listed on the National Register of Historic Places (NRHP) are recorded in the project area, and no cultural resources are recorded within a three mile radius of the project area.

The Houston Area Geoarcheological analysis places the project area in the Potential Archeological Liability Mapping (PALM) Map Unit 2, with a recommendation for surface survey, but not for deep testing. Aerial photos clearly depict artificially graded agricultural fields gone fallow for grazing. Based on the agricultural disturbances to the already shallow Holocene-era soil profile, little likelihood exists for the proposed project to impact a property eligible for or listed on the NRHP.

3.8 AIR QUALITY AND NOISE

3.8.1 *Air Quality*

The proposed project is located in Brazoria County, Texas. This county is within an area designated as the Houston-Galveston-Brazoria Intrastate Air Quality Control Region (HGB). The HGB is in attainment or unclassified with the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants except ozone and is classified as having "severe" nonattainment with the 8-hour NAAQS for ozone, with an attainment deadline of 2019 (73 FR 56983; TCEQ, 2008a). Thus by 2019, the area is expected to achieve and maintain attainment

with the NAAQS for ozone. Counties in the HGB Nonattainment Area affected under this status are Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller.

In accordance with regulatory requirements, Section 176 of the Clean Air Act (CAA), known as the General Conformity Rule and Texas Rule, 30 TAC 101.30, respectively, criteria were established for air quality preservation that apply to Federal actions in areas that are designated as being in non-attainment for any of the criteria pollutants.

The activity to be assessed is the construction of the containment levee for the proposed expanded PA. Maintenance dredging associated with the use of the proposed expanded area would be identical to dredging operations historically conducted in the Chocolate Bayou Channel, so there would be no increase in emissions. Also, there will be no new depths to be dredged, and discharge would be at an approved site. Therefore, requirements of the General Conformity Rule do not apply to the dredging (30 TAC 101.30(3)(B)(ix)).

3.8.2 *Noise*

Pursuant to the Noise Control Act of 1972 as amended by the Quiet Communities Act of 1978, the U.S Environmental Protection Agency (EPA) has developed appropriate noise-level guidelines. The EPA generally recognizes an average day-night noise level (Ldn) of less than 50 decibels a-weighting (dBA) (USEPA, 1978) for rural areas and between 55 and 60 dBA for urban areas. Hearing loss could result if the average outdoor noise level is in excess of 70 dBA or more for 24 hours over a 40-year period (USEPA, 1974). The immediate activities in the study area with the potential of affecting noise levels include waterborne transportation (commercial vessels and recreation boats), dredging, and related construction activities. Most of the GIWW and the Chocolate Bay Channel in the project vicinity are bounded by undeveloped marsh and upland properties, but are nevertheless subjected to noise from consistent barge and boat traffic.

The primary source of noise from the proposed activity would be from the equipment required to construct retaining levees, and transport and deposit the dredged material. Typical noise levels generated by this equipment range from 80 to 88 decibels at 50 feet from the source (USDOT, 1995). Noise from this equipment would be intermittent and of short-term duration. Assuming that noise from the equipment radiates equally in all directions, sound intensity would diminish inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), the sound pressure level decreases 6 decibels with each doubling of the distance from the source. Under most conditions, reflected sound will reduce in attenuation

because of distance (American National Standards Institute, 1983). The area surrounding the project site is composed of undeveloped marsh and grasslands. There are no sensitive receptors located in the project vicinity.

3.9 WATER AND SEDIMENT QUALITY

3.9.1 *Water Quality*

Chocolate Bay is a tertiary bay of the Galveston Bay system and is a classified water body designated Segment 2432 in the Bays and Estuaries category. Water body uses of this segment are: High Aquatic Life Use; Contact Recreation Use; General Use; Fish Consumption Use, and Oyster Waters Use. Based on recent available data, the TCEQ determined that except for Oyster Waters Use, all other uses are fully supported or of no concern for the entire Chocolate Bay water segment. Oyster Waters Use is not supported in the entire segment because of bacteria, which led to restrictions on shellfish harvesting by the Texas Department of State Health Services (TCEQ, 2008b). Discharges of waste effluents are made into Chocolate Bayou by municipal and industrial facilities. The elevated coliforms are probably related to the discharge of livestock wastes from inflows of pasture and drainage, and untreated or partially treated domestic sewage. Nonetheless, except for high levels of bacteria found in the bay waters, the quality of area waters is generally considered to be good.

As part of the Galveston Bay National Estuary Program, a study was undertaken to assess the overall quality of this bay system. Ward and Armstrong (1992) compiled existing water and sediment quality data. Based on this compilation, it appears that the water quality of Chocolate Bay is generally inferior to the rest of the bay system on the basis of TSS, coliforms, and several metals. However, with the exception of coliforms, the overall trend seems to be toward improvement, or neutral. More recent water quality data were obtained on samples collected by the Galveston District (SWG) from the Chocolate Bayou Channel in April 2006. Chemical analyses were conducted for a variety of metals, pesticides, polycyclic aromatic hydrocarbons, and other organic compounds. These data are located at Appendix C, and indicate that, in general, the water quality is good. Along with data on detected analytes, Appendix C also includes the complete list of contaminants analyzed.

The 2006 data show that detected contaminant levels in all ambient water samples were below applicable EPA Water Quality Criteria, and Texas Surface Water Quality Standards except for copper, which exceeded the State Standard for oyster waters at several sample sites. It is possible, however, that the data are artificially high as indicated by the analyses of the field blanks which also exhibit elevated levels of copper.

A review of the National Response Center web page (NRC, 2009) was also conducted. Records for the past three years did not reveal any reports of significant chemical or petroleum spills in the project vicinity. But there were several incidences of minor spills of hydraulic oil, diesel fuel, or unknown sheens; these releases were either secured or left to dissipate, as appropriate. In July 2008, there was a reported fish kill, estimated to be in the thousands, from an unknown cause in the Liverpool area upstream of the project.

Elutriate data were also acquired in 2006 and are included in Appendix C. The elutriate test was designed to simulate the process of hydraulic dredging and is used to predict any potential for resuspension of contaminants into the water column during dredging. The elutriate is prepared by creating a slurry of sediments and water from the channel which is then agitated to determine if contaminants associated with the sediment particles are resuspended into the water column. These data show that detected contaminant levels in elutriate samples were below all applicable Texas Surface Water Quality Standards and EPA Water Quality Criteria, except for copper which exceeded the State Standard for oyster waters at several sample sites. However, there is no definitive trend to suggest that copper is being resuspended into the water column. The mean copper concentration in ambient water samples is 3.18 micrograms per liter, whereas the average in the elutriate samples is 3.12 micrograms per liter. This decrease indicates that copper disassociates from the water column to become adsorbed onto the sediment particles.

3.9.2 Sediment Quality

The study conducted by Ward and Armstrong (1992) also indicates that the sediment quality in Chocolate Bay is generally similar to the rest of the bay system. There is also a general trend toward decreasing concentrations of some metals, notably, arsenic, chromium, and nickel, with no discernible trends in regard to copper, lead, mercury or zinc. Levels of cadmium appear to be relatively constant.

The 2006 SWG sediment quality data located at Appendix C, are based on analyses of composite samples comprised of subsamples collected perpendicular to the centerline of the channel. There are no EPA quality criteria for sediments, so comparisons with sediment quality screening guidelines (Buchman, 1999) were made. Based on these comparisons, the channel sediments in the Chocolate Bayou Channel are considered to be non-hazardous. The quality of this material is described in (Berger/EA, 2006).

Sediments that collect in the Chocolate Bayou Project between dredging cycles have been regularly sampled for grain-size characteristics since the early-1990's. The historical

average sediment grain size is given in the following Table. The sediments in these channel reaches are primarily clays and silts with a small sand fraction. The D_{50} , which gives the median grain size, indicates an overall particle size characteristic of fine silt.

TABLE 4
Sediment And Grain Size Analysis

Project Segment	Average Composition (%)			D_{50} (mm)
	Sand	Silt	Clay	
Chocolate Bayou Channel	12.4	29.0	58.6	0.013

3.10 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

An environmental survey was conducted for the proposed construction of PA 4A to evaluate the potential risks of encountering hazardous, toxic or radioactive waste (HTRW). The assessment methodology included a review of historical land use and a review of regulatory agency databases containing records that include spills, legal and illegal landfills, priority response sites, chemical and fuel storage tanks, and remediation sites. The survey was conducted in accordance with ER 1165-2-132, "Hazardous, Toxic and Radioactive Waste Guidance for Civil Works Projects."

Historical aerial photos, from 1958 to 2006, indicate the land has been used for rice farming and stock grazing. FM 2004 didn't exist in 1958, but appears in a 1964 photo. The Chocolate Bayou channel from West Galveston Bay to the refineries was dredged by 1964, and the Chocolate Bayou refineries were established by 1977. Some petroleum exploration has occurred in the vicinity. A pipeline corridor skirts the south side of FM 2004. PA 4 was constructed and in use by 1987. A review of the regulatory databases indicate there are no HTRW sites or sites of concern in or adjacent to the proposed PA 4A.

3.11 SOCIOECONOMICS AND AESTHETICS

The project vicinity is an area of transit for barge traffic along the Chocolate Bayou Channel. The proposed expanded PA 4 would be located in an upland area, so no construction activities would take place in Chocolate Bay. Routine barge traffic would not be affected by the construction activity. The characteristics of the areas around the project sites are common

around Chocolate Bay. No unique or significant economic activity is generated at the project sites, nor are other areas dependent on economic activity at the project sites for sustained economic activity. Conversely, if the proposed PA expansion is not implemented, ability to maintain the Chocolate Bayou Channel would be curtailed, resulting in shoaled channel conditions which would then lead to draft restrictions or light-loading. These consequences would present economic hardships to the local industries that rely on the channel. Additionally, shoaled conditions could result in vessel groundings and possible chemical spills from damaged barges.

3.12 PUBLIC SAFETY AND AWARENESS

Levee construction operations would entail the use of equipment that could present a safety hazard to the general public. However, the proposed construction would take place on private property where public access is restricted by barbed-wire fencing with locked gates.

Dredging and dredged material discharge operations to the expanded PA 4 would entail the use of equipment that would present a safety hazard to recreational boaters and fishermen. This equipment includes barges, utility boats, dredge anchor floats, and dredge pipeline. This pipeline could be floating or submerged.

3.13 PRIME OR UNIQUE FARMLANDS

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. The soils within the footprint of the proposed expanded PA 4 include approximately 2.3 acres of Bernard clay loam, considered to be prime farmland, and about 0.5 acres of Leton loam, which would be considered prime farmland if drained. Historically, 22.6 acres of the site were Bernard clay loam, but 20.3 acres were previously converted to non-agricultural uses. The remaining 2.3 acres are located in two separate areas about 1,000 feet apart. There are no other tracts of prime farmland present in the immediate project area. There are no tracts of unique farmland present in the immediate project area.

3.14 ENVIRONMENTAL JUSTICE

In compliance with Executive Order (EO) 12898, Federal Action to Address Environmental Justice in Minority and Low-Income Populations, an analysis was performed to determine whether the proposed project would have a disproportionate adverse impact on

minority or low-income population groups in the vicinity of the project area. This analysis consisted of determining characteristics of residential populations in the project area.

The proposed project location is relatively isolated and is bounded by Chocolate Bay and uninhabited areas with several petrochemical plants in close proximity. There are no residential areas in the immediate project vicinity. The Amsterdam community, which is the nearest concentration of human habitation, is about 2.5 miles from the project area.

The project is located in Brazoria County, which has a population of 241,767 living in 81,954 households, according to the 2000 Census. A breakdown of the population is reported as 77.1 percent white, 8.5 percent African American, 0.5 percent Native American, 2.0 percent Asian, and 9.6 percent other; the remaining 2.3 percent are considered multi-racial. Within these groups, approximately 22.8 percent of the population is of Hispanic or Latino origin (USCB, 2008). The median household income is \$48,632.00 (1999 Dollars), with about 10.2 percent of families living below the poverty level (USCB, 2008).

The project area is located within Census Tract 6617, Block Group 3. The total population of this Block Group is 1,161 living in 406 households. A breakdown of this population is reported as 90.5 percent white, 3.9 percent African American, 0.6 percent Native American, and 3.1 percent other; the remaining 1.9 percent are considered multi-racial. Within these groups, approximately 12.4 percent of the population is of Hispanic or Latino origin (USCB, 2008). The median household income is \$58,750.00, with about 10.6 percent of families living below the poverty level (USCB, 2008). Table 5 summarizes these population data.

TABLE 5
Population Characteristics

Geographic Unit	White		Non-White		Families Below Poverty Level	
	Percent	Percent of Brazoria Co.	Percent	Percent of Brazoria Co.	Percent	Percent of Brazoria Co.
Brazoria County	77.1	----	22.9	----	10.2	----
Census Tract 6617, Block Group 3	90.5	0.6	9.5	0.04	10.6	0.05

4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

4.1 EFFECTS OF UPLAND DREDGED MATERIAL PLACEMENT

The greatest environmental effects are associated with dredged material discharge activities rather than dredging. The expanded placement area would be an upland confined area. Adverse environmental effects generally experienced from construction and use of such an area typically include destruction of vegetation; loss of foraging, feeding, nesting, and resting areas for birds, mammals, and reptiles; and long-term suppression of the productivity in the footprint of the area.

When a land area is used for deposition of dredged materials, most of the vegetation is covered or destroyed, particularly where containment levees are used. Recovery of the vegetation usually begins within 6 months. The primary long-term adverse environmental effect resulting from use of upland placement areas is the suppression of vegetative productivity. Because of repeated use, the vegetation is periodically suppressed. Where a placement area is used for the first time, the vegetation will normally change to a lower quality type composed mainly of hardy, drought-resistant weed species. This may lower the productivity of an area for an extended period from a wildlife food and cover standpoint. However, the project area currently provides low quality habitat because of the presence of imported fire ants, and grazing cattle which results in closely-cropped vegetation.

The habitat present in the existing upland PA 4, which provides some wildlife resource value, is growth that has reestablished after placement of maintenance material. So recolonization by invader species is expected to occur after each dredging cycle, mimicking the current habitat throughout the expanded PA.

Once the capacity of an upland PA has been expended, it would no longer be subjected to the conditions of sporadic disturbance which prevents establishment of more mature habitats. Natural processes can then create features, such as depressional areas, which encourage microhabitats and greater biodiversity in both plant and animal species.

Construction and use of expanded PA 4 would permanently displace about 201 acres of degraded grassland prairie. The project area was converted to agricultural use; so there is no remaining native coastal prairie habitat. The acreage that would be impacted is only a small fraction of similar areas in the region, which also includes the BNWR.

4.2 EFFECTS ON WETLANDS

The proposed PA expansion would not have adverse impacts on wetlands. The drainage ditch from the expanded PA would exit in the area of some fringe marsh, but the shoreline at the location where the effluent discharge ditch would be excavated is an eroded scarp where no marsh exists. This ditch would be allowed to vegetate naturally, and because of the excavation depth, the vegetation could include wetland species. The ditch would not be routinely cleared of vegetation, rather it would be cleaned only when drainage is impeded.

4.3 EFFECTS ON WILDLIFE

The proposed action would affect most animals inhabiting the footprint of the expanded area. A few small mammals, primarily rodents would possibly be destroyed. The primary impact, however, would be the loss of degraded grassland habitat, which would cause the displacement of any bird, mammal, and reptile inhabitants. Wildlife which use this area would suffer loss of a small amount of a type of habitat which is plentiful nearby.

Small mammals, reptiles, and amphibians would be forced by dredged material placement to migrate to unaffected areas or seek suitable habitat elsewhere. Reestablishment of upland habitat inside the PA after placement would induce recolonization by terrestrial wildlife until the succeeding maintenance cycle. This would continue for the life of the project. Once the PA is no longer in use, however, maturation of the area as described above can result in greater diversity of a regional habitat that may attract wildlife not ordinarily found there. Neotropical migrant birds, especially, may be attracted to the new uplands if trees become established.

Some short-term disturbance to wildlife adjacent to the PA footprint also would result from earth-moving, and other similar equipment during levee construction and dredged material discharge operations. Seasonal timing of the proposed action is not expected to result in any appreciable reduction of these impacts.

4.4 EFFECTS ON FISHERIES

The proposed expansion is not expected to have any direct impacts to fisheries or oyster production. The PA would be located in an upland area; so it would not be possible for any fish species to venture into the construction area, and the size of the expanded area would provide

additional ponding capacity that would help minimize reintroduction of suspended solids into Chocolate Bay.

4.4.1 Impacts on Essential Fish Habitat

The PA expansion would be located in an upland area; so it would not be possible for fish species to venture into the construction area. Therefore, the proposed expanded PA would not adversely impact EFH or associated managed fishery species.

4.5 EFFECTS ON THREATENED AND ENDANGERED SPECIES

The overall conclusion of the Biological Assessment is that the proposed project is not likely to adversely affect bald eagles, whooping cranes, or some State-listed vascular plants, and would have no effect on other threatened or endangered species, nor would it adversely modify designated or proposed critical habitat. Additionally, the project would have no effect on any species of concern. Although several threatened or endangered species may occur in the project vicinity, no regularly-used preferred habitat is known to exist in the immediate project site. Should any of these species wander into the project vicinity, the size and mobility of these animals would allow them to avoid the immediate project site during construction and dredged material discharge operations. The Biological Assessment addressing Federally-listed species is found at Appendix B. A response to a request for concurrence with the finding of No Effect on listed species under NMFS jurisdiction was not received because of agency policy to neither concur nor disagree with a No Effect conclusion.

4.6 EFFECTS ON HISTORIC RESOURCES

Based on agricultural disturbance, relatively shallow Holocene-age alluvial veneer deposits and the lack of recorded sites in the area, little likelihood exists for the proposed expansion of Placement Area 4 to adversely affect a historic property eligible for or listed on the NRHP.

4.7 EFFECTS ON AIR QUALITY AND NOISE

4.7.1 Impacts on Air Quality

The proposed project is within an area classified as severe non-attainment for ozone, so an applicability analysis (Appendix D) was conducted based on the established criteria to

estimate what the air quality impact would be, and indicate whether a formal conformity determination would be required. The results of the analysis indicated that short-term construction emissions of volatile organic compound (VOC) and nitrogen oxide (NO_x), which are ozone precursors, would amount to 2.63 and 22.8 tons per year, respectively, and would be below their applicable *de minimis* threshold levels that would initiate the requirement for a formal General Conformity determination pursuant to Section 176 (c) of the CAA. Therefore, further conformity analysis is not required, and the resulting emissions would conform to the most recent approved State Implementation Plan (SIP), as required by Section 176 of the CAA.

Construction of the proposed PA expansion would result in short-term increases in air emissions. However, these emissions would be less than the conformity *de minimis* thresholds. Therefore, by definition the proposed project would not (1) cause or contribute to any new violation of any of NAAQS impacts to air quality in the project area, (2) increase the frequency or severity of any existing violation of NAAQS, or (3) delay attainment of the NAAQS or any interim emissions reduction in the project area. Therefore, direct and indirect emissions from this project are not considered regionally significant.

4.7.2 *Impacts of Noise*

Noise from the operation of heavy-duty construction equipment would be generated from implementation of the proposed action. These impacts are expected to be minor in nature and would be temporary, occurring only during the construction period, which is expected to be about two months to accomplish. Dredging activities would be conducted regardless of whether the proposed PA expansion is implemented. There are no sensitive receptors in the project vicinity.

4.8 EFFECTS ON WATER AND SEDIMENT QUALITY

4.8.1 *Water Quality*

Construction of the retaining levees for the proposed expanded PA 4 would take place on an upland area. Therefore, this action is not expected to result in any adverse impacts to water quality in Chocolate Bay.

Operation of the expanded PA 4 during dredged material discharge operations may result in elevated levels of suspended solids (TSS), however these levels are expected to be similar to, or more likely lower than levels experienced from operation of existing PA 4, because of the increased ponding capacity. The expanded PA would provide additional ponding area to

enhance ability for settlement and consolidation of the fine-grained dredged material discharged into the area. The PA effluent would also be decanted over a drop outlet structure, thereby controlling the release of suspended solids. Increases in TSS may also be caused by movement of boats and equipment in the shallow water; however, boat and equipment movement would not increase over what already occurs during use of the existing upland PA 4. Furthermore, Chocolate Bay is often naturally turbid due to wind-induced resuspension of bay sediments; consequently, aquatic organisms are adapted to this type of disturbance. Therefore, any such impacts from dredged material placement operations are expected to be minor and would be temporary, occurring only during the dredging periods, which is expected to be about five weeks at this location.

Elutriate data (Appendix C) do not indicate any definitive trends to suggest that resuspension of contaminants into the water column would result in water quality problems during levee construction or maintenance dredging of this project.

4.8.2 *Sediment Quality*

A comparison of sediment quality data (Appendix C) with sediment quality screening guidelines indicates that the sediments in the region are suitable for discharge into the expanded PA 4. Therefore, unacceptable adverse impacts on sediment quality are not expected to result from levee construction or dredging and discharge operations into the proposed expanded PA.

4.9 EFFECTS FROM HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

Research conducted to determine whether HTRW sites are located in or near the proposed project and the potential for discovery of a site indicate there are no HTRW sites or sites of concern in or adjacent to the proposed expanded PA 4.

Based on the findings of the HTRW survey and regulatory file data, no other HTRW investigations are warranted at this time, and the probability of increased project cost and lost time from discovery, coordination and remediation of contaminated materials from construction of the PA is considered low.

4.10 EFFECTS ON SOCIOECONOMICS AND AESTHETICS

The proposed construction would have no effect on maritime traffic within Chocolate Bay. Construction and use of the proposed PA would not restrict access to the general area for commercial or recreational boating, except for the immediate area near the dredge and dredged

material pipelines. Use of the expanded PA would be implemented as part of routine maintenance dredging in the channel. During such operations, the dredge swings out of the way to allow passage of barge or other traffic. Construction and use of the proposed expanded PA would be identical to the operation of existing PA 4.

There would be minor, temporary impacts to localized aesthetics during the construction activity by the presence and activity of construction equipment. Other than for the containment structures, the area would be similar in appearance to the surrounding landscape. Any such impacts would be identical to those already experienced through the operation of existing PA 4. There would be no long-term significant impacts to aesthetics as a result of project implementation.

4.11 EFFECTS ON PUBLIC SAFETY AND AWARENESS

During levee construction, the immediate area of the project may be hazardous due to lifting and placement of heavy materials. However, access to the area is restricted, so the proposed action is not likely to result in any adverse effects on public safety and awareness.

During dredging, the area immediately around the dredge and pipeline may be hazardous due to the presence of equipment. Service boat traffic will also be increased. These conditions necessitate a higher level of vigilance on the part of the boating public. These impacts are expected to be minor in nature and would be temporary, occurring only during the dredging period, which is expected to take about five weeks.

4.12 EFFECTS ON PRIME OR UNIQUE FARMLANDS

The project contains a small area of soils classified as important farmland that would be permanently converted to non-agricultural use. A Farmland Conversion Impact Rating of the proposed project was undertaken. Results of this rating indicate that no further consideration of prime farmlands is warranted, and there are no tracts of unique farmland present in the immediate project area. Therefore, impacts on prime or unique farmlands are considered to be minor.

4.13 ENVIRONMENTAL JUSTICE

The population data presented in Table 4 indicate that in the project vicinity, there are no disproportionate concentrations of minority populations or families living below the poverty level. Furthermore, the project area is situated several miles from the nearest concentrated

human habitation. Therefore, the proposed action would not create adverse environmental impacts on any person or group of people, nor would there be any disproportionate share of adverse environmental impacts on any minority, low income, disadvantaged, or Native American tribal population within the area.

4.14 CUMULATIVE EFFECTS

Cumulative impacts is defined by the Council on Environmental Quality's (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) as the effects on the environment which result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Ecological effects refer to effects on natural resources and on the components, structures, and functioning of affected ecosystems, whether direct, indirect, or cumulative.

Analysis of aerial photography indicates that there is no discernable remaining native coastal prairie. The entire project vicinity (5.5-mile radius from the proposed PA 4 Expansion), with the possible exception of most of the marsh and open-water areas, was previously impacted. Although some of the impacts are permanent, most of the impacts can be considered as non-permanent, and could be reversed. Permanent impacts include petro-chemical processing plant sites, paved highways, ponds, residential areas, and confined dredged material placement areas. Non-permanent impacts resulted from intensive cattle grazing and conversion for agriculture.

Land within the BNWR is being allowed to revert to grassland habitat. Also, INEOS, Inc., which owns one of the chemical plants and is a landowner in the vicinity, has set aside 4,400 acres of land for a wildlife refuge and coastal prairie restoration project.

Although a Department of the Army permit is not required for work not involving jurisdictional wetlands, a search of permit records for the project vicinity was conducted to determine if permitted or potential actions might include components that would impact uplands in question. This search indicated that numerous permitted actions have occurred in the vicinity. However, no actions were found that represent significant permanent impacts to former or potential prairie areas. Additionally, the representative of the non-Federal sponsor of the Chocolate Bayou Channel has no knowledge of any pending plans for chemical plant expansion or other work that would cause significant impacts in the vicinity.

The proposed expansion is estimated to occupy less than one percent of the area that could potentially be restored to prairie habitat. If the expanded PA is not constructed, there is no commitment by the landowner to cease cattle grazing or agricultural activities. So, there is no guarantee that coastal prairie habitat would be restored. Furthermore, because of the present condition of the land, the proposed expansion does not represent a loss of prairie habitat, rather it is a loss of an area that could be potentially restored to prairie habitat.

Therefore, this action together with previous and future similar projects should not have a significant cumulative effect on biological resources in the region.

5.0 RELATIONSHIP TO OTHER FEDERAL PROJECTS

This plan is part of the Chocolate Bayou Channel, a tributary channel of the Gulf Intracoastal Waterway, which is a Congressionally-authorized, federally-maintained navigation channel. There are no other Federal projects directly affected by this plan.

6.0 RELATIONSHIP OF PLAN TO ENVIRONMENTAL REQUIREMENTS

This assessment was prepared to satisfy the requirements of all applicable environmental laws and regulations and has been prepared using Corps of Engineers Regulation ER 200-2-2, Environmental Quality: Policy and Procedures for Implementing NEPA and the CEQ National Environmental Policy Act regulations (40 CFR Part 1500). The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each.

National Environmental Policy Act - This environmental assessment was prepared in accordance with CEQ regulations to aid in complying with NEPA. The environmental and social consequences of the recommended plan have been analyzed in accordance with the Act and presented in the assessment.

Fish And Wildlife Coordination Act Of 1958, as amended - The proposed plan was coordinated with the USFWS, NMFS, TPWD, and other appropriate State and Federal resource agencies. During the coordination process, the agencies provided information on fish and wildlife resources and planning input that was considered in the development of the project. The USFWS expressed concerns about the project in relation to the diminishing extant of coastal prairie (Appendices A and G).

Magnuson-Stevens Fishery Conservation and Management Act (Public Law 104 - 297) - Congress enacted amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265) in 1996 that established procedures for identifying essential fish habitat and required interagency coordination to further the conservation of federally managed fisheries. Rules published by the National Marine Fisheries Service (50 CFR 600.805 through 600.930) specify that any Federal agency that authorizes, funds, or undertakes or proposes to authorize, fund, or undertake an activity that could adversely affect EFH is subject to the consultation provisions of the Act. No significant impacts to living marine resources or EFH would occur as a result of the project (Sections 3.5.1 and 4.4.1, Appendix A).

Endangered Species Act of 1973, as amended - Informal consultation under Section 7 of this Act was conducted with the USFWS and NMFS regarding threatened, endangered or proposed species, and their critical habitats in the project area. Products of this consultation are located at Appendix B. Available information, investigations, and consultation with the USFWS and NMFS have determined that the proposed project is not likely to adversely affect some federally-listed threatened or endangered species, and would have no effect on other listed species or critical habitat (Sections 3.6 and 4.5). A response to a request for concurrence with the finding of No Effect on listed species under NMFS jurisdiction was not received because of agency policy to neither concur nor disagree with a No Effect conclusion.

Clean Water Act of 1977 - A CWA Section 404(b)(1) evaluation of the proposed action was conducted and is included in Appendix C. A Joint Public Notice was issued with the TCEQ (Appendix A). The §401 State Water Quality Certification for this action was requested, and upon receipt will be included in Appendix C.

National Historic Preservation Act of 1966, as amended - Coordination of the proposed project has been completed with the Texas State Historic Preservation Officer (Appendices A and F). It was determined that no further historic resources investigations are necessary and that no historic properties eligible for the National Register of Historic Places would be impacted by this project (Sections 3.7 and 4.6).

Coastal Zone Management Act (CZMA) of 1972 - This Act requires that all land-use changes in the project area be conducted in accordance with approved State coastal zone management programs. Any project that is located in or that may affect land and water resources in the Texas coastal zone and that requires a Federal license or permit, or is a direct activity of a Federal agency, or is federally funded must be reviewed for consistency with the Texas Coastal Management Program (TCMP). The proposed action is within the coastal boundary defined by

the TCMP and is consistent to the maximum extent practicable with the goals and policies of the TCMP (Appendix E). A letter from the Coastal Coordination Council (CCC) indicating their agreement that the proposed action is in compliance with the TCMP will be included in Appendix E.

Clean Air Act of 1977 - The EPA established nationwide air quality standards to protect public health and welfare. The State of Texas has adopted the National Ambient Air Quality Standards [40 CFR Part 50] as the State's air quality criteria. This project is in Brazoria County, which is a severe nonattainment area for air quality (ozone). Direct and indirect emissions of ozone precursors from construction activities meet EPA Final General Conformity Rule *de minimis* requirements and are not considered regionally significant (Sections 3.8.1 and 4.7.1, and Appendix D).

Executive Order (EO) 11990, Protection of Wetlands - The proposed action has been analyzed for compliance with EO 11990. Impacts to wetlands from the proposed action have been identified in the EA and Section 404(b)(1) analysis. The proposed project is in compliance with this EO (Sections 3.3 and 4.2).

EO 11988, Floodplain Management - This EO directs Federal agencies to evaluate the potential effects of proposed actions in floodplains. The proposed project is situated in a floodplain. In accordance with this EO, a public notice has been circulated to acquaint the public and all interested Federal, State and local agencies, and organizations with details of the proposed action and provide an opportunity for public hearing. The recommended plan would not induce increased flooding in developed areas and would not contribute to increased future flood damages.

CEQ Memorandum dated August 11, 1980, Prime or Unique Farmlands - Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. The proposed project would have only minor impacts on any lands considered prime or unique farmlands (Sections 3.13 and 4.12).

EO 12898, Environmental Justice - This EO directs Federal agencies to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, to achieve environmental justice by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental

effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

The project would not have a disproportionate adverse impact on minority or low-income population groups within the project area (Sections 3.14 and 4.13).

Memorandum of Agreement (MOA) with the FAA to Address Aircraft-Wildlife Strikes - This MOA was executed between the Federal Aviation Administration (FAA), the U.S. Air Force, the U.S. Army, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture. Through this MOA, the agencies establish procedures necessary to coordinate their missions to more effectively address existing and future environmental conditions contributing to aircraft-wildlife strikes throughout the United States. These efforts are intended to minimize wildlife risks to aviation and human safety, while protecting the Nation's valuable environmental resources.

A search was made to determine the proximity of airports to the project site. There are no airports located within five statute miles of the proposed PA. The nearest airport is located more than 11 statute miles away. Therefore, the risk of aircraft-wildlife strikes is considered to be negligible, and no further coordination is required.

7.0 CONCLUSIONS

The following specific conclusions summarize the findings of the EA, as detailed in the environmental analyses in Section 4.0:

- The proposed action would ensure that adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the life of the project. The proposed placement area would also facilitate establishment and management of the nearby BU-created marsh habitats.
- Potential impacts on the aquatic habitat would be either identical, or less than those from operation of existing upland PA 4.
- The proposed expanded area would be located at an upland site. The site is converted agricultural land formally used for rice cultivation and presently used for cattle grazing. The area currently provides low quality habitat for wildlife.

- Threatened or endangered species are not likely to be adversely affected by this action.
- Historic properties or recorded archeological sites would not be affected by the proposed action.
- Direct and indirect emissions of the ozone precursors, and other compounds, meet EPA Final General Conformity Rule *de minimis* requirements and are not considered regionally significant.
- Implementation of the proposed action would not exceed any Federal or local noise guidelines and regulations, and there are no sensitive receptors in the project vicinity.
- There would be no long-term impacts to water quality from the proposed activities.
- There would be no hazardous and/or toxic waste impacts from the proposed action.
- There would be minor, temporary impacts to localized aesthetics during the dredging period, but no long-term impacts. Impacts to barge traffic or other local commercial and recreational boating along the Chocolate Bayou Channel would be identical to those occurring during routine maintenance dredging operations.
- No significant impacts to environmental resources are expected to occur as a result of implementation of the proposed placement area expansion. No adverse cumulative impacts to environmental resources are expected as a result of project implementation.
- The U.S. Army Corps of Engineers finds that the proposed action is not a major Federal action and is in compliance with the Texas Coastal Management Program.
- It is recommended that a Finding of No Significant Impact (FONSI) be prepared and signed for this action.

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APPENDIX A

Public Notice and Responses



REPLY TO
ATTENTION OF

Environmental Section

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

October 22, 2008

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
AND
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PUBLIC NOTICE NO. IWW-NW-2-S-2
(Supplements Public Notice No. IWW-NW-2)

EXPANSION OF PLACEMENT AREA NO. 4

**GULF INTRACOASTAL WATERWAY,
CHOCOLATE BAYOU CHANNEL
BRAZORIA COUNTY, TEXAS**

PURPOSE

This public notice is issued in accordance with the provisions of Federal regulations, Title 33 CFR 337.1 and Title 40 CFR 230, concerning the policy, practice, and procedures to be followed by the U.S. Army Corps of Engineers (USACE) in connection with disposition of dredged or fill material in navigable waters.

This notice is being distributed to interested State, Federal, and local agencies, private organizations, news media, and individuals in order to assist in collecting facts and recommendations concerning the dredging and dredged material disposition for the Gulf Intracoastal Waterway (GIWW) - Chocolate Bayou Channel, Texas.

This public notice supplements PUBLIC NOTICE NOS. IWW-NW-2 and IWW-NW-2-S-1, dated February 15, 1977 and April 19, 2002, respectively, which describe our dredged material placement plan for maintenance of the GIWW - Chocolate Bayou Channel, Texas.

The purpose of this notice is to inform the public that expansion of an existing upland confined placement area is proposed for deposition of material from maintenance dredging of segments of the Chocolate Bayou Channel.

PUBLIC NOTICE NO. IWW-NW-2-S-2

This public notice addresses only changes in the existing dredged material placement plan; specifically, expansion of an existing upland confined placement area is proposed for incorporation into the plan as presented originally by IWW-NW-2 and IWW-NW-2-S-1.

PROJECT LOCATION

The proposed expanded site is located near Chocolate Bay, an arm of West (Galveston) Bay in Brazoria County, Texas. This bay is situated about 26 miles west of Galveston and 17 miles east of Freeport.

PROJECT DESCRIPTION

Maintenance dredging of the Chocolate Bayou Channel was addressed in the Final Environmental Statement (FES) for GIWW - Chocolate Bayou, which was completed and filed with the U.S. Environmental Protection Agency (EPA) in August 1978. In the FES, designated areas for the placement of dredged materials were identified. Additional beneficial use sites were designated as described in an Environmental Assessment dated March 2003. Maintenance dredging of the project is required approximately every four years. The proposed action provides for continued periodic maintenance of the channel to its authorized dimensions.

The work described in this public notice identifies the expansion of an existing upland confined placement area to be used for routine maintenance of the this federally-maintained navigation project. (Enclosed Figures).

NEED FOR WORK

The USACE is responsible for maintaining the Chocolate Bayou Channel to its authorized dimensions to insure navigability of the waterway. The expansion of Placement Area No. 4 will ensure that adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the life of the project. The proposed placement area will also facilitate establishment and management of the nearby marsh habitats being created in PAs 1A and 4A. The expanded PA 4 will be used in conjunction with marsh creation efforts at these sites by providing an area for deposition of dredged material in excess of the volumes needed to achieve desired target elevations at PAs 1A and 4A. Additionally, this proposed expanded PA is needed to provide long-term capacity for maintenance of the channel after these beneficial uses are exhausted.

PLACEMENT AREA

The proposed placement area, to be designated PA No. 4, will be an upland confined site comprising the existing 60-acre PA expanded an additional 201 acres to create a total area of about 261 acres. This area also includes a 116' x 900' effluent discharge corridor. Prior to use, containment levees will be constructed around the entire area except for the discharge corridor which will be excavated to create a drainage ditch. During dredging operations, the dredged material slurry will be discharged into the existing part of PA 4, then be allowed to flow throughout the remainder of the PA where solids will settle. Entrained water will be decanted over a drop-outlet structure located at the head of the discharge corridor and return to Chocolate Bay.

COMPOSITION AND QUANTITY OF MATERIALS

Materials dredged from the Chocolate Bayou Channel consist of sands, silts, and clay. Historical data show average values of 12.4 percent sand, 29.0 percent silt and 58.6 percent clay. Shoaling in the channel is a result of alluvial deposits occurring during high water periods and redistribution of sediments from wind and tidal action in Chocolate Bay. Dredging frequency along this channel is approximately four years. Material excavated during each dredging cycle is approximately 857,600 cubic yards (CY). This results from a shoaling rate of 214,400 CY annually.

Shoal material from the Chocolate Bayou Channel has undergone chemical and grain-size analyses prior to dredging events. Chemical data obtained in conjunction with previous dredging in this channel indicate that no unacceptable environmental impacts due to chemical composition of sediments are expected to occur from the proposed dredged material placement plan.

DREDGING EQUIPMENT

Maintenance dredging of this project is generally performed by a hydraulic cutterhead dredge. This type of equipment utilizes a rotating cutter and a centrifugal pump to excavate and entrain sediment in high velocity water and pumps the slurry through a floating or temporary land-based pipeline to the placement area. Although dredging contractors have different sizes of dredges, it is expected that future dredging for this project would be conducted by a 20-inch (pipeline diameter) or larger cutterhead dredge.

Other types of equipment expected to be used during routine channel maintenance include bulldozers or low-ground pressure marsh vehicles for earthwork and pipeline handling, including

draglines to construct the containment structures, and barges and tow boats to transport pipelines and equipment.

DREDGING BY OTHERS

Dredging or deposition of materials by others are not covered by this notice. The Department of the Army permit program regulates non-Federal dredging activities.

COMPLIANCE WITH LAWS AND REGULATIONS

This dredged material placement plan is being coordinated with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and other Federal, State, and local agencies. Informal consultation procedures also have begun with the USFWS and NMFS in compliance with the Endangered Species Act, as amended. Our initial determination is that the proposed action is not likely to adversely affect any listed threatened or endangered species, nor result in adverse modification of any designated critical habitat.

This notice initiates Essential Fish Habitat consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Our initial determination is that the proposed action will not have a substantial adverse impact on Essential Fish Habitat or federally-managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by, and coordination, with the NMFS.

The proposed dredged material placement plan will also be evaluated with regard to the requirements of Section 404(b)(1) of the Clean Water Act. Water quality certification will be requested from the Texas Commission on Environmental Quality (TCEQ).

It is also our preliminary determination that the proposed action is consistent with the Texas Coastal Management Program (TCMP) to the maximum extent practicable.

The proposed activity will be coordinated with the State Historic Preservation Officer (SHPO). Our initial determination is that the proposed action will not have any adverse impacts on historic or cultural resources.

The following is a partial list of Federal, State, and local agencies with which these activities are being coordinated:

U.S. Environmental Protection Agency, Region 6

U.S. Department of Commerce

PUBLIC NOTICE NO. IWW-NW-2-S-2

U.S. Department of the Interior
U.S. Department of Energy
Eighth Coast Guard District
Budget and Planning Office, Office of the Governor of Texas
Texas Historical Commission
Texas Parks and Wildlife Department
Texas Commission on Environmental Quality
Texas General Land Office
Coastal Coordination Council
The Texas Office of State-Federal Relations
Texas Department of Transportation
Texas Water Development Board
Commissioners' Court of Brazoria County
Brazoria County Conservation and Reclamation District No. 3

STATE WATER QUALITY CERTIFICATION

Texas Commission on Environmental Quality certification is required. The TCEQ is reviewing the proposed project under Section 401 of the Clean Water Act and in accordance with Title 31, Texas Administrative Code Section 279.1-13 to determine if the work would comply with State water quality standards. By virtue of an agreement between the U.S. Army Corps of Engineers and the TCEQ, this public notice is also issued for the purpose of advising all known interested persons that there is pending before the TCEQ a decision on water quality certification under such act. Any comments concerning this work may be submitted to the Texas Commission on Environmental Quality, Attention: 401 Coordinator, MC-150, P.O. Box 13087, Capitol Station, Austin, Texas 78711-13087. The public comment period extends 30 days from the date of publication of this notice. A copy of the public notice with a description of work is made available for review in the TCEQ's Austin office.

The TCEQ may conduct a public meeting to consider all comments concerning water quality if requested in writing. A request for a public meeting must contain the following information: the name, mailing address, and telephone number of the person making the request; a brief description of the interest of the requester, or of persons represented by the requester; and a brief description of how the project would adversely affect such interest.

EVALUATION FACTORS

The decision whether to proceed with the proposed dredged material placement plan will be based on an evaluation of the probable impact of the proposed activity on the public interest.

PUBLIC NOTICE NO. IWW-NW-2-S-2

That decision will reflect the national concern for both protection and utilization of important resources as well as public and environmental safety and economic concerns.

ENVIRONMENTAL DOCUMENTATION

The work described in this notice represents a change to the previous dredged material placement plan. A preliminary review of this proposed dredged material placement plan indicates that an Environmental Impact Statement (EIS) is not required. This preliminary determination of EIS requirement will be changed if information brought forth in the coordination process is of a significant nature. It is anticipated that an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) will fulfill the requirements of the National Environmental Policy Act (NEPA). Single copies of these documents will be available by written request to the address below. The draft EA will also be available online for review in the "Hot Topics" section at: <http://www.swg.usace.army.mil/>.

Designation of the proposed placement plan associated with this Federal project shall be made through the application of guidelines promulgated by the Administrator of the EPA in conjunction with the Secretary of the Army. If these guidelines alone prohibit the designation of this proposed plan, any potential impairment to the maintenance of navigation, including any economic impact on navigation and anchorage which would result from the failure to use this plan, will also be considered.

PUBLIC COMMENT

Persons desiring to express their views or provide information to be considered in evaluating the impact of this work and the future maintenance and operations are requested to mail their comments within 30 days of the date of this notice to:

District Engineer
U.S. Army Engineer District, Galveston
ATTN: CESWG-PE-PR
P.O. Box 1229
Galveston, Texas 77553-1229

or email at: robert.g.hauch@usace.army.mil

The comments should make specific reference to Public Notice No. IWW-NW-2-S-2.

PUBLIC NOTICE NO. IWW-NW-2-S-2

Any person who has an interest, which may be affected by this action, may request a public hearing. The request must be submitted in writing within 30 days of the date of this notice and must clearly set forth the interest which may be affected and the manner in which the interest may be affected by this activity.

Any questions concerning the proposed action may be directed to Mr. Rob Hauch at the email address above.

A handwritten signature in black ink, appearing to read 'D. C. Weston', written in a cursive style.

David C. Weston

Colonel, Corps of Engineers

District Commander

Enclosure

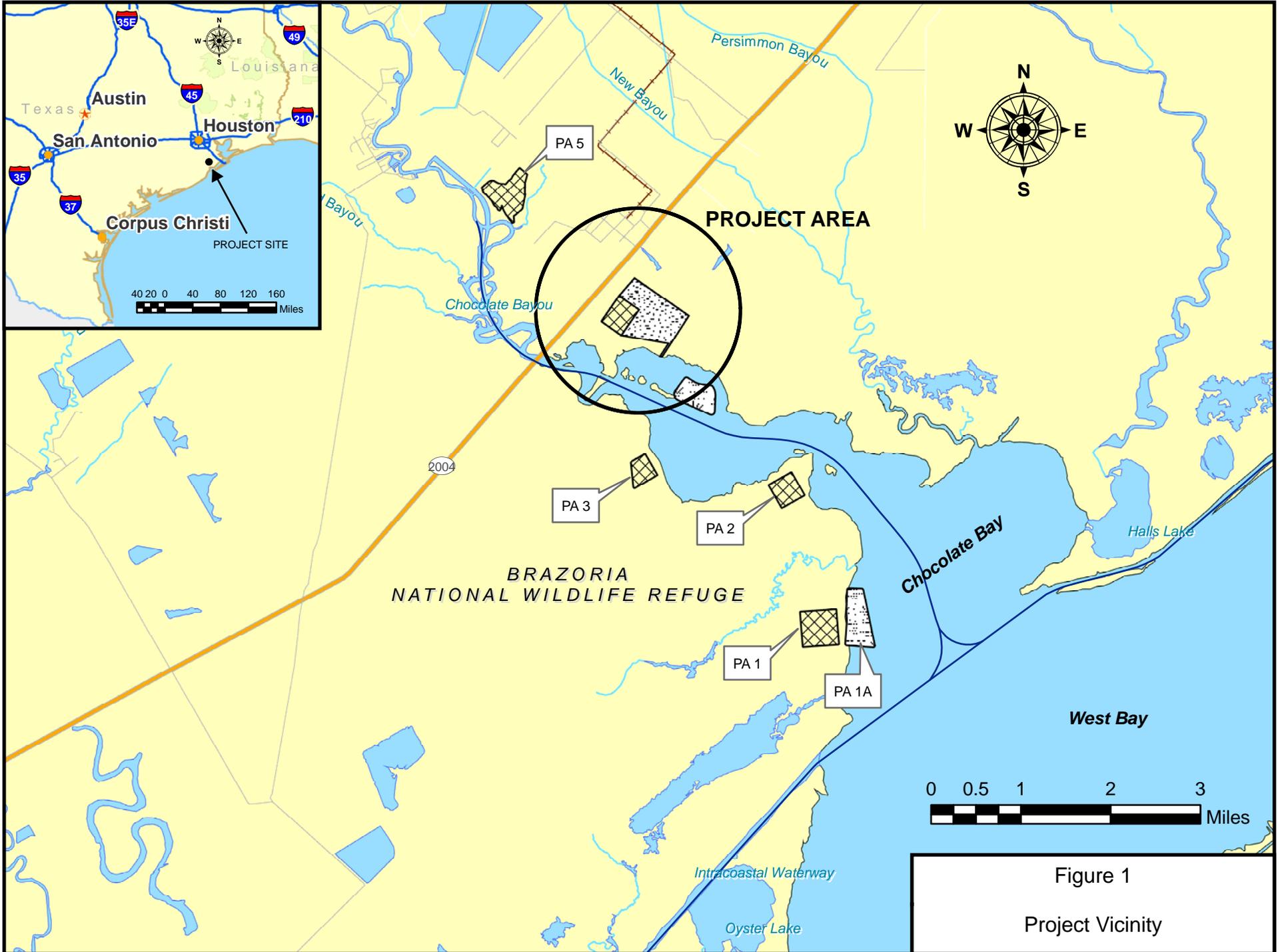


Figure 1
Project Vicinity

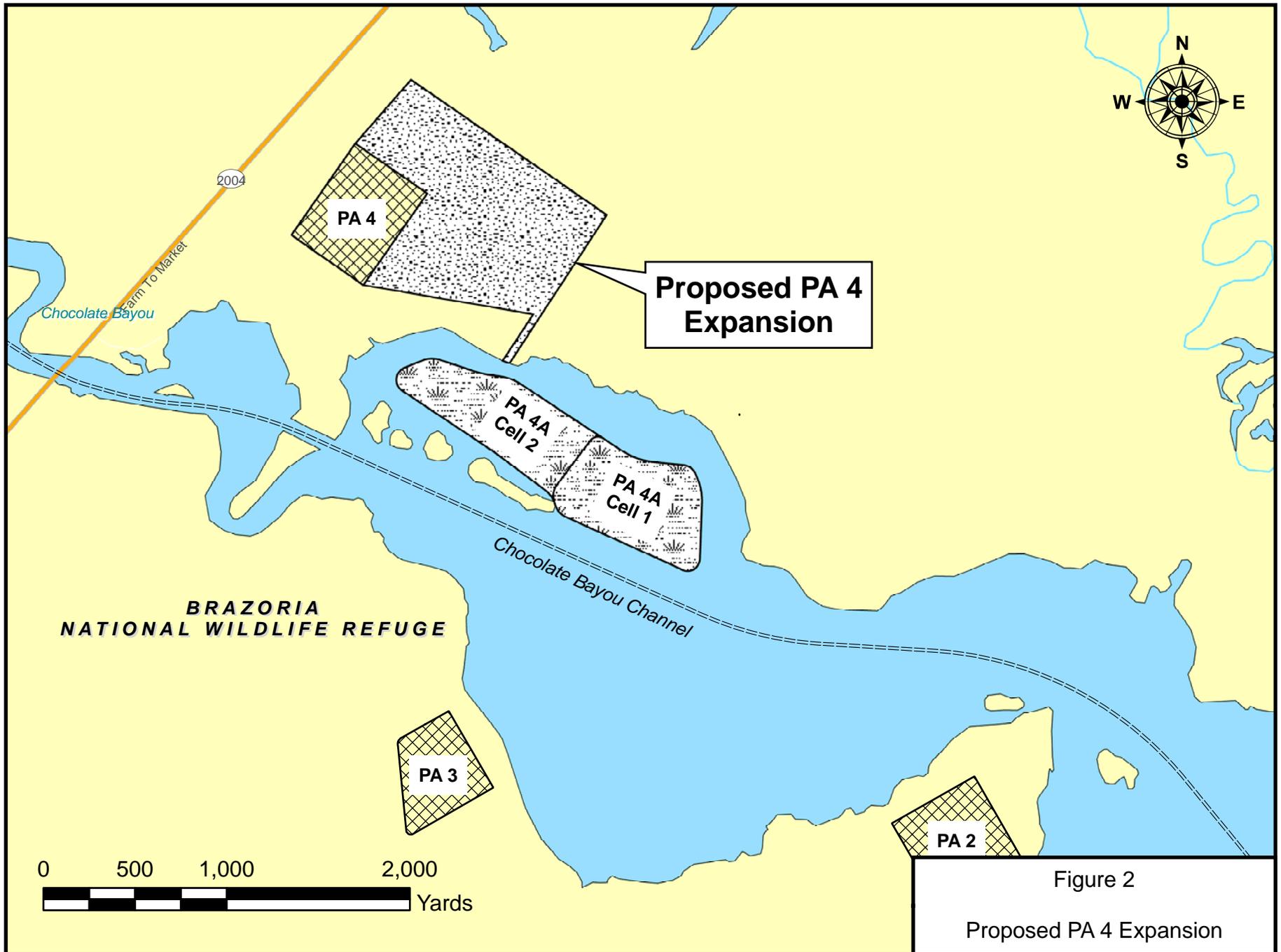


Figure 2
Proposed PA 4 Expansion

United States Department of Agriculture



Natural Resources Conservation Service
101 South Main
Temple, TX 76501-7602

October 29, 2008

District Engineer
U. S. Engineer District, Galveston
ATTN: CESWG-PE-PR
P. O. Box 1229
Galveston, TX 77553-1229

Dear Sir:

We have reviewed the project information and map pertaining to the policy, practice, and procedures to be followed by the U. S. Army Corps of Engineers (USACE) in connection with disposition of dredged or fill material in navigable waters in the Gulf Intracoastal Waterway, Chocolate Bayou Channel, Brazoria County, Texas.

This project should have no significant impact on the environment and natural resources in the area. We do not require any permits, easements, or approvals for activities such as this.

Thank you for the opportunity to review this proposed project.

Sincerely,

Salvador Salinas
For DONALD W. GOHMERT
State Conservationist

Helping People Help the Land

An Equal Opportunity Provider and Employer

Donald W. Gohmert
State Conservationist
Natural Resources Conservation Service
101 South Main
Temple, Texas 76501-7602

COMMENT NO.

RESPONSE

Thank you for your letter.



ALABAMA-COUSHATTA TRIBE OF TEXAS

571 State Park Rd 56 • Livingston, Texas 77351 • (936) 563-1100

November 5, 2008

District Engineer
U.S. Army Engineer District, Galveston
Attn: CESWG-PE-PR
P.O. Box 1229
Galveston, TX 77553-1229

Dear District Engineer:

On behalf of Chief Oscola Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult with us concerning the maintenance activities for the Chocolate Bayou Channel (**IWW-NW-2-S-2**) in Brazoria County.

Our Tribe maintains ancestral associations throughout Texas despite the absence of written records to completely identify Tribal activities, villages, trails, or grave sites. However, it is our objective to ensure significances of Native American ancestry including the Alabama-Coushatta Tribe are administered with the utmost attention.

Upon review of your October 22, 2008 public notice submitted to our Tribe, a determination of immediate impact to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas could not be ascertained. In the event of inadvertent discovery of human remains and/or archaeological artifacts, activity in proximity to the location must cease immediately and appropriate authorities notified, including this office, without delay.

Should you be in need of additional assistance, please do not hesitate to contact us.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "B. Celestine".

Bryant J. Celestine
Historic Preservation Officer

Bryant J. Celestine
Historic Preservation Officer
Alabama-Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

COMMENT NO.

RESPONSE

1. Thank you for your comments.
2. Contract specifications for the proposed work will have requirements regarding procedures to be followed if human remains and/or archaeological artifacts are discovered. Work will be conducted in compliance with the Native American Graves Protection and Repatriation Act (Public Law 101-601, 25 U.S. Code).



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services

17629 El Camino Real #211

Houston, Texas 77058-3051

281/286-8282 FAX 281/488-5882



November 20, 2008

Colonel David C. Weston
U.S. Army Corps of Engineers, Galveston District
P.O. Box 1229
Galveston, Texas 77553

Dear Colonel Weston:

Reference is made to the Joint Public Notice for the Department of the Army, U.S. Army Corps of Engineers, Galveston District (USACE) and Texas Commission on Environmental Quality Public Notice No. IWW-NW-2-S-2 (PN), dated October 22, 2008. This notice supplements Public Notice Nos. IWW-NW-2 and IWW-NW-2-S-1, dated February 15, 1977 and April 19, 2002, respectively, which described the dredge material placement plan for maintenance of the Gulf Intracoastal Waterway (GIWW), specifically the Chocolate Bayou Channel, Texas. The proposed expansion of Placement Area 4 (PA4), located south of FM 2004 on the east side of Chocolate Bay in Brazoria County, Texas, will increase from its current size of 61 acres to just over 261 acres.

The revised Department of the Interior manual Instructions (503 DM 1), dated August 3, 1973, assign responsibility for the Department of the Interior coordination and review of Department of the Army permit applications to the U. S. Fish and Wildlife Service (Service). Our comments are provided in accordance with these instructions and with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661, et seq.) with the provisions of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 703 et seq.) and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.).

Project Description

We have reviewed the PN, plans, aerial photography and conducted a site visit with other resource agency personnel in May 2008. The PN indicates that PA4 will increase from 61 to approximately 261 acres in size and will include a 116' by 900' effluent discharge corridor which will permit entrained water to be returned to Chocolate Bay. According to the PN, the expansion will ensure long term capacity and accommodate the anticipated volume of material to be excavated from the channel over the life of the project. In addition, PA4 is to be used in conjunction with marsh creation efforts when volumes are in excess of what is needed to achieve target elevations at PAs 1A and 4A. Dredging frequency is expected to be approximately every four years and estimated material to be excavated during each dredge cycle is approximately

857,600 cubic yards. PA4 lies on coastal prairie and currently experiences moderate cattle grazing activity.

Threatened and Endangered Species

In a letter dated, October 23, 2008, the Service concurred with the USACE's determination that the project is not likely to adversely affect any federally listed or candidate species or designated critical habitat.

Recommendations

The Service recognizes the USACE's need for planning future dredge cycles and placement of dredged material. The Service recommends the proposed expansion of PA4 be re-evaluated with the intent of fulfilling its commitment to have the Chocolate Bay Beneficial Use sites (PA 1A and 4A) fully functional and protected as originally stated prior to initiating any additional projects. Both sites continue to be non-functional as to their original intent and design. This may be in large part due to the USACE's reduced budget for routine channel operations and maintenance, contracting problems and increased red tape processes that have not allowed for the procurement of necessary water control structures and levee/geotube repairs. These sites were created as refuges for migratory and nesting shorebirds, and while both PA 1A and 4A have experienced some bird activity, neither are close to reaching their potential.

Expansion of the project site will encompass valuable coastal prairie uplands which will always be the most economically and simple alternative for beneficial use material. However, local waterways and bayous are subjected to increased frequency of barge traffic, wake size and sea level rise; all of which cause significant amounts of erosion. The USACE's environmental mission has two focus areas: restoration and stewardship. Responsible restoration and stewardship along the upper Texas coast includes the strategic placement of beneficial use material within the eroded waterways. These actions provide erosion control and salinity moderation along the GIWW shoreline, which happens to contain some of the most productive remaining coastal prairie and wintering waterfowl habitat on the Texas coast. Of the approximately 9 million acres of coastal prairie in pre-settlement, Texas, less than 1% remains due in large part to agricultural and urban development. The Service asks that USACE place the dredge material into environmentally beneficial areas within the waterways and not expand PA4. The Service would welcome the opportunity to coordinate with the USACE to identify additional opportunities for beneficial use placement for private, state and federal landowners.

Should the USACE decide to not consider our recommendation and address our concerns regarding the expansion of PA4, we would like to meet with the project manager and unit leader to discuss these issues further. Thank you for the opportunity to comment on this PN. If you need any additional information, please contact Donna Anderson or me at 281/286-8282.

Sincerely,



Stephen D. Parris
Field Supervisor, Clear Lake ES Field Office

Ss:

Environmental Protection Agency, Marine and Wetland Section 6WQ-EM, Dallas, TX

Texas General Land Office, La Porte, TX

Coastal Permitting Assistance Office, NRC, Corpus Christi, TX

National Marine Fisheries Service, Habitat Conservation Division, Galveston, TX

Texas Commission on Environmental Quality, Watershed Management Div., Austin, TX

Texas Parks and Wildlife Department, Wetlands Conservation Program, Austin, TX

Texas Parks and Wildlife Department, Resource Protection Branch, Dickinson, TX



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

April 17, 2009

Environmental Section

Steve Parris
Field Supervisor
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, Texas 77058

Dear Mr. Parris:

Please reference your letter of November 20, 2008, concerning Public Notice No. IWW-NW-2-S-2 for our proposed expansion of Placement Area (PA) No. 4 along the Chocolate Bayou Channel.

In response to concerns expressed in your letter, we have engaged in discussions and meetings with your staff in an effort to identify additional potential beneficial use (BU) opportunities. Unfortunately, no feasible alternatives have been identified.

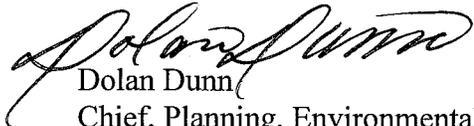
Enclosed is a brief engineering analysis of the future capacity needs for the upper half of the Chocolate Bayou Channel. It is based on a four-year dredging cycle with an estimated average of 450,000 CY per cycle. We view the long-term life of a project to be from 20 to 50 years. The enclosed table indicates that the proposed expansion would fulfill project needs for about 29 years.

The expanded PA 4 is needed for future maintenance of the upper half of the Chocolate Bayou Channel. The next maintenance dredging of this project is scheduled to commence in August of this year. Part of that contract will be devoted to repairing the BU site at PA 4A. This BU site has about 100,000 cubic yards (CY) of remaining capacity until the target marsh elevation is achieved. After this volume of material is deposited, the site will be full, and future efforts will be devoted only to repairs or tweaking to maximize attainment of BU objectives. This site will be filled during this year's dredging, leaving an excess of about 350,000 CY that will have to be placed somewhere. There are no other PAs along the upper reach to accommodate remaining material from this, or future contracts.

We have reached the point where we can no longer delay our process and accomplish needed maintenance dredging on a timely basis. Because no additional feasible BUs have been identified, to be faithful to our mission of providing safe and reliable navigation in a cost-effective manner, we must proceed with our proposed PA 4 expansion. However, this decision does not preclude any future BU opportunities.

We will continue our coordination to optimize the BUs that are implemented for this project. Should you need additional information or have any questions please call Mr. Rob Hauch at (409) 766-3913.

Sincerely,

A handwritten signature in black ink, appearing to read "Dolan Dunn", written in a cursive style.

Dolan Dunn
Chief, Planning, Environmental,
and Regulatory Division

Enclosure

EXPANSION OF PA 4 CHOCOLATE BAYOU, TEXAS

The computations below for the expansion of PA 4 - Chocolate Bayou assumes that we will not be able to use the 47 acres currently occupied by the existing PA 4 footprint. A total cycle period of 4 years and cycle volume from about Station 180+00 upstream to the end of the project of approximately 450,000 CY's is also being considered. The acreage on the tables is the usable acreage surrounding the existing footprint of PA 4.

PA 4 Expansion

			200 ac		150 ac		100 ac	
Avg Int Elev = 10 ft Int Elevs are between 8.2 - 12.5 ft MLT		Assuming 3ft Freeboard	Cap per ft Vol (CY's)	Yrs of Life per Ft Rise	Cap per ft Vol (CY's)	Yrs of Life per Ft Rise	Cap per ft Vol (CY's)	Yrs of Life per Ft Rise
				322,667 CY's	2.87yrs	242,000 CY's	2.15yrs	161,333 CY's
Avg Int. Ground Ht	Levee Ht Ft MLT	Ft of Available Levee Capacity	Yrs of Life Provided	Ft of Lift per cycle	Yrs of Life Provided	Ft of Lift per cycle	Yrs of Life Provided	Ft of Lift per cycle
10.ft	15.ft	2.ft	5.74yrs	1.39ft	4.3yrs	1.86ft	2.87yrs	2.79ft
10.ft	16.ft	3.ft	8.6yrs	1.39ft	6.45yrs	1.86ft	4.3yrs	2.79ft
10.ft	17.ft	4.ft	11.47yrs	1.39ft	8.6yrs	1.86ft	5.74yrs	2.79ft
10.ft	18.ft	5.ft	14.34yrs	1.39ft	10.76yrs	1.86ft	7.17yrs	2.79ft
10.ft	19.ft	6.ft	17.21yrs	1.39ft	12.91yrs	1.86ft	8.6yrs	2.79ft
10.ft	20.ft	7.ft	20.08yrs	1.39ft	15.06yrs	1.86ft	10.04yrs	2.79ft
10.ft	21.ft	8.ft	22.95yrs	1.39ft	17.21yrs	1.86ft	11.47yrs	2.79ft
10.ft	22.ft	9.ft	25.81yrs	1.39ft	19.36yrs	1.86ft	12.91yrs	2.79ft
10.ft	23.ft	10.ft	28.68yrs	1.39ft	21.51yrs	1.86ft	14.34yrs	2.79ft

Other assumptions were we would stay at or near the current levee elevations for the ultimate height. All available feet of capacity also assume that there will be 3 ft of freeboard designed into the levee template. The current levee elevations are on average about 21.9 ft. Average surrounding ground elevations are between 8.2 ft MLT to 12.5 ft MLT. All material to construct new levees would be obtained from the interior of the acreage enclosed. Even though the total acreage delineated was done to avoid potential marsh areas, the 200 acres eventually outlined fit what we needed in terms of capacity, and in particular size of lift per cycle. The size of lift

for the 200 acres is 1.39 ft. That is within the range of what is very manageable in order to dry and consolidate the material inside. The ultimate levee height we were looking at the time was 20 – 25 ft MLT. The current design reflects that and it provides just under 30 yrs of capacity.

Buddy Garcia, *Chairman*
Larry R. Soward, *Commissioner*
Bryan W. Shaw, Ph.D., *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 21, 2008

Mr. Robert Hauch
U.S. Army Corps of Engineers
Galveston District CESWG-PE-RE
P.O. Box 1229
Galveston, Texas 77553-1229

Re: USACE Public Notice No. IWW-NW-2-S-2

Dear Mr. Hauch:

As described in the Joint Public Notice (PN), dated October 22, 2008, the U.S. Army Corps of Engineers (USACE), proposes to expand an existing upland confined placement area for deposition of material from maintenance dredging of segments of the Chocolate Bayou Channel. The project is located near Chocolate Bay, an arm of West Galveston Bay, Brazoria County, Texas.

The USACE is responsible for maintaining the Chocolate Bayou Channel to insure navigability of the waterway. The project proposed in the PN will incorporate the expansion of Placement Area (PA) No. 4 as presented originally by PN Nos. IWW-NW-2 and IWW-NW-2-S-1, which describe the dredged material placement plan for maintenance of the Gulf Intracoastal Waterway (GIWW) – Chocolate Bayou Channel, Texas. The expansion of Placement Area No. 4 will be used for routine maintenance of the federally-maintained navigation project. As proposed, the expansion will add 201 acres of upland to the existing 60-acre PA No. 4 to create a total area of approximately 261 acres.

In addition to the information contained in the public notice, the following information is needed for review of the proposed project. Responses to this letter may raise other questions that will need to be addressed before a water quality certification determination can be made.

1. PA No. 4 is described in the PN as an existing upland confined placement area. Since the proposed placement area expansion is in close proximity to coastal natural resources, please verify that no wetlands or valuable wildlife habitat are located within the footprint of the proposed expansion area.
2. The PN states that the proposed placement area will "facilitate establishment and management of the nearby marsh habitats being created in PAs 1A and 4A." However, it is unclear how the proposed expansion of the existing upland confined placement area will facilitate development of these created marsh habitats. Please have the applicant provide additional information that describes how placement of additional dredged material in the designated confined upland areas will assist with the establishment and management of created marsh habitats in Chocolate Bay.

Mr. Robert Hauch
U.S. Army Corps of Engineers
USACE Public Notice No. IWW-NW-2-S-2
Page 2
November 21, 2008

3. Please have the applicant provide a list of alternative beneficial uses for the channel maintenance dredged material that were identified and evaluated and the justification for not incorporating these uses into this PN.
4. The PN includes a proposed discharge corridor that will be excavated to create a drainage ditch for the discharge of decant water from the confined placement area to Chocolate Bay. As described, the entrained water will flow over a drop-outlet structure located at the head of the drainage ditch. Please note that the effluent discharge from contained placement areas should not exceed a total suspended solids concentration of 300 milligrams per liter.

The Texas Commission on Environmental Quality (TCEQ) looks forward to receiving and evaluating other agency or public comments. Please provide any agency comments, public comments, as well as the applicant's comments, to Mr. Robert Hansen of the Water Quality Division MC-150, P.O. Box 13087, Austin, Texas 78711-3087. Mr. Hansen may also be contacted by e-mail at rhansen@tceq.state.tx.us, or by telephone at (512) 239-4583.

Sincerely,



L'Oreal W. Stepney, P.E., Director
Water Quality Division
Texas Commission on Environmental Quality

LWS/RSH/sp

Enclosure

Ms. L'Oreal W. Stepney, P.E., Director
Water Quality Division
Texas Commission on Environmental Quality
P.O. Box 13087
Capitol Station
Austin, TX 78711-3087

COMMENT NO.

RESPONSE

1. Thank you for your comments.
2. A comprehensive response to your letter will be incorporated in our formal request for a CWA Section 401 Certification.

APPENDIX B

Compliance with the Endangered Species Act



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

July 28, 2008

Environmental Section

Steve Parris
Field Supervisor
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, Texas 77058

Dear Mr. Parris:

This letter is in regard to the maintenance dredging and dredged material placement of material from the Gulf Intracoastal Waterway - Chocolate Bayou Channel Project, in Brazoria County Texas (Enclosed Figures). The Galveston District is currently refining a long-term Dredged Material Management Plan that would use the material beneficially to establish and enhance marsh habitat. Part of this Plan will necessitate the expansion of a confined upland placement area.

To ensure compliance with the requirements of Section 7, subsection (a)(2) of the Endangered Species Act, a list is requested of any species which are listed or proposed to be listed, as well as any critical habitat that may be present in the area of the proposed action.

If you or your staff have any questions regarding this activity, please contact Rob Hauch at (409) 766-3913.

Sincerely,

A handwritten signature in black ink, appearing to read "Carolyn Murphy".

 Carolyn Murphy
Chief, Environmental Section

Enclosure



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services
17629 El Camino Real #211
Houston, Texas 77058-3051
281/286-8282 / (FAX) 281/488-5882



July 27, 2008

Carolyn Murphy
Environmental Section Chief
Department of the Army
Galveston District, Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229

Dear Ms. Murphy,

Thank you for your inquiry as to the status of any threatened, endangered or proposed species as well as critical habitat designation that may lie within the Gulf Intracoastal Waterway - Chocolate Bayou Channel Project in Brazoria County, Texas that is being proposed by the Galveston District.

Please find enclosed general Section 7 information and a reference to our website that has a county by county list of the threatened and endangered species that may occur in the project area.

If you or your staff should have any questions regarding your obligation under the Endangered Species Act, please contact Kathy Nemic, Edith Erfling or Catherine Yeargan at 281/286-8282.

Sincerely,

Stephen Parris
Project Leader

Enclosure

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IN AMERICA 



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services

17629 El Camino Real #211

Houston, Texas 77058-3051



April 2008

This responds to your request for threatened and endangered species information in the Clear Lake Ecological Services Field Office's area of responsibility. According to Section 7(a)(2) of the Endangered Species Act and the implementing regulations, it is the responsibility of each federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed species. Therefore, we are providing information to assist you in meeting your obligations under the Endangered Species Act.

A county by county listing of federally listed threatened and endangered species that occur within this office's work area can be found at

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm>. You should use the county by county listing and other current species information to determine whether suitable habitat for a listed species is present at your project site. If suitable habitat is present, a qualified individual should conduct surveys to determine whether a listed species is present.

After completing a habitat evaluation and/or any necessary surveys, you should evaluate the project for potential effects to listed species and make one of the following determinations:

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 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.

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. You should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation you 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 formal Section 7 consultation with this office.

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.

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The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Endangered Species Act requirements for your projects at <http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm>.

If we can further assist you in understanding your obligations under the Endangered Species Act, please contact Kathy Nemecek, Edith Erfling, or Catherine Yeargan at 281/286-8282.

Sincerely,

A handwritten signature in black ink that reads "Stephen D. Parris". The signature is written in a cursive style with a large, prominent initial "S".

Stephen D. Parris
Field Supervisor, Clear Lake Field Office



Endangered Species List

[Back to Start](#)

List of species by county for Texas:

Counties Selected: Brazoria

Select one or more counties from the following list to view a county list:

- Anderson
- Andrews
- Angelina
- Aransas
- Archer

[View County List](#)

Brazoria County

<u>Common Name</u>	<u>Scientific Name</u>	<u>Species Group</u>	<u>Listing Status</u>	<u>Species Image</u>	<u>Species Distribution Map</u>	<u>Critical Habitat</u>	<u>More Info</u>
bald eagle	<i>Haliaeetus leucocephalus</i>	Birds	DM				P
brown pelican	<i>Pelecanus occidentalis</i>	Birds	DM, E				P
green sea turtle	<i>Chelonia mydas</i>	Reptiles	E, T				P
hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Reptiles	E				P
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Reptiles	E				P
leatherback sea turtle	<i>Dermochelys coriacea</i>	Reptiles	E				P
loggerhead sea turtle	<i>Caretta caretta</i>	Reptiles	T				P
piping Plover	<i>Charadrius melodus</i>	Birds	E, T				P
whooping crane	<i>Grus americana</i>	Birds	E, EXPN				P



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

July 28, 2008

Environmental Section

David M. Bernhart
Assistant RA for Protected Resources
Southeast Regional Office
National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, FL 33701

Dear Mr. Bernhart:

This letter is in regard to the maintenance dredging and dredged material placement of material from the Gulf Intracoastal Waterway - Chocolate Bayou Channel Project, in Brazoria County Texas (Enclosed Figures). The Galveston District is currently refining a long-term Dredged Material Management Plan that would use the material beneficially to establish and enhance marsh habitat. Part of this Plan will necessitate the expansion of a confined upland placement area.

To ensure compliance with the requirements of Section 7, subsection (a)(2) of the Endangered Species Act, a list is requested of any species which are listed or proposed to be listed, as well as any critical habitat that may be present in the area of the proposed action.

If you or your staff have any questions regarding this activity, please contact Rob Hauch at (409) 766-3913.

Sincerely,


Carolyn Murphy
for Chief, Environmental Section

Enclosure

CF:

Mr. Rusty Swafford
National Marine Fisheries Service
Habitat Conservation Division
4700 Avenue U
Galveston, Texas 77551



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Ave. South
St. Petersburg, FL 33701-5505
(727) 824-5312, FAX (727) 824-5309
<http://sero.nmfs.noaa.gov>

AUG 15 2008

F/SER3:TM

Ms. Carolyn Murphy
Chief, Environmental Section
Galveston District, Corps of Engineers
P.O. Box 1229
Galveston, TX 77553-1229

Dear Ms. Murphy:

This correspondence responds to the Corps of Engineers' letter dated July 28, 2008, to the National Marine Fisheries Service (NMFS) concerning the proposed Chocolate Bayou Channel Maintenance Dredge Project in Brazoria County, Texas.

As requested, enclosed is a list of federally-protected species under the jurisdiction of NMFS for the state of Texas.

We look forward to continued cooperation with you in conserving our endangered and threatened resources. If you have any questions regarding the ESA consultation process, please contact Mr. Eric Hawk, fishery biologist, at (727) 824-5312, or by e-mail at Eric.Hawk@noaa.gov.

Sincerely,

David M. Bernhart
Assistant Regional Administrator
Protected Resources Division

Enclosure

File: 1514-22.F.1.TX
Ref: T/SER/2008/05162





Endangered and Threatened Species and Critical Habitats
under the Jurisdiction of the NOAA Fisheries Service

Texas

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	<i>Balaenoptera musculus</i>	Endangered	12/02/70
finback whale	<i>Balaenoptera physalus</i>	Endangered	12/02/70
humpback whale	<i>Megaptera novaengliae</i>	Endangered	12/02/70
sei whale	<i>Balaenoptera borealis</i>	Endangered	12/02/70
sperm whale	<i>Physeter macrocephalus</i>	Endangered	12/02/70
Turtles			
green sea turtle	<i>Chelonia mydas</i>	Threatened ¹	07/28/78
hawksbill sea turtle	<i>Eretmochelys imbricata</i>	Endangered	06/02/70
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered	12/02/70
leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	06/02/70
loggerhead sea turtle	<i>Caretta caretta</i>	Threatened	07/28/78
Fish			
smalltooth sawfish	<i>Pristis pectinata</i>	Endangered	04/01/03

Designated Critical Habitat
None

Species Proposed for Listing
None

Proposed Critical Habitat
None

¹ Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered



Texas

Candidate Species ²	Scientific Name
none	

Species of Concern ³	Scientific Name
Fish	
dusky shark	<i>Carcharhinus obscurus</i>
largetooth sawfish	<i>Pristis pristis</i>
night shark	<i>Carcharhinus signatus</i>
saltmarsh topminnow	<i>Fundulus jenkinsi</i>
sand tiger shark	<i>Carcharias taurus</i>
speckled hind	<i>Epinephelus drummondhayi</i>
Warsaw grouper	<i>Epinephelus nigritus</i>
white marlin	<i>Tetrapturus albidus</i>
Invertebrates	
ivory bush coral	<i>Oculina varicosa</i>

² The Candidate Species List has been renamed the Species of Concern List. The term “candidate species” is limited to species that are the subject of a petition to list and for which NOAA Fisheries Service has determined that listing may be warranted (69 FR 19975).

³ Species of Concern are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

October 14, 2008

Environmental Section

David M. Bernhart
Assistant RA for Protected Resources
Southeast Regional Office
National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, FL 33701

Dear Mr. Bernhart:

This letter is in regard to the maintenance dredging and placement of dredged material from the Gulf Intracoastal Waterway (GIWW) - Chocolate Bayou Channel in Brazoria County, Texas. The Galveston District is currently developing a plan to expand an existing upland confined dredged material placement area.

Please review the enclosed Biological Assessment for the proposed work. The overall conclusion is that the proposed project will have no effect on any federally-listed threatened or endangered species, nor will it adversely modify critical habitat under your jurisdiction. Additionally, the project will have no effect on any species of concern.

I am hereby requesting your written concurrence, pursuant to 50 CFR 402.13, that the proposed action will have no effect on listed species or critical habitat under your jurisdiction.

We appreciate your continued cooperation in allowing us to fulfill our responsibilities under the Endangered Species Act. Should you need additional information or have any questions please call Mr. Rob Hauch at (409) 766-3913.

Sincerely,

A handwritten signature in black ink that reads "Carolyn Murphy".

Carolyn Murphy
Chief, Environmental Section

Enclosure

CF:

Mr. Rusty Swafford
National Marine Fisheries Service
Habitat Conservation Division
4700 Avenue U
Galveston, Texas 77551



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

October 14, 2008

Environmental Section

Steve Parris
Field Supervisor
U.S. Fish and Wildlife Service
17629 El Camino Real, Suite 211
Houston, Texas 77058

Dear Mr. Parris:

This letter is in regard to the maintenance dredging and placement of dredged material from the Gulf Intracoastal Waterway (GIWW) - Chocolate Bayou Channel in Brazoria County, Texas. The Galveston District is currently developing a plan to expand an existing upland confined dredged material placement area.

Please review the enclosed Biological Assessment for the proposed work. The overall conclusion is that the proposed project is not likely to adversely affect bald eagles, brown pelicans, or whooping cranes and will have no effect on other federally-listed threatened or endangered species, nor will it adversely modify critical habitat.

I am hereby requesting your written concurrence, pursuant to 50 CFR 402.13, that the proposed action is not likely to adversely affect, or will have no effect on listed species or critical habitat under your jurisdiction.

We appreciate your continued cooperation in allowing us to fulfill our responsibilities under the Endangered Species Act. Should you need additional information or have any questions please call Mr. Rob Hauch at (409) 766-3913.

Sincerely,


Carolyn Murphy
Chief, Environmental Section

Enclosure

**BIOLOGICAL ASSESSMENT FOR
FEDERALLY-LISTED
THREATENED AND ENDANGERED SPECIES**

EXPANSION OF PLACEMENT AREA NO. 4

**GULF INTRACOASTAL WATERWAY,
CHOCOLATE BAYOU CHANNEL
BRAZORIA COUNTY, TEXAS**

1.0 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. The proposed Federal action is the expansion of an existing upland confined placement area (PA) to be used for deposition of material from maintenance dredging of segments of the Gulf Intracoastal Waterway (GIWW) - Chocolate Bayou Channel (Figures 1 and 2).

This BA is being prepared to assist the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) personnel in fulfilling their obligations under the ESA.

1.2 DESCRIPTION OF THE PROPOSED PROJECT

The proposed expanded site is located near Chocolate Bay, an arm of West (Galveston) Bay in Brazoria County, Texas. This bay is situated about 26 miles west of Galveston and 17 miles east of Freeport. The site is located in the coastal plain that was previously used for rice cultivation. The land currently supports cattle grazing.

The proposed placement area, to be designated PA No. 4, will be an upland confined site comprising the existing 60-acre PA expanded an additional 201 acres to create a total area of about 261 acres. This area also includes a 116' x 900' effluent discharge corridor. Prior to use, containment levees will be constructed around the entire area except for the discharge corridor which will be excavated to create a drainage ditch. During dredging operations, the dredged material slurry will be discharged into the existing part of PA 4, then be allowed to flow throughout

the remainder of the PA where solids will settle. Entrained water will be decanted over a drop-outlet structure located at the head of the discharge corridor and return to Chocolate Bay.

This proposed expansion of Placement Area No. 4 will ensure that adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the life of the project. The proposed placement area will also facilitate establishment and management of the nearby marsh habitats being created in PAs 1A and 4A. The expanded PA 4 will be used in conjunction with marsh creation efforts at these sites by providing an area for deposition of dredged material in excess of the volumes needed to achieve desired target elevations at PAs 1A and 4A. Additionally, this proposed expanded PA is needed to provide long-term capacity for maintenance of the channel after these beneficial uses are exhausted. No final levee elevation has been established for this PA. This will be determined by foundation characteristics and future capacity needs for the site.

2.0 FEDERALLY-LISTED THREATENED AND ENDANGERED SPECIES

The project area is in the coastal vicinity of Brazoria County, Texas. The USFWS and NMFS consider the endangered or threatened species contained in Table 1 as possibly occurring in this county. No other species, and no designated or proposed critical habitat under their jurisdictions were identified as possibly occurring in the project vicinity.

TABLE 1
Federally-Listed Threatened, Endangered, and Species of Concern
for Brazoria County, Texas

Common Name	Scientific Name	Listing Status
BIRDS		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted & being Monitored
Brown Pelican	<i>Pelecanus occidentalis</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
FISH		
Smalltooth Sawfish	<i>Pristis pectinata</i>	Endangered
Dusky Shark	<i>Carcharhinus obscurus</i>	Species of Concern
Sand Tiger Shark	<i>Odontaspis taurus</i>	Species of Concern
Night Shark	<i>Carcharhinus signatus</i>	Species of Concern

TABLE 1 (Cont'd.)
Federally-Listed Threatened, Endangered, and Species of Concern
for Brazoria County, Texas

Common Name	Scientific Name	Listing Status
Speckled Hind	<i>Epinephelus drummondhayi</i>	Species of Concern
Saltmarsh Topminnow	<i>Fundulus jenkinsi</i>	Species of Concern
Warsaw Grouper	<i>Epinephelus nigritus</i>	Species of Concern
Largetooth sawfish	<i>Pristis pristis</i>	Species of Concern
White Marlin	<i>Tetrapturus albidus</i>	Species of Concern
INVERTEBRATES		
Ivory Bush Coral	<i>Oculina varicosa</i>	Species of Concern
MARINE MAMMALS		
Blue Whale	<i>Balaenoptera musculus</i>	Endangered
Finback Whale	<i>Balaenoptera physalus</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Endangered
Sei Whale	<i>Balaenoptera borealis</i>	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Endangered
REPTILES		
Green Sea Turtle	<i>Chelonia mydas</i>	Threatened
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	Endangered
Loggerhead Sea Turtle	<i>Caretta caretta</i>	Threatened
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	Endangered
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Endangered

Source: US Fish & Wildlife Service, letter dated July 27, 2008 and website:
<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm>, and National Marine Fisheries Service, letter dated August 15, 2008

2.1 BALD EAGLE

The bald eagle is a bird of aquatic ecosystems. It frequents estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. However, such areas must have an adequate food base, perching areas, and nesting sites to support the birds. In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and that offer good perch trees and night roosts (60.FR 36000-36010). The bald eagle has been reported along the entire coast of Texas, where it feeds

on fish and waterfowl in the estuaries, rivers, and lakes, but it is most abundant inland away from the coast in more secluded forested regions. The nesting that does occur near the coast takes place along the middle and upper Texas Coast, where tall trees suitable for nesting are found (USACE, 1995). Abundant food items can be found in the project vicinity, so some feeding could occur, however, this species is not likely to occur in the project area.

2.2 BROWN PELICAN

The brown pelican is largely found in coastal and near-shore areas. The brown pelican almost completely disappeared from the coast of Texas by the 1960s, largely due to the use of agricultural pesticides which bioaccumulate in the marine food chain and cause reproductive failure (King et al., 1977; Schreiber, 1980; USFWS, 1980, 1985). Since then, the use of chlorinated hydrocarbons for pest control has declined and the brown pelican has recovered and spread through its original range. It is now common along the Texas coast and nests on several isolated islands where they are safe from predators such as raccoons and coyotes. Foraging pelicans are common along the Texas Coasts and may be found in the project area.

2.3 PIPING PLOVER

The northern Great Plains and Great Lakes populations of the piping plover migrate along the Texas coast from fall through spring, and feed in moist sand along beaches and sand-mud flats around inlets and estuaries (Chapman, 1984; Haig, 1987). The major portion of the two populations now winters along North and South Padre Island and Bolivar Flats in Texas (50 FR 50726-50733; Haig and Oring, 1985). Loss of wintering habitat is a significant threat to the bird since so much of its population winters in Texas. Critical habitat was designated for this species; the nearest critical habitat unit is TX-34 located on west Galveston Island, about 5,000 feet from the project site. The next closest unit is TX-35, located on Galveston's Big Reef, about 28 miles from the project.

Piping plovers can occasionally be seen in the general vicinity of the project. However, these species are transitory and the chances of them occurring at one particular site is very low.

2.4 WHOOPING CRANE

The Aransas National Wildlife Refuge and vicinity serves as the sole wintering grounds for the only breeding population of whooping cranes. Each Fall, the cranes fly 2,600 miles from northern Canada to the oak savannahs, salt flats and bays where they feed on crabs, clams, shrimp, frogs, small fish, crayfish, snails, roots and tubers of plants, as well as acorns, sorghum and other grains (Oberholser, 1974). Whooping cranes may occasionally use salt marsh areas away from their

wintering grounds, particularly during migration. Normally whooping cranes do not stray from their traditional breeding and feeding grounds. The whooping crane is a potential migrant in the vicinity. Although blue crab, which is a preferred food item, can be found in the project vicinity, this species is not likely to occur in the project area.

2.5 SMALLTOOTH SAWFISH

Smalltooth sawfish inhabit shallow coastal waters of tropical seas and estuaries and are usually found in shallow waters very close to shore over muddy and sandy bottoms. They are often found in sheltered bays, on shallow banks, and in estuaries or river mouths. This species has been reported in the Pacific and Atlantic Oceans, and Gulf of Mexico; however, the U.S. population is found only in the Atlantic Ocean and Gulf of Mexico. Historically, the U.S. population was common throughout the Gulf of Mexico from Texas to Florida, and along the east coast from Florida to Cape Hatteras. The current range of this species has contracted to peninsular Florida, and smalltooth sawfish are relatively common only in the Everglades region at the southern tip of the state. Anecdotal observations, indicate that this species was once common throughout its historic range and that smalltooth sawfish have declined dramatically in U.S. waters over the last century.

Sawfish are extremely vulnerable to overexploitation because of their propensity for entanglement in nets, their restricted habitat, and low rate of population growth.

The decline in smalltooth sawfish abundance has been caused primarily by bycatch in various fisheries, especially in gill nets. Because adults can grow very large, and potentially damage fishing gear or even pose a threat to fishermen, many incidentally captured sawfish were killed before they were removed from fishing gear, even if the fishermen had no interest in keeping them.

Juvenile sawfish use shallow habitats with a lot of vegetation, such as mangrove forests, as important nursery areas. Many such habitats have been modified or lost due to development of the waterfront in Florida and other southeastern states. The loss of juvenile habitat likely contributed to the decline of this species (NMFS 2008a). It is unlikely that this species occurs in the project area.

2.6 DUSKY SHARK

The dusky shark is a large shark with a wide-ranging distribution in warm-temperate and tropical continental waters. It is coastal and pelagic in its distribution, where it occurs from the surf zone to well offshore. This shark is not commonly observed in estuaries due to avoidance of low salinity water. Currently, the principal threat to this species is from recreational shark fisheries. It is

also taken as bycatch during other commercial fishery activities (NMFS, 2008b). Habitat for this species does not exist in the project vicinity.

2.7 SAND TIGER SHARK

The sand tiger shark has a broad inshore distribution. This shark occurs in all warm and temperate seas except for the Eastern Pacific Ocean. They are generally coastal, usually being found from the surf zone down to depths around 75 feet. They may also be found in shallow bays. They usually live near the bottom, but may be found throughout the water column. The biggest threat is from overfishing and take as bycatch during other fishing activities. These sharks are very susceptible to fisheries because they aggregate in large numbers at particular coastal spots at certain times of year. These aggregations have been targeted in the past by fisheries. In addition, the juveniles are most common and dependent on some of the most polluted estuaries of the eastern U.S. (NMFS, 2008c). Habitat for this species does not exist in the project vicinity.

2.8 NIGHT SHARK

The night shark is a deep-water shark reported in waters throughout the Atlantic Ocean, and parts of the Gulf of Mexico. This shark is usually found at depths ranging 900-1200 feet during the day and 610 feet at night. The main threat to this shark has been mortality associated with fishing. The shark is caught mainly on longlines in about 100 fathoms, usually at night (NMFS, 2008d). Habitat for this species does not exist in the project vicinity.

2.9 SPECKLED HIND

The speckled hind inhabits warm, moderately deep waters from North Carolina to Cuba, including Bermuda, the Bahamas and the Gulf of Mexico. The preferred habitat is offshore rocky bottoms at depths ranging from 80 to 1,300 feet but, are most common from 200 to 400 feet. The major threat to this species is mortality as a result of fishing (NMFS, 2008e). Habitat for this species does not exist in the project vicinity.

2.10 SALTMARSH TOPMINNOW

The saltmarsh topminnow is endemic to the north-central coast of the Gulf of Mexico of the southern United States from Galveston Bay, Texas eastward to Escambia Bay, Florida. This species tends to live in salt marshes and estuaries, and requires shallow flooded marsh surfaces for breeding and feeding. Coastal erosion and man-made conversions of marsh habitat to other uses is thought to

be the greatest threat to this species (NMFS, 2008f). It is possible that this species occurs in the project area.

2.11 WARSAW GROUPER

The warsaw grouper is a very large fish found on the deep-water reefs of the western Atlantic Ocean and Gulf of Mexico. This fish ranges from Massachusetts to the Florida Keys and throughout much of the Gulf of Mexico to the Yucatan Peninsula. This species inhabits deepwater reefs on the continental shelf break in waters 180 to 1,700 feet deep; juveniles can occasionally be found in shallow-water reefs and jetties. The major threat is mortality as a result of fishing and take as bycatch during other fishing activities (NMFS, 2008g). Habitat for this species does not exist in the project vicinity.

2.12 LARGETOOTH SAWFISH

Largetooth sawfish are generally large anadromous fish that historically inhabited warm-temperate and tropical waters in the Atlantic and eastern Pacific Ocean, and freshwater habitats in Central and South America and Africa. Historical occurrences in North America strictly confined to shallow (<10 m), near-shore, warm-temperate and tropical waters (>18-30°C), estuarine localities, partly enclosed lagoons, and similar situations. In the United States, largetooth sawfish were reported mainly along the Texas coast and east into Florida waters, but reported occurrences of this species in U.S. waters were rare and this species is considered to be extirpated in the U.S.

Largetooth sawfish produce a small number of young, resulting in a very low intrinsic rate of population growth for these species.

Incidental commercial catch was likely the most significant factor in the decline of sawfish populations in U.S. waters. Sawfish are extremely vulnerable to overexploitation due to their exceptional propensity for entanglement in net gear, their restricted habitat, and their low intrinsic rate of increase. Habitat degradation likely impacts the species given their inshore distribution (NMFS, 2008h). It is unlikely that this species occurs in the project area.

2.13 WHITE MARLIN

White marlin are found in offshore waters throughout the tropical and temperate Atlantic Ocean and adjacent seas. White marlin preferred habitat is deep blue water over 100 m with salinity around 35 ppt and a surface temperature of about 22°C. Prey items include a variety of fishes,

crustaceans, and cephalopods. White marlin are mostly caught as bycatch in international longline fisheries (NMFS, 2008i). Preferred habitat for this species does not exist in the project vicinity.

2.14 IVORY BUSH CORAL

Ivory Bush Coral ranges from Cape Hatteras North Carolina through the Gulf of Mexico and Caribbean, but the main population of concern is located off east-central Florida. Colonies of this coral are found to depths of 152 m depth on substrates of limestone rubble, low-relief limestone outcrops, and high-relief, steeply sloping prominences. The primary threat is habitat damage caused by mechanical fishing gear, trawls, and anchors that yield a rubble substrate which is not conducive to coral recruitment (NMFS, 2008j). The proposed project is not located within the historical range for this species, nor does suitable spawning habitat exist in the vicinity.

2.15 WHALE SPECIES

The five species of whales listed by the NMFS are known to occur in waters off the Texas coast. Only eight whale strandings were reported through 1992 (USEPA, 1992). Of the eight stranded whales, seven were identified by the NMFS. Five were sperm whales, one was a right whale, and one was a fin whale. Whales are open-ocean species and would not be expected to enter the shallow waters of the project site. Historical records indicate that it is unlikely that any of these species will appear within the project area.

2.16 SEA TURTLES

Of the five species of endangered and threatened sea turtles known to occur in the Gulf, only the loggerhead, green, and Kemp's Ridley normally enter bays; none of which are likely to occur in the proposed project area.

The loggerhead sea turtle frequents the temperate waters of the continental shelf along the Atlantic Ocean and Gulf of Mexico, where it forages around rocks, coral reefs, and shellfish beds. Sub-adults will also commonly enter bays, lagoons, and estuaries. There are scattered records of loggerhead sea turtles within the Texas bays, all of which were subadults.

Juvenile or subadult green sea turtles are known to inhabit lagoon waters and bays along the Florida and Texas coasts, especially where there is submerged vegetation available for grazing.

The Kemp's ridley sea turtle is the most critically endangered sea turtle. The primary range of the Kemp's ridley sea turtle is the Gulf of Mexico, but it also utilizes shallow water bays

throughout its known distribution. Distribution appears closely related to the abundance of blue crabs, a favorite food item (Lutcavage and Musick, 1985). A favorite feeding ground is the crab-rich waters adjacent to the Mississippi Delta, east of Sabine Pass (Hildebrand, 1979).

The hawksbill turtle, listed as endangered by the NMFS, is rare in Texas coastal waters. Adults are extremely rare, and Hildebrand (1983) believes that the hawksbills occurring in Texas waters are waifs. This species is not likely to be found in the project vicinity.

The leatherback turtle is rare along the Texas coast. This is not surprising because the leatherback is generally considered to be a pelagic species, tending to keep to deeper offshore waters, where it feeds primarily on jellyfish. Fritts *et al.* (1983), however, found this turtle more frequently in shallower waters in the Gulf than previously supposed. Leatherback nests were recorded on Padre Island in the 1930s - 40s. Since that time, no leatherback nests have been located anywhere in Texas until one nest was observed at Padre Island National Seashore in 2008 (NPS, 2008a & 2008b). There are no known aggregation sites or feeding areas in the project area. Therefore, this species is not likely to be found in the project vicinity.

3.0 EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES

3.1 EFFECTS ON BALD EAGLE

Bald eagles may be observed along the Texas Coast and may be found in the project area. However, no nesting or roosting sites are located in the immediate project site. But, because abundant food may be found in the vicinity, some potential feeding may occur. Therefore, it is determined that the proposed project is not likely to adversely affect on this species.

3.2 EFFECTS ON BROWN PELICAN

Foraging pelicans are common along the Texas Coast and may be found in the project area. However, no nesting, or roosting sites are located in the immediate project site. Therefore, it is determined that the proposed project is not likely to adversely affect on this species.

3.3 EFFECTS ON PIPING PLOVER

The piping plover utilizes coastal beaches and tidal flats. The nearest unit of designated critical habitat is located about a mile from the proposed project area, and preferred habitat for this species does not exist in the project site. Therefore, it is determined that the proposed project will have no effect on this species, nor will it adversely modify critical habitat.

3.4 EFFECTS ON WHOOPING CRANE

The whooping crane is potential migrant in the vicinity. Although blue crab, which is a preferred food item, can be found in the project vicinity, this species is not likely to occur in the project area. Therefore, it is determined that the proposed project is not likely to affect this species, nor will it adversely modify critical habitat.

3.5 EFFECTS ON SMALLTOOTH SAWFISH

Habitat for the smalltooth sawfish can be found in the project vicinity. Nevertheless, it is unlikely that this species occurs in the project area. Furthermore, the proposed PA expansion will be located in an upland area; so it would not be possible for any fish species to venture into the construction area. Therefore, it is determined that the proposed project will have no effect on this species.

3.6 EFFECTS ON FISH SPECIES OF CONCERN

With the possible exception of the saltmarsh topminnow and largemouth sawfish, habitat for these species does not exist in the project vicinity. Although there is a possibility that the saltmarsh topminnow may occur in the project area, the proposed PA expansion will be located in an upland area; so it would not be possible for these, or any other, fish species to venture into the construction area. Therefore, it is determined that the proposed project will have no effect on fish species of concern.

3.7 EFFECTS ON IVORY BUSH CORAL

Ivory bush coral does not exist in the project vicinity, nor does suitable habitat for corals exist. Therefore, it is determined that the proposed project will have no effect on this species.

3.8 EFFECTS ON WHALES

Whales occur in offshore waters and none of these species are likely to wander into shallow coastal estuaries. Therefore, it is determined that the proposed project will have no effect on these species.

3.9 EFFECTS ON SEA TURTLES

While sea turtles may occur in the project area, the proposed PA expansion will be located in an upland area; so turtles would not venture into the construction area, and no nesting habitat would be affected. Furthermore, maintenance dredging would be conducted by cutterhead dredge. Therefore, it is determined that the proposed project will have no effect on these species.

4.0 CONCLUSIONS

The overall conclusion is that the proposed project is not likely to adversely affect bald eagles, brown pelicans, or whooping cranes and will have no effect on other federally-listed threatened or endangered species, nor will it adversely modify critical habitat. Additionally, the project will have no effect on any species of concern. Although several threatened or endangered species may occur in the project vicinity, no regularly used habitat is known to exist in the immediate project site. Should any of these species wander into the project vicinity, the size and mobility of these animals would allow them to avoid the immediate project site during construction and dredged material discharge operations.

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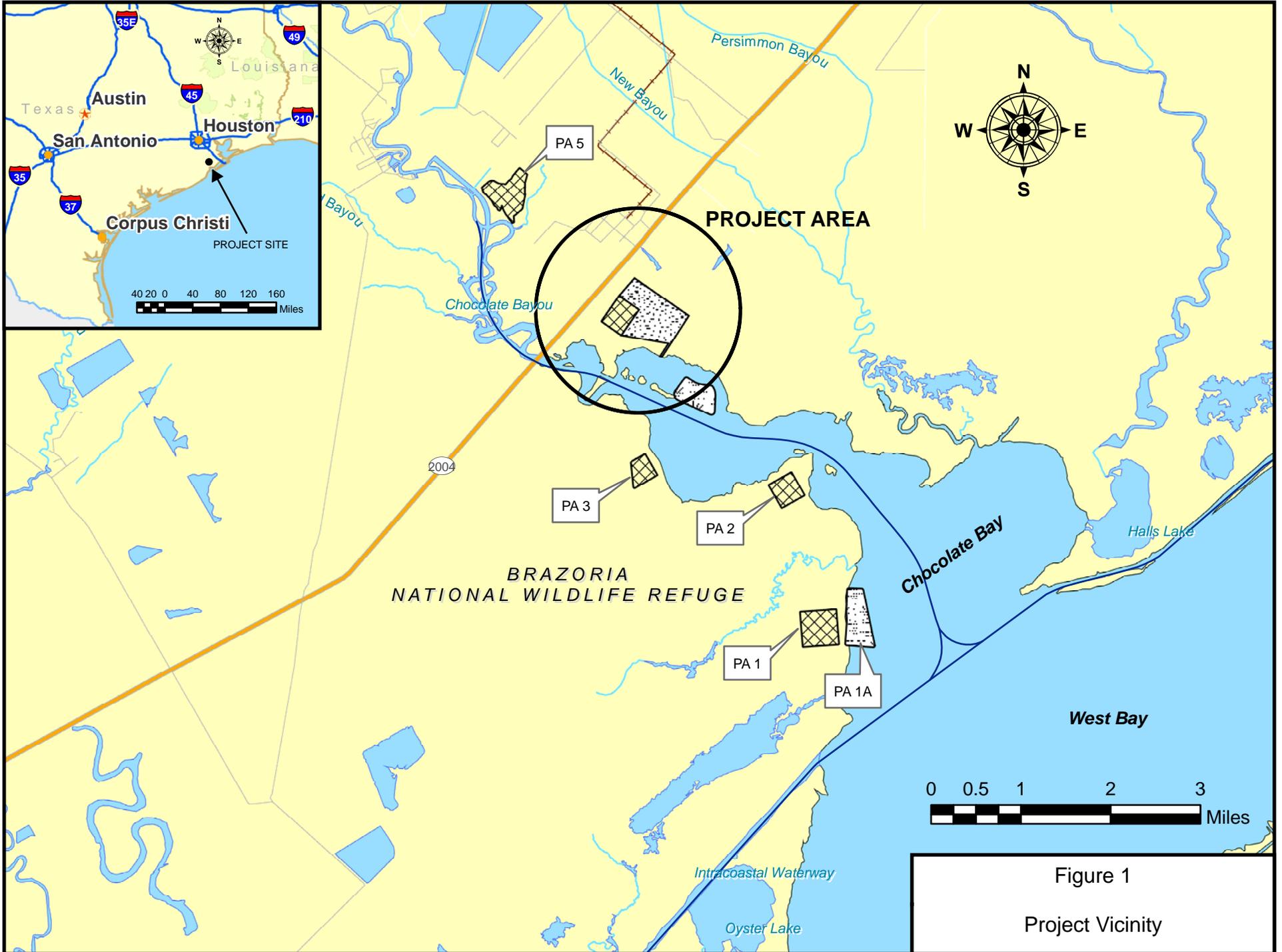


Figure 1
Project Vicinity

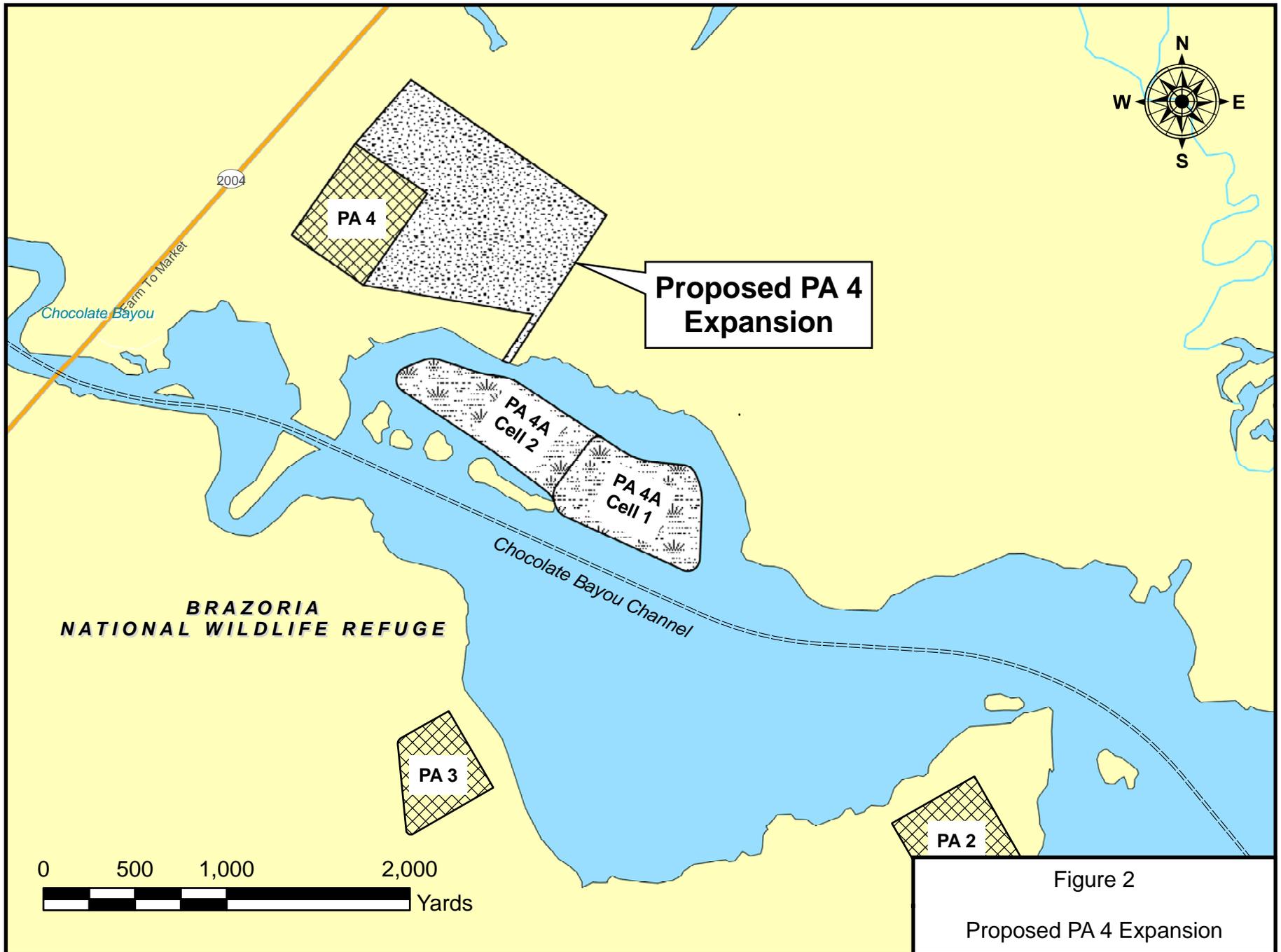


Figure 2
Proposed PA 4 Expansion



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Division of Ecological Services
17629 El Camino Real #211
Houston, Texas 77058-3051
281/286-8282 / (FAX) 281/488-5882



December 15, 2008

Carolyn Murphy
Chief, Environmental Section
Galveston District, Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229

Dear Ms. Murphy:

Thank you for your letter dated October 14, 2008 requesting our concurrence with your determination that the proposed expansion of Placement Area 4 (PA 4) located near Chocolate Bayou Channel, Brazoria County, Texas, is not likely to adversely affect any federally listed threatened and endangered species. The US Army Corp of Engineers (USACE) proposes to expand PA 4 (currently 60 acres in size) to approximately 261 acres to include an effluent discharge corridor. The expansion will ensure adequate long-term capacity is provided to accommodate the anticipated volume of material to be excavated from the channel over the life of the project.

Our comments are provided in accordance with the provisions of the Endangered Species Act of 1973 (87) Stat. 884, as amended.

The U.S. Fish and Wildlife Service concurs that the proposed project is not likely to adversely affect any federally listed or candidate species or designated critical habitat under our jurisdiction. This concurrence is based upon a review of Service files and information provided by the USACE. In the event 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.

If you have any questions, or need additional information, please contact Donna Anderson at 281/286-8282.

Sincerely,

for Stephen D. Parris
Field Supervisor, Clear Lake ES Field Office

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APPENDIX C

Clean Water Act Section 404(b)(1) Evaluation and Section 401 Water Quality Certification

EVALUATION OF SECTION 404(b)(1) GUIDELINES (SHORT FORM)

PROPOSED PROJECT: Expansion of Placement Area No. 4, Gulf Intracoastal Waterway, Chocolate Bayou Channel, Brazoria County, Texas.

	Yes	No*
1. Review of Compliance (230.10(a)-(d))		
A review of the proposed project indicates that:		
a. The placement represents the least environmentally damaging practicable alternative and, if in a special aquatic site, the activity associated with the placement must have direct access or proximity to, or be located in the aquatic ecosystem, to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative).	X	
b. The activity does not appear to:		
1) Violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act;	X	
2) Jeopardize the existence of Federally-listed endangered or threatened species or their habitat; and	X	
3) Violate requirements of any Federally-designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies).	X	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, an economic values (if no, see values, Section 2)	X	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see Section 5)	X	

	Not Applicable	Not Significant	Significant*
2. Technical Evaluation Factors (Subparts C-F) (where a 'Significant' category is checked, add explanation below.)			
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)			
1) Substrate impacts	X		
2) Suspended particulates/turbidity impacts		X	
3) Water column impacts		X	
4) Alteration of current patterns and water circulation	X		
5) Alteration of normal water fluctuation/hydroperiod	X		
6) Alteration of salinity gradients	X		
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D)			
1) Effect on threatened/endangered species and their habitat	X		
2) Effect on the aquatic food web	X		
3) Effect on other wildlife (mammals, birds, reptiles and amphibians)		X	

	Not Applicable	Not Significant	Significant*
2. Technical Evaluation Factors (Subparts C-F) (where a 'Significant' category is checked, add explanation below.)			
c. Special Aquatic Sites (Subpart E)			
1) Sanctuaries and refuges	X		
2) Wetlands		X	
3) Mud flats	X		
4) Vegetated shallows	X		
5) Coral reefs	X		
6) Riffle and pool complexes	X		
d. Human Use Characteristics (Subpart F)			
1) Effects on municipal and private water supplies	X		
2) Recreational and Commercial fisheries impacts	X		
3) Effects on water-related recreation	X		
4) Aesthetic impacts		X	
5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves	X		

	Yes
3. Evaluation of Dredged or Fill Material (Subpart G)	
a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material (check only those appropriate)	
1) Physical characteristics	X
2) Hydrography in relation to known or anticipated sources of contaminants	X
3) Results from previous testing of the material or similar material in the vicinity of the project	X
4) Known, significant sources of persistent pesticides from land runoff or percolation	
5) Spill records for petroleum products or designated (Section 311 of Clean Water Act) hazardous substances	X
6) Other public records of significant introduction of contaminants from industries, municipalities or other sources	
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	

List appropriate references:

- 1) Unpublished Corps of Engineer data, Chocolate Bayou Channel – Sampling and Chemical Analysis Brazoria County, Texas, 2006 (Attached).
- 2) National Response Center – Public Report URL <http://www.nrc.uscg.mil/>

	Yes	No
b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and placement sites and not likely to degrade the placement sites, or the material meets the testing exclusion criteria.	X	

	Yes
4. Placement Site Delineation (230.11(f))	
a. The following factors as appropriate, have been considered in evaluating the placement site:	N/A
1) Depth of water at placement site	
2) Current velocity, direction, and variability at placement site	
3) Degree of turbulence	
4) Water column stratification	
5) Discharge vessel speed and direction	
6) Rate of discharge	
7) Fill material characteristics (constituents, amount, and type of material, settling velocities)	
8) Number of discharges per unit of time	
9) Other factors affecting rates and patterns of mixing (specify)	

List appropriate references:

	Yes	No
b. An evaluation of the appropriate factors in 4a above indicates that the placement site and/or size of mixing zone are acceptable.	X	

	Yes	No
5. Actions to Minimize Adverse Effects (Subpart H)		
All appropriate and practicable steps have been taken, through application of recommendations of 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X	

List actions taken:

- 1) Water to be drained from the expanded confined placement area would be controlled by an overflow weir that would allow sediments to settle within the area. This will minimize release of suspended solids into Chocolate Bay.

	Yes	No*
6. Factual Determination (230.11)		
A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:		
a. Physical substrate at the placement site (review Sections 2a, 3, 4, and 5 above)	X	
b. Water circulation, fluctuation and salinity (review Sections 2a, 3, 4, and 5)	X	
c. Suspended particulates/turbidity (review Sections 2a, 3, 4, and 5)	X	
d. Contaminant availability (review Sections 2a, 3, and 4)	X	
e. Aquatic ecosystem structure and function (review Sections 2b and c, 3, and 5)	X	
f. Placement site (review Sections 2, 4, and 5)	X	
g. Cumulative impacts on the aquatic ecosystem	X	
h. Secondary impacts on the aquatic ecosystem	X	

7. Evaluation Responsibility
a. This evaluation was prepared by: Robert G. Hauch Position: Physical Scientist

8. Findings	Yes
a. The proposed placement site for discharge of fill material complies with the Section 404(b)(1) Guidelines.	X
b. The proposed placement site for discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines with the inclusion of the following conditions:	

List of conditions:

c. The proposed placement site for discharge of dredged or fill material does not comply with the Section 404(b)(1) Guidelines for the following reason(s):	
1) There is a less damaging practicable alternative	
2) The proposed discharge will result in significant degradation of the aquatic ecosystem	
3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem	

<u>4/30/2009</u> Date	 CAROLYN MURPHY Chief, Environmental Section
--------------------------	--

NOTES:

- * A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

Negative responses to three or more of the compliance criteria at the preliminary stage indicate that the proposed projects may not be evaluated using this “short form” procedure. Care should be used in assessing pertinent portions of the technical information of items 2a-e before completing the final review of compliance.

Negative response to one of the compliance criteria at the final stage indicates that the proposed project does not comply with the Guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the “short form” evaluation process is inappropriate.

June 1, 2006

Mr. Robert G. Hauch
U.S. Army Engineer District - Galveston
Environmental Branch
P.O. Box 1229 Galveston, TX 77553-1229

Subject: Revised Letter Report
**Chocolate Bayou Channel – Sampling and Chemical Analysis
Brazoria County, Texas**

Reference: Contract No. W912HY-05-D-0002 Task Order 0004
EA Project No. 62065.07

Dear Mr. Hauch:

The Berger/EA Joint Venture is pleased to submit this revised report describing sampling activities at Chocolate Bayou, Brazoria County, Texas. Along with a description of the sampling activities, this report includes the laboratory technical report with summary tables for the collected samples, and quality assurance (QA) / quality control (QC) data outlined in the Draft Scope of Work (SOW) received February 28, 2006. In addition to the hard copy of this report, a CD-ROM containing Microsoft® Word, Excel, and other files used to report the required data has been provided. Copies of the raw data, lab notes, chromatograms, standard curves, etc. are included in the laboratory technical report (Attachment 1). This report has been revised to include a table of the grain size results from sediment sampling in the Chocolate Bayou Channel (Table 3).

Sample Collection

From April 19 to April 21, 2006, EA Engineering, Science, and Technology, Inc., (EA) collected water and sediment samples from Chocolate Bayou Channel, for the purpose of conducting testing to characterize the shoaled sediments and to facilitate the determination of the potential unacceptable adverse impacts that would result from dredging and dredged material placement options.

Sediment Sampling

A total of eight composite sediment samples were collected from Chocolate Bayou. Sediment samples were collected at the sampling locations designated in the SOW. Approximate sampling

locations are provided in the Table 1. All sampling locations were accessed using a 23-ft aluminum boat. Sediment samples were collected using a stainless steel Ponar grab sampler. At each sample location, three equal representative sediment samples were collected, deposited into a decontaminated clean stainless steel pan, and homogenized with a clean stainless steel spoon into one composite sample. The composite was then placed into pre-cleaned laboratory-supplied glass jars using a stainless steel spoon. The jars were completely filled with no head space. The grab sampler was thoroughly rinsed with deionized water, then ambient water between grabs at each sampling location. Field technicians wore powder-free latex gloves when handling the samples. Each collected sample was representative of the shoal material in the channel bottom. Additional sediment volume was collected from location GIF-CB-06-01 for matrix spike (MS)/matrix spike duplicate (MSD) analysis.

Water Samples

Water samples were collected at the same eight locations as the sediment samples in Chocolate Bayou Channel. Water temperature, pH, salinity, and dissolved oxygen were measured at each sampling location (Table 1) using a YSI (portable water quality instrument) and were recorded in a standard field notebook with the sample location, date, time, depth, and comments. Following completion of sampling, water quality information was then transferred to the water quality datasheets that were provided by USACE-Galveston District with the SOW. Water quality parameters measured at each location are provided in Table 1.

A peristaltic pump with dedicated tubing was used to collect the water samples. The water samples were collected from 1/2 to 1/3 of the distance from the bottom. The initial pumped water that equaled at least five times the hose volume was discarded. The water samples were pumped directly into pre-cleaned laboratory supplied bottles. Water samples that were analyzed for metals, other than mercury and selenium, were filtered through a clean 0.45- μ m filter prior to dispensing into containers with acid preservatives. Water samples that were analyzed for mercury and selenium were not filtered prior to dispensing into containers with acid preservatives. Pre-cleaned laboratory supplied brown glass bottles were used for organics analyses. The bottles were filled completely, and were as free of air bubbles as possible.

Additional water volume was collected from location GIF-CB-06-01 for MS/MSD analysis. Two equipment blanks (one for the sediment collection equipment and one for the water collection equipment) were also submitted to the analytical laboratory for QA/QC purposes.

Sampling equipment for both sediment and water sampling was decontaminated between sampling sites according to protocols described in the SOW prior to each use to prevent any possible cross contamination. Following collection, sediment and water samples were chilled on ice in laboratory-supplied coolers, and were hand-delivered under chain-of-custody to Anacon, Inc. Laboratory of Houston, Texas. Chain-of-custody documentation is provided in the laboratory technical report (Attachment 1).

Chemical and Physical Analyses

Sediment, water, and standard elutriate samples were analyzed for the chemical and physical parameters identified in the SOW. Standard elutriates were created (using sediment and water from each sampling location) and tested in the analytical laboratory. The standard elutriate preparation methodology followed the protocol in Appendix B of the *Inland Testing Manual* (USEPA/USACE 1998). A total of eight elutriates were created and tested for the parameters specified in the SOW.

The laboratory analyses were performed by Anacon, Inc. Laboratory, of Houston, TX. The table of target detection limits (TDLs) specified in the SOW was provided to the laboratory prior to project initiation. Anacon, Inc. indicated that they could meet all of the Contract Required Detection Limits (CRDLs). For each data package, the laboratory evaluated each target analyte to the CRDL with respect to reporting non-detects. Results below the CRDL are designated as “<” (less than) the numerical value of the CRDL in the results tables. Where target analytes were detected above the CRDL, a quantitative value as a result is provided. Reported values that were estimated between the Method Detection Limit (MDL) and the CRDL are flagged with a “J” qualifier. Sample results for sediments are reported as dry weight.

Table 2 summarizes the concentrations of detected analytes in the Chocolate Bayou Channel sediment, water, and standard elutriate samples. Table 3 summarizes the results of the grain size analysis of the sediments in the Chocolate Bayou Channel. The Anacon, Inc. laboratory technical report is provided in Attachment 1. Electronic copies of the analytical result summary and the grain size results are provided on the enclosed CD.

We appreciate the opportunity to provide this service to the Galveston District. If you have any questions, please contact me at 410-329-5126.

Sincerely,
BERGER/EA JV



Peggy Derrick
Senior Scientist / Project Manager

TABLE 1. WATER QUALITY DATA

Project: **Chocolate Bayou Channel** Task Order #: **W912HY-05-D-0002**
 Date(s) Collected: 04/21/06,04/19/06 Tide, MLT: _____
 Wind Direction: SW Wind Speed: Variable, Gusty
 Weather and Water Conditions: Rain, overcast, breezy. Seas 1' and less

Sample Number	GIF-CB-06-01A	GIF-CB-06-01B	GIF-CB-06-01C	GIF-CB-06-02A	GIF-CB-06-02B	GIF-CB-06-02C	GIF-CB-06-03A	GIF-CB-06-03B	GIF-CB-06-03C
Station	50+00	50+00	50+00	100+00	100+00	100+00	150+00	150+00	150+00
Distance From C _L (Ft.)	W 50	0	E 50	SW 50	0	NE 50	S 50	0	N 50
Water Depth MLT (Ft.)	12.1	13.1	11.8	9.8	12.5	14.5	13.3	11.6	9.4
DO (mg/L)	1.45	3.22	1.26	4.18	6.82	6.93	6.92	6.80	6.74
pH	7.88	7.58	7.95	8.14	8.06	8.11	8.02	7.93	7.91
Salinity (‰)	27.90	28.01	27.99	28.49	28.43	28.43	27.92	27.75	27.37
Water Temp. (°C)	25.35	25.31	25.31	26.29	25.92	26.12	25.86	25.75	25.61
Air Temp. (°C)	20.56	20.56	20.56	24.4	24.4	24.4	24.4	24.4	24.4
Lat.	17693647.62N	17693668.06N	17693678.51N	17697823.64N	17697860.31N	17697891.91N	17701542.61N	17701470.00N	17701628.86N
Long.	2057973.40E	2057981.91E	2058019.10E	2055276.85E	2055311.01E	2055276.85E	2051868.54E	2051912.15E	2051989.73E
Time	10:45	10:00	11:00	15:20	14:40	15:05	13:35	12:55	13:59
Comment									

REMARKS: NONE

TABLE 1. WATER QUALITY DATA (continued)

Project: **Chocolate Bayou Channel** Task Order #: **W912HY-05-D-0002**
 Date(s) Collected: 04/19/06-04/20/06 Tide, MLT: _____
 Wind Direction: SW Wind Speed: 10-20 mph
 Weather and Water Conditions: Overcast, seas less than 1'

Sample Number	GIF-CB-06-04A	GIF-CB-06-04B	GIF-CB-06-04C	GIF-CB-06-05A	GIF-CB-06-05B	GIF-CB-06-05C	GIF-CB-06-06A	GIF-CB-06-06B	GIF-CB-06-06C
Station	200+00	200+00	200+00	250+00	250+00	250+00	300+00	300+00	300+00
Distance From C _L (Ft.)	S 50	0	N 50	S 50	0	N 50	S 50	0	N 50
Water Depth MLT (Ft.)	11.7	12.6	13.0	11.4	13.0	12.2	12.7	13.7	11.8
DO (mg/L)	6.22	6.40	6.34	2.33	3.84	1.83	2.48	3.54	2.06
pH	7.61	7.6	7.69	8.09	8.14	8.09	8.22	8.29	8.21
Salinity (‰)	26.83	26.07	26.92	23.99	23.73	23.86	19.81	19.51	19.89
Water Temp. (°C)	24.89	24.8	24.98	26.46	26.22	26.43	25.71	25.61	25.74
Air Temp. (°C)	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4
Lat.	17702364.52N	17702414.19N	17702458.99N	17704257.73N	17704325.06N	17704366.01N	17706201.23N	17706265.69N	17706314.65N
Long.	2047045.67E	2047044.7E	2047047.48E	2042439.06E	2042467.13E	2042435.1	2037831.97E	2037837.42	2037851.45E
Time	11:54	11:18	12:15	13:55	13:45	8:24	11:40	11:30	11:50
Comment				see remarks					

REMARKS: Refusal at location 5A. New location depth 13.2'
 Lat. 17704318.22N
 Long. 2042390.20E

TABLE 1. WATER QUALITY DATA (continued)

Project: **Chocolate Bayou Channel** Task Order #: **W912HY-05-D-0002**
 Date(s) Collected: 4/20/2006 Tide, MLT: _____
 Wind Direction: SW Wind Speed: Variable, Gusty
 Weather and Water Conditions: Partly sunny, breezy, seas less than 1'

Sample Number	GIF-CB-06-07A	GIF-CB-06-07B	GIF-CB-06-07C	GIF-CB-06-08A	GIF-CB-06-08B	GIF-CB-06-08C			
Station	350+00	350+00	350+00	400+00	400+00	400+00			
Distance From C ₁ (Ft.)	SW 50	0	NE 50	W 50	0	E 50			
Water Depth MLT (Ft.)	8.5	14.6	14.8	13.1	14.0	13.2			
DO (mg/L)	3.32	4.15	2.78	4.59	3.43	16.33			
pH	8.44	8.38	8.33	8.28	8.21	4.06			
Salinity (‰)	16.33	17.75	17.79	16.78	17.86	16.33			
Water Temp. (°C)	26.08	25.74	25.72	25.98	25.94	26.02			
Air Temp. (°C)	24.4	24.4	24.4	24.4	24.4	24.4			
Lat.	17708146.25N	17708179.67N	17708214.38N	17712807.00N	17712806.62N	17712790.98N			
Long.	2033324.99E	2033386.44E	2033390.47E	2031867.00E	2031909.60E	2031979.56E			
Time	10:35	10:30	10:45	09:45	09:20	10:00			
Comment									

REMARKS: NONE

TABLE 2. CHOCOLATE BAYOU CHANNEL - ANALYTICAL RESULTS

Matrix: WATER

Project Name	Sample ID	Units	Antimony	Arsenic	Cadmum	Chromium	Tri		Copper	Lead	Nickel	Selenium
							Chromium	Chromium				
Chocolate Bayou	FB-01	(ug/L)	<3.00	<1.00	<1.00	<1.00	<1.00	<1.00	0.35J	<1.00	<1.00	<2.00
Chocolate Bayou	FB-02	(ug/L)	<3.00	<1.00	0.46J	<1.00	<1.00	<1.00	1.06	0.42J	<1.00	<2.00
Chocolate Bayou	GIF-CB-06-01	(ug/L)	0.84J	2.64	0.34J	0.44J	0.44J	0.44J	3.29	0.34J	3.63	0.63J
Chocolate Bayou	GIF-CB-06-02	(ug/L)	0.68J	2.66	<1.00	0.49J	0.49J	0.49J	3.65	0.39J	3.35	<2.00
Chocolate Bayou	GIF-CB-06-03	(ug/L)	0.37J	2.64	<1.00	<1.00	<1.00	<1.00	3.84	<1.00	3.69	<2.00
Chocolate Bayou	GIF-CB-06-04	(ug/L)	0.54J	2.76	<1.00	<1.00	<1.00	<1.00	4.23	<1.00	3.86	<2.00
Chocolate Bayou	GIF-CB-06-05	(ug/L)	0.45J	2.81	<1.00	<1.00	<1.00	<1.00	2.65	<1.00	3.16	0.66J
Chocolate Bayou	GIF-CB-06-06	(ug/L)	0.74J	2.97	<1.00	<1.00	<1.00	<1.00	2.36	<1.00	2.87	0.46J
Chocolate Bayou	GIF-CB-06-07	(ug/L)	0.75J	3.05	<1.00	<1.00	<1.00	<1.00	2.4	<1.00	2.84	0.58J
Chocolate Bayou	GIF-CB-06-08	(ug/L)	0.87J	3.18	<1.00	<1.00	<1.00	<1.00	3.05	0.54J	2.89	0.47J

Matrix: SEDIMENT

Sample ID	Units	Arsenic	Beryllium	Cadmum	Chromium	Tri		Copper	Lead	Mercury	Nickel
						Chromium	Chromium				
Chocolate Bayou	GIF-CB-06-01	(mg/kg)	6.02	0.92J	<0.10	17.3	17.3	10.9	17.9	<0.20	7.34
Chocolate Bayou	GIF-CB-06-02	(mg/kg)	5.75	0.92J	<0.10	16.8	16.8	10.2	18.6	0.09J	5.66
Chocolate Bayou	GIF-CB-06-03	(mg/kg)	3.73	0.67J	<0.10	11.6	11.6	6.92	11.6	<0.20	3.86
Chocolate Bayou	GIF-CB-06-04	(mg/kg)	4.96	0.82J	0.17	14.8	14.8	9.93	14.6	0.11J	5.5
Chocolate Bayou	GIF-CB-06-05	(mg/kg)	5.01	0.99J	<0.10	16.6	16.6	10.3	16	0.2	6.03
Chocolate Bayou	GIF-CB-06-06	(mg/kg)	5.04	0.97J	0.18	16.5	16.5	10.9	15.3	0.21	6.36
Chocolate Bayou	GIF-CB-06-07	(mg/kg)	4.19	0.94J	<0.10	16.1	16.1	11.4	14.4	0.10J	5.69
Chocolate Bayou	GIF-CB-06-08	(mg/kg)	3.9	0.79J	0.15	14	14	10.7	11.3	0.07J	5.54

Matrix: ELUTRIATE

Sample ID	Units	Antimony	Arsenic	Copper	Nickel	Selenium	Thallium	Zinc	Ammonia	Total Organic	
									(as N)	Carbon	
Chocolate Bayou	GIF-CB-06-01	(ug/L)	0.68J	2.81	5.27	3.84	0.57J	<1.00	4.00	2580	5200
Chocolate Bayou	GIF-CB-06-02	(ug/L)	0.73J	3	4.01	3.52	0.86J	1.53	4.88	620	3920
Chocolate Bayou	GIF-CB-06-03	(ug/L)	1.70J	4.03	3.35	3.4	0.89J	<1.00	4.12	870	7300
Chocolate Bayou	GIF-CB-06-04	(ug/L)	0.59J	3.43	4.57	3.24	0.71J	<1.00	4.26	920	5780
Chocolate Bayou	GIF-CB-06-05	(ug/L)	1.00J	3.81	1.99	3.13	0.36J	<1.00	3.82	1100	8930
Chocolate Bayou	GIF-CB-06-06	(ug/L)	0.98J	4.97	1.97	3.03	0.45J	<1.00	3.03	1260	7360
Chocolate Bayou	GIF-CB-06-07	(ug/L)	1.50J	5.01	1.83	2.55	0.79J	0.15J	2.7	1400	9280
Chocolate Bayou	GIF-CB-06-08	(ug/L)	1.00J	4.16	1.97	2.73	0.54J	<1.00	2.89	1940	6920

****ONLY PARAMETERS WITH RESULTS ABOVE DETECTION LIMIT ARE LISTED.****

TABLE 2. CHOCOLATE BAYOU CHANNEL - ANALYTICAL RESULTS (continued)

Matrix: WATER

Project Name	Sample ID	Units	Thallium	Zinc	Ammonia (as N)	Total Organic Carbon
Chocolate Bayou	FB-01	(ug/L)	0.15J	1.53	30	1200
Chocolate Bayou	FB-02	(ug/L)	<1.00	1.88	30	<1000
Chocolate Bayou	GIF-CB-06-01	(ug/L)	<1.00	3.43	4390	90J
Chocolate Bayou	GIF-CB-06-02	(ug/L)	0.23J	4.55	60	3210
Chocolate Bayou	GIF-CB-06-03	(ug/L)	0.24J	4.45	100	3150
Chocolate Bayou	GIF-CB-06-04	(ug/L)	0.29J	3.89	120	4690
Chocolate Bayou	GIF-CB-06-05	(ug/L)	0.22J	4.14	80	8170
Chocolate Bayou	GIF-CB-06-06	(ug/L)	0.38J	3.43	140	5760
Chocolate Bayou	GIF-CB-06-07	(ug/L)	0.37J	3.08	130	7280
Chocolate Bayou	GIF-CB-06-08	(ug/L)	0.76J	3.3	150	9200

Matrix: SEDIMENT

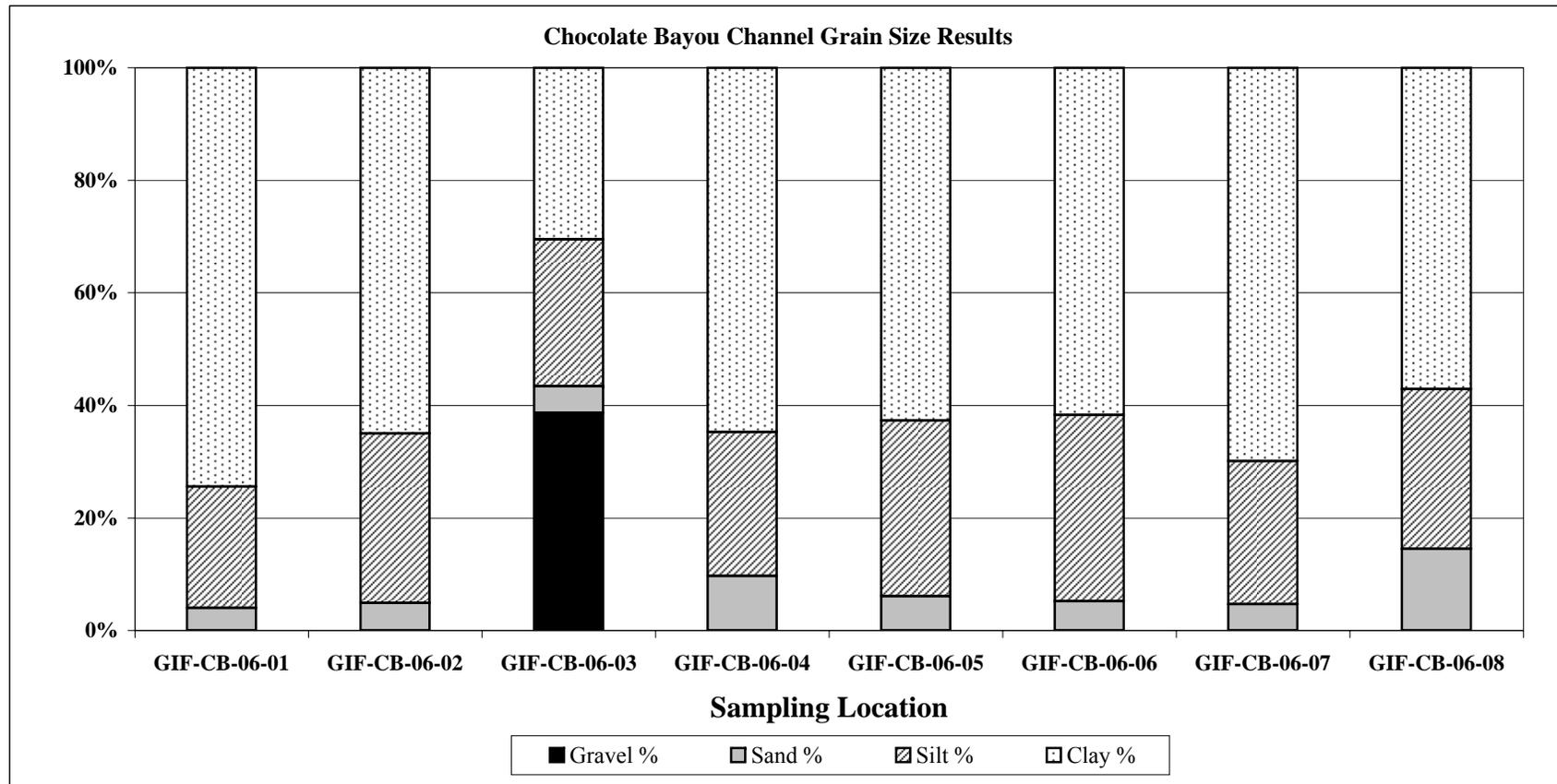
	Sample ID	Units	Selenium	Silver	Thallium	Zinc	Ammonia (as N)	Cyanide	Total Organic Carbon	Percent Solids
Chocolate Bayou	GIF-CB-06-01	(mg/kg)	0.18J	0.09J	0.55	20.9	253	<2.00	0.61%	32.6%
Chocolate Bayou	GIF-CB-06-02	(mg/kg)	0.27J	0.12J	0.15J	19.3	196	5.16	0.77%	33.6%
Chocolate Bayou	GIF-CB-06-03	(mg/kg)	0.16J	0.06J	0.10J	13	166	0.45J	0.49%	49.0%
Chocolate Bayou	GIF-CB-06-04	(mg/kg)	0.23J	0.08J	0.17J	18.7	355	<2.00	0.51%	35.5%
Chocolate Bayou	GIF-CB-06-05	(mg/kg)	0.23J	0.08J	0.23	19.1	233	<2.00	0.59%	35.3%
Chocolate Bayou	GIF-CB-06-06	(mg/kg)	0.23J	0.09J	0.26	21.4	349	<2.00	0.67%	34.1%
Chocolate Bayou	GIF-CB-06-07	(mg/kg)	0.18J	0.08J	0.34	20.5	248	<2.00	0.68%	45.7%
Chocolate Bayou	GIF-CB-06-08	(mg/kg)	0.20J	0.06J	0.5	19.7	184	<2.00	0.50%	45.7%

****ONLY PARAMETERS WITH RESULTS ABOVE DETECTION LIMIT ARE LISTED.****

TABLE 3. CHOCOLATE BAYOU CHANNEL - GRAIN SIZE RESULTS

Matrix: SEDIMENT

			GIF-CB-06-01	GIF-CB-06-02	GIF-CB-06-03	GIF-CB-06-04	GIF-CB-06-05	GIF-CB-06-06	GIF-CB-06-07	GIF-CB-06-08
Analyte	Units									
Chocolate Bayou	Gravel	%	0	0	38.7	0	0	0	0	0
Chocolate Bayou	Sand	%	4	4.9	4.7	9.7	6.1	5.2	4.7	14.5
Chocolate Bayou	Silt	%	21.6	30.1	26.1	25.6	31.2	33.1	25.4	28.4
Chocolate Bayou	Clay	%	74.4	65	30.5	64.7	62.7	61.7	69.9	57.1



**Target Detection Levels^a (TDLs)
for Analysis of Sediment, Water, and Elutriate**

Analyte	Sediment (Dry Wt.)	Water/Elutriate
Metals^e		
	mg/kg	µg/l
Antimony	2.5	3 (0.02) ^c
Arsenic	0.3 ^b	1 (0.005) ^c
Beryllium	1 ^b	0.2
Cadmium	0.1	1 (0.01) ^c
Chromium (total)	1 ^b	1
Chromium (3+)	1	1
Chromium (6+)	1	1
Copper	1 ^b	1 (0.1) ^c
Lead	0.3 ^b	1 (0.02) ^c
Mercury	0.2	0.2 (0.0002) ^c
Nickel	0.5 ^b	1 (0.1) ^c
Selenium	0.5 ^b	2
Silver	0.2	1 (0.1) ^c
Thallium	0.2	1 (0.02) ^c
Zinc	2 ^b	1 (0.5) ^c
Conventional/Ancillary Parameters		
	mg/kg	mg/l
Ammonia	0.1	0.03
Cyanides	2	0.1 ^d
Total Organic Carbon	0.1%	0.1%
Total Petroleum Hydrocarbons	5	0.1
Grain Size	1%	-
Total Solids/Dry Weight	0.1%	-
LPAH Compounds		
	µg/kg	µg/l
Naphthalene	20	0.8 ^b
Acenaphthylene	20	1.0 ^b
Acenaphthene	20	0.75 ^b
Fluorene	20	0.6 ^b
Phenanthrene	20	0.5 ^b
Anthracene	20	0.6 ^b

**Target Detection Levels^a (TDLs)
for Analysis of Sediment, Water, and Elutriate**

Analyte	Sediment (Dry Wt.)	Water/Elutriate
HPAH Compounds		
	µg/kg	µg/l
Fluoranthene	20	0.9 ^b
Pyrene	20	1.5 ^b
Benzo(a)anthracene	20	0.4 ^b
Chrysene	20	0.3 ^b
Benzo(b&k)fluoranthene	20	0.6 ^b
Benzo(a)pyrene	20	0.3 ^b
Indeno[1,2,3-c,d]pyrene	20	1.2 ^b
Dibenzo[a,h]anthracene	20	1.3 ^b
Benzo[g,h,i]perylene	20	1.2 ^b
Organonitrogen Compounds		
	µg/kg	µg/l
Benzidine	5	1
3,3-Dichlorobenzidine	300 ^b	3 ^b
2,4-Dinitrotoluene	200 ^b	2 ^b
2,6-Dinitrotoluene	200 ^b	2 ^b
1,2-Diphenylhydrazine	10	1
Nitrobenzene	160 ^b	0.9 ^b
N-Nitrosodimethylamine	-	3.1 ^b
N-Nitroso-di-n-propylamine	150 ^b	0.9 ^b
N-Nitrosodiphenylamine	20	2.1 ^b
Phthalate Esters		
	µg/kg	µg/l
Dimethyl Phthalate	50	1 ^b
Diethyl Phthalate	50	1 ^b
Di-n-butyl Phthalate	50	1 ^b
Butyl Benzyl Phthalate	50	4 ^b
Bis[2-ethylhexyl] Phthalate	50	2 ^b
Di-n-octyl Phthalate	50	3 ^b
Phenols/Substituted Phenols		
	µg/kg	µg/l
Phenol	100	10
2,4-Dimethylphenol	20	10
Pentachlorophenol	100	50
2,4,6-Trichlorophenol	140 ^b	0.9 ^b
4-Chloro-3-methylphenol	140 ^b	0.7 ^b

**Target Detection Levels^a (TDLs)
for Analysis of Sediment, Water, and Elutriate**

Analyte	Sediment (Dry Wt.)	Water/Elutriate
2-Nitrophenol	200 ^b	2 ^b
4-Nitrophenol	500 ^b	5 ^b
2,4-Dinitrophenol	500 ^b	5 ^b
2-Chlorophenol	110 ^b	0.9 ^b
2,4-Dichlorophenol	120 ^b	0.8 ^b
4,6-Dinitro-o-cresol	600	10
Polychlorinated Biphenyls		
	<i>µg/kg</i>	<i>µg/l</i>
Total PCB	1	0.01
Pesticides		
	<i>µg/kg</i>	<i>µg/l</i>
Aldrin	3 ^b	0.03 ^b
Chlordane and Derivatives	3 ^b	0.03 ^b
Dieldrin	5 ^b	0.02
4,4'-DDD	5 ^b	0.1
4,4'-DDE	5 ^b	0.1
4,4'-DDT	5 ^b	0.1
Endosulfan and Derivatives	5 ^b	0.1
Endrin and Derivatives	5 ^b	0.1
Heptachlor and Derivatives	3 ^b	0.1
Alpha-BHC	3 ^b	0.03
Beta-BHC	3 ^b	0.03
Delta-BHC	3 ^b	0.03
Gamma-BHC (Lindane)	3 ^b	0.1
Toxaphene	50	0.5
Chlorinated Hydrocarbons		
	<i>µg/kg</i>	<i>µg/l</i>
1,3-Dichlorobenzene	20	0.9 ^b
1,4-Dichlorobenzene	20	1 ^b
1,2-Dichlorobenzene	20	0.8 ^b
1,2,4-Trichlorobenzene	10	0.9 ^b
Hexachlorobenzene	10	0.4 ^b
2-Chloronaphthalene	160 ^b	0.8 ^b
Hexachlorocyclopentadiene	300 ^b	3.0 ^b
Hexachloroethane	100	0.9 ^b
Hexachlorobutadiene	20	0.9 ^b

**Target Detection Levels^a (TDLs)
for Analysis of Sediment, Water, and Elutriate**

Analyte	Sediment (Dry Wt.)	Water/Elutriate
Halogenated Ethers		
	$\mu\text{g}/\text{kg}$	$\mu\text{g}/\text{l}$
Bis(2-chloroethyl)ether	130 ^b	0.9 ^b
4-Chlorophenyl phenyl ether	170 ^b	0.6 ^b
4-Bromophenyl phenyl ether	160 ^b	0.4 ^b
Bis(2-chloroisopropyl)ether	140 ^b	0.7 ^b
Bis(2-chloroethoxy)methane	130 ^b	1 ^b
Miscellaneous		
	$\mu\text{g}/\text{kg}$	$\mu\text{g}/\text{l}$
Isophorone	10	1

^aThe primary source of these TDLs was EPA 823-B-95-001, *QA/QC Guidance for Sampling and Analysis of Sediments, Water and Tissues for Dredged Material Evaluations*.

^bThese values are based on recommendations from the EPA Region 6 Laboratory in Houston; these values were based on data or other technical basis.

^cThe values in parentheses are based on EPA "clean techniques", (EPA 1600 series methods) which are applicable in instances where other TDLs are inadequate to assess EPA water quality criteria.

^dThis value recommended by Houston Lab using colorimetric method.

^eMetals shall be expressed as Dissolved values in water samples, except for mercury and selenium, which shall be reported as Total Recoverable Concentrations.

APPENDIX D

Preliminary Air Conformity Analysis

PRELIMINARY AIR CONFORMITY ANALYSIS

EXPANSION OF PLACEMENT AREA NO. 4

GULF INTRACOASTAL WATERWAY, CHOCOLATE BAYOU CHANNEL BRAZORIA COUNTY, TEXAS

INTRODUCTION

The proposed project is located in Brazoria County which is situated within the Houston-Galveston-Brazoria Intrastate Air Quality Control Region (HGB). The HGB is classified as a severe non-attainment area for ozone under the 8-hour National Ambient Air Quality Standard for ozone (TCEQ, 2008). A preliminary analysis of air contaminant emissions for the proposed project was conducted to determine if the construction of the containment levee at the proposed expanded Placement Area No. 4 will generate nitrogen oxide (NO_x) and volatile organic compound (VOC) emissions (ozone precursors) above *de minimus* levels specified in the General Conformity rules, as established by the Clean Air Act, for the HGB. For this severe classification, *de minimus* levels are 25 tons per year each for NO_x and VOCs. Furthermore, if potential emissions are below 25 tpy for both NO_x and VOCs, a Formal Conformity Determination will not be required.

METHODOLOGY

Assumptions and equipment schedules were based on routine levee construction operations similar to those to be implemented for the proposed project. Specifically, activities were assumed to take place 12 hours a day, 7 days a week. The project is estimated to require about 65 days. Emission factors for equipment typical of this type of project were obtained using the U.S. Environmental Protection Agency's (EPA) sources and Texas Commission on Environmental Quality (TCEQ) (EPA, 2002, 2006, 2009; TCEQ, 2009). The attached table summarizes the assumptions and values used in calculating the emissions associated with the proposed project.

SUMMARY OF EMISSIONS/GENERAL CONFORMITY THRESHOLDS

The exemption thresholds for ozone precursor pollutants are 25 tpy of VOC and NO_x. Pursuant the provisions of 40 CFR 93.150, Federal agencies are required to perform a Formal Conformity Determination when the emissions in non-attainment or maintenance areas would total or exceed threshold emission levels. If project operations result in air emissions of less than

PRELIMINARY AIR CONFORMITY ANALYSIS
EXPANSION OF PLACEMENT AREA NO. 4

25 tpy for both of these air contaminants, the action is not required to perform a Formal Conformity Determination and no further analysis is required to demonstrate that such actions conform to the State Implementation Plan (SIP).

Table 1
Comparison of Estimated Emissions (tons/year) to General Conformity Thresholds

	VOC	NO _x
Tons/year	2.63	22.80
General Conformity Threshold (tons/year)	25.00	25.00
Exceeds Threshold	No	No

As shown on Table 1, the potential emissions for both NO_x and VOCs from the dredging and beneficial use activities associated with the project would not exceed *de minimus* levels. Therefore, a Formal Conformity Determination is not required prior to the implementation of the project. Additionally, these actions may be presumed to conform, and may be considered less than significant in terms of their impact on attainment of the 8-hour ozone ambient air quality standard for this region.

REFERENCES

- EPA. 2002. Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression-Ignition. EPA420-P-02-016-NR-009b.
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<http://www.epa.gov/ttn/chief/net/2002inventory.html#nonroad>. Accessed April 17, 2009.
- _____. 2009. AP-42: Compilation of Air Pollutant Emission Factors
<http://www.epa.gov/otaq/ap42.htm> Accessed April 17, 2009

PRELIMINARY AIR CONFORMITY ANALYSIS
EXPANSION OF PLACEMENT AREA NO. 4

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<http://www.tceq.state.tx.us/implementation/air/sip/hgb.html>. Accessed April 17, 2009.

_____. 2009. NO_x Emission Standards Appendix B NO_x Emission Standards On-Road Vehicles On-Road Heavy-Duty CI Engines NO_x Emission Standards by Model Year Diesel Engines Emission Standard Year.
<http://www.tceq.state.tx.us/assets/public/implementation/air/terp/rebate/AppendixB.pdf>.
Accessed April 17, 2009.

PRELIMINARY AIR CONFORMITY ANALYSIS

CHOCOLATE BAYOU CHANNEL - EXPANSION OF PLACEMENT AREA NO. 4, BRAZORIA COUNTY, TEXAS

Work Duration is expected to be about 65 days

Equipment expected to be used is below:

Type	Activity	Hours/Day	Total Hrs	Horsepower (HP)	Emission Factor (g/hp-hr)		Emissions (tons)	
					VOC	NO _x	VOC	NO _x
<u>Levee Construction</u>								
Wide-Track Dozers (2 @ 185 hp)	Construction	24	1,560	370	0.56	6.9	0.36	4.39
Excavator - 330 Cat (2 @ 220 hp)	Construction	24	1,560	440	0.56	6.9	0.42	5.22
Dump Trucks (4 @ 240 hp)	Hauling	48	3,120	960	0.56	4	1.85	13.19
Total							2.63	22.80

APPENDIX E

Compliance with the Texas Coastal Management Program

COMPLIANCE WITH THE TEXAS COASTAL MANAGEMENT PROGRAM

EXPANSION OF PLACEMENT AREA NO. 4

GULF INTRACOASTAL WATERWAY, CHOCOLATE BAYOU CHANNEL BRAZORIA COUNTY, TEXAS

INTRODUCTION

The State of Texas submitted the Texas Coastal Management Program to the National Oceanic and Atmospheric Administration (NOAA) for review pursuant to §306 of the Federal Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 *et seq.*). The TCMP was approved by the Office of Ocean and Coastal Resource Management in 1996. Federal approval of the TCMP requires that Federal actions occurring within the TCMP boundary be consistent to the maximum extent practicable with the goals and policies of the TCMP. To show compliance, Federal agencies responsible for these actions must prepare a consistency determination and submit it to the state for review. The consistency determination for this project was prepared in accordance with the “Texas Coastal Management Program Final Environmental Impact Statement,” dated August 1996. Details of the proposed activity, as well as environmental impacts, are presented in sections of the accompanying Environmental Assessment (EA) and will be referenced in this determination. It is the intent of the Galveston District of the U.S. Army Corps of Engineers that all Corps projects be consistent to the maximum extent practicable with the goals and policies of the Texas Coastal Management Program.

IMPACT ON COASTAL NATURAL RESOURCES AREAS (CNRA)

Several of the CNRAs as defined in 31 TAC §501.3 are found in the vicinity of the project. A description of the project, an environmental description of the site, results of a cultural resource investigation of the project area, and environmental impacts resulting from the proposed activity are presented in Sections 1.0, 3.0, and 4.0 of the EA. Following are short descriptions of each CNRA near the project and methods to minimize or avoid potential impacts resulting from the project.

- **Coastal Barrier:** The project is not located within any designated Coastal Barrier Unit. The nearest Unit is TX-04, Follets Island, located about five miles from the project site. Therefore, no adverse impacts on any coastal barrier are anticipated by this action.

- **Coastal Historic Area:** No historic properties have been identified in this project area. Therefore, no adverse impacts on coastal historic areas are anticipated by this action.
- **Coastal Preserve:** There are no coastal preserves in the project area. The nearest coastal preserve is Christmas Bay located about nine miles away. The next closest is Armand Bayou, located about 25 miles away. Therefore, no adverse impacts on coastal preserves are anticipated by this action.
- **Coastal Shore Area:** This resource area is a strip of land from the high-water mark on coastal beaches to 100 feet inland. None of these resources are located near the project area. The proposed expanded Placement Area is located approximately 9.4 miles from the coastal shore and would have no direct impacts on that area.
- **Coastal Wetlands:** The project is not directly situated in a wetland; however much of the vicinity is in areas classified as coastal wetlands under §501.3.b.5. Impacts to the wetlands have been assessed and described in Section 4.1. Adverse impacts on existing wetlands are not anticipated from this project.
- **Critical Dune Area:** There are no critical dune areas located in the project area. The nearest protected dune area is located approximately nine miles from the proposed expanded PA. Therefore, no adverse impacts on critical dune areas are anticipated by this action.
- **Critical Erosion Area:** There are no critical erosion areas located in the project area. The nearest such area is identified as Treasure Island, located approximately 9.6 miles from the proposed expanded PA. Therefore, no adverse impacts on critical erosion areas are anticipated by this action.
- **Gulf Beach:** There are no Gulf beaches located in the project area. The proposed expanded Placement Area is located approximately 9.4 miles from the nearest beach, and would have no direct impacts on that area.
- **Hard-Substrate Reef:** There are no naturally occurring rock outcrops or serpulid worm reefs occurring near the project area. Therefore, no adverse impacts on any hard-substrate reef are anticipated by this action.
- **Oyster Reef:** There are numerous oyster reefs occurring near the project area, including a reef along part of the adjacent shoreline. Construction activities would be occurring on upland areas, and dredged material would be discharged into the

upland confined placement area. Therefore, no adverse impacts on oyster reefs are anticipated by this action.

- **Special Hazard Area:** These are low-lying, flood-prone areas as shown on flood insurance rate maps. The proposed expanded placement area is situated in a Special Flood Hazard Area Inundated by 100-Year Flood, Zones AE and VE. However, the proposed action would not induce increased flooding in developed areas, nor contribute to increased future flood damages in the region.
- **Submerged Land:** The Chocolate Bay bottom near the project site is considered submerged land. But, the location of the proposed placement area is an upland area. Therefore, adverse impacts on submerged land are not anticipated.
- **Submerged Aquatic Vegetation:** There are no known areas of submerged aquatic vegetation growing in the project area. Therefore, no adverse impacts are anticipated by this action.
- **Tidal Sand or Mud Flats:** There are no known areas of tidal sand or mud flats in the project area. Therefore, no adverse impacts are anticipated by this action.
- **Water of the Open Gulf of Mexico:** The project is located inland from the Gulf of Mexico and would not affect this resource.
- **Water Under Tidal Influence:** Chocolate Bay near the project site is considered water under tidal influence. But, the location of the proposed placement area is an upland area. Therefore, unacceptable adverse impacts on water under tidal influence are not anticipated.

COMPLIANCE WITH GOALS AND POLICIES

The following goals and policies of the TCMP were reviewed for compliance.

- §501.15: Policy for Major Actions
- §501.23: Policies for Development in Critical Areas
- §501.25: Policies for Dredging and Dredged Material and Placement

Compliance with §501.15: Policy for Major Actions

The U.S. Army Corps of Engineers finds that the proposed action is not a major Federal action and is in compliance with §501.15.

Compliance with §501.23: Policies for Development in Critical Areas

None of the critical areas defined by the TCMP are situated in the immediate project site. Therefore, no adverse impacts are anticipated to occur. Sections 1.0, 3.0, and 4.0 of the EA demonstrate that the project complies with §501.23(a)(1)-(7).

Compliance with §501.25: Policies for Dredging and Dredged Material and Placement

The locations of the proposed expanded placement area was selected to minimize adverse impacts to existing resources to the maximum extent practicable. Additionally, the expanded placement area would help ensure success of a beneficial use project designed to establish intertidal wetlands, a CNRA. Sections 1.0, 3.0, and 4.0 of the EA, together with the enclosed analysis, demonstrate that the project complies with applicable subparts of this section.

CONSISTENCY DETERMINATION

The project has been reviewed for consistency with the goals and policies of the TCMP. CNRAs in the project area are identified and evaluated for potential impacts from project activities. It is determined that project activities would not adversely impact these CNRAS. Furthermore, the result of the project is expected to be beneficial by helping to ensure success of a nearby marsh establishment project. Therefore, the proposed action to expand existing upland confined Placement Area No. 4 is consistent with the goals and policies of the Texas Coastal Management Program to the maximum extent practicable.

**COMPLIANCE WITH GOALS AND POLICIES
SECTION 501.25(a)-(f)**

EXPANSION OF PLACEMENT AREA NO. 4

**GULF INTRACOASTAL WATERWAY,
CHOCOLATE BAYOU CHANNEL
BRAZORIA COUNTY, TEXAS**

Section 501.25 Policies for Dredging and Dredged Material and Placement

(a) Dredging and the disposal and placement of dredged material shall avoid and otherwise minimize adverse effects to coastal waters, submerged lands, critical areas, coastal shore areas, and Gulf beaches to the greatest extent practicable. The policies of this subsection are supplemental to any further restrictions or requirements relating to the beach access and use rights of the public. In implementing this subsection, cumulative and secondary adverse effects of dredging and the disposal and placement of dredged material and the unique characteristics of affected sites shall be considered.

(1) Dredging and dredged material disposal and placement shall not cause or contribute, after consideration of dilution and dispersions to violation of any applicable surface water quality standards established under §501.21 of this title.

(2) Except as otherwise provided in paragraph (4) of this paragraph, adverse effects on critical areas from dredging and dredged material disposal or placement shall be avoided and otherwise minimized, and appropriate and practicable compensatory mitigation shall be required, in accordance with §501.23 of this title.

(3) Except as provided in paragraph (4) of this paragraph, dredging and the disposal and placement of dredged material shall not be authorized if:

(A) there is a practicable alternative that would have fewer adverse effects on coastal waters, submerged lands, critical areas, coastal shore areas, and Gulf beaches, so long as that alternative does not have other significant adverse effects;

(B) all appropriate and practicable steps have not been taken to minimize adverse effects on coastal waters, submerged lands, critical areas, coastal shore areas, and Gulf beaches; or

(C) significant degradation of critical areas under §501.23(a)(7)(E) of this title would result.

(4) A dredging or dredged material disposal or placement project that would be prohibited solely by application of paragraph (3) of this paragraph may be allowed if it is determined to be of overriding importance to the public and national interest in light of economic impacts on navigation and maintenance of commercially navigable waterways.

Compliance: The proposed action represents upland construction and continuation of the practice of depositing material into an upland confined placement area. The effluent from the expanded placement area would be managed to control and minimize reintroduction of suspended solids into waters of Chocolate Bayou. This action would have no significant adverse impacts on any CNRA, nor would it result in degradation of surface water quality.

(b) Adverse effects from dredging and dredged material disposal and placement shall be minimized as required in subsection (a) of this section. Adverse effects can be minimized by employing the techniques in this paragraph where appropriate and practicable.

(1) Adverse effects from dredging and dredged material disposal and placement can be minimized by controlling the location and dimensions of the activity. Some of the ways to accomplish this include:

(A) locating and confining discharges to minimize smothering of organisms;

(B) locating and designing projects to avoid adverse disruption of water inundation patterns, water circulation, erosion and accretion processes, and other hydrodynamic processes;

(C) using existing or natural channels and basins instead of dredging new channels or basins, and discharging materials in areas that have been previously disturbed or used for disposal or placement of dredged material;

(D) limiting the dimensions of channels, basins, and disposal and placement sites to the minimum reasonably required to serve the project purpose, including allowing for reasonable overdredging of channels and basins, and taking into account the need for capacity to accommodate future expansion without causing additional adverse effects;

(E) discharging materials at sites where the substrate is composed of material similar to that being discharged;

(F) locating and designing discharges to minimize the extent of any plume and otherwise control dispersion of material; and

(G) avoiding the impoundment or drainage of critical areas.

Compliance: Adverse effects of dredging and dredged material placement in this project have been minimized as described under "Compliance" for subsection (a) of this section. The establishment of the expanded placement area is necessary to accommodate the long-term need for dredged material capacity from future channel maintenance. The new site addressed in this EA would satisfy that need. It was determined that the size of the expanded area is the minimum needed to fulfill requirements needed to provide navigation in the Chocolate Bayou Channel throughout the life of the project.

(2) Dredging and disposal and placement of material to be dredged shall comply with applicable standards for sediment toxicity. Adverse effects from constituents contained in materials discharged can be minimized by treatment of or limitations on the material itself. Some ways to accomplish this include:

(A) disposal or placement of dredged material in a manner that maintains physicochemical conditions at discharge sites and limits or reduces the potency and availability of pollutants;

(B) limiting the solid, liquid, and gaseous components of material discharged;

(C) adding treatment substances to the discharged material; and

(D) adding chemical flocculants to enhance the deposition of suspended particulates in confined disposal areas,

Compliance: Sediments to be dredged from the channel have been tested for a variety of chemical contaminants of concern to resource agencies since the late 1980s. The U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Texas Commission on Environmental Quality have reviewed these data and have not found any issues of concern.

(3) Adverse effects from dredging and dredged material disposal or placement can be minimized through control of the materials discharged. Some ways of accomplishing this include:

(A) use of containment levees and sediment basins designed, constructed, and maintained to resist breaches, erosion, slumping, or leaching;

(B) use of lined containment areas to reduce leaching where leaching of chemical constituents from the material is expected to be a problem;

(C) capping in-place contaminated material or, selectively discharging the most contaminated material first and then capping it with the remaining material;

(D) properly containing discharged material and maintaining discharge sites to prevent point and nonpoint pollution; and

(E) timing the discharge to minimize adverse effects from unusually high water flows, wind, wave, and tidal actions.

Compliance: The placement area to be expanded is an upland area that would have levees to fully contain the dredged material.

(4) Adverse effects from dredging and dredged material disposal or placement can be minimized by controlling the manner in which material is dispersed. Some ways of accomplishing this include:

(A) where environmentally desirable, distributing the material in a thin layer;

(B) orienting material to minimize undesirable obstruction of the water current or circulation patterns;

(C) using silt screens or other appropriate methods to confine suspended particulates or turbidity to a small area where settling or removal can occur;

(D) using currents and circulation patterns to mix, disperse, dilute, or otherwise control the discharge;

(E) minimizing turbidity by using a diffuser system or releasing material near the bottom;

(F) selecting sites or managing discharges to confine and minimize the release of suspended particulates and turbidity and maintain light penetration for organisms; and

(G) setting limits on the amount of material to be discharged per unit of time or volume of receiving waters.

Compliance: The dredged material would not be discharged directly into water. Use of the fully leveed placement site minimizes or eliminates any adverse effects by confining the dredged materials on site. Discharges are managed to confine and minimize the release of suspended particulates. The measures described under “Compliance” for paragraph (3), above, also satisfies this requirement.

(5) Adverse effects from dredging and dredged material disposal or placement operations can be minimized by adopting technology to the needs of each site. Some ways of accomplishing this include:

(A) using appropriate equipment, machinery, and operating techniques for access to sites and transport of material, including those designed to reduce damage to critical areas;

(B) having personnel on site adequately trained in avoidance and minimization techniques and requirements; and

(C) designing temporary and permanent access roads and channel spanning structures using culverts, open channels, and diversions that will pass both low and high water flows, accommodate fluctuating water levels, and maintain circulation and faunal movement.

Compliance: Construction and use of expanded Placement Area No. 4 would meet this requirement. These activities would avoid adverse impacts to critical areas, and trained inspectors would be on site to ensure compliance with all standards.

(6) Adverse effects on plant and animal populations from dredging and dredged material disposal or placement can be minimized by:

(A) avoiding changes in water current and circulation patterns that would interfere with the movement of animals;

(B) selecting sites or managing discharges to prevent or avoid creating habitat conducive to the development of undesirable predators or species that have a competitive edge ecologically over indigenous plants or animals;

(C) avoiding sites having unique habitat or other values including habitat of endangered species;

(D) using planning and construction practices to institute habitat development and restoration to produce a new or modified environmental state of higher ecological value by displacement of some or all of the existing environmental characteristics;

(E) using techniques that have been demonstrated to be effective in circumstances similar to those under consideration whenever possible and, when proposed development and restoration techniques have not yet advanced to the pilot demonstration stage, initiating their use on a small scale to allow corrective action if unanticipated adverse effects occur;

(F) timing dredging and dredged material disposal or placement activities to avoid spawning or migration seasons and other biologically critical time periods; and

(G) avoiding the destruction of remnant natural sites within areas already affected by development.

Compliance: The proposed expanded upland, confined Placement Area No. 4 meets these requirements. Construction and use of this area would not affect circulation patterns or surrounding habitats. The expanded area would be constructed in degraded coastal prairie formerly used for agriculture and cattle grazing. Cutterhead dredging does not affect spawning or migration and is not limited to certain seasons.

(7) Adverse effects on human use potential from dredging and dredged material disposal or placement can be minimized by:

(A) selecting sites and following procedures to prevent or minimize any potential damage to the aesthetically pleasing features of the site, particularly with respect to water quality;

(B) selecting sites which are not valuable as natural aquatic areas;

(C) timing dredging and dredged material disposal or placement activities to avoid the seasons or periods when human recreational activity associated with the site is most important; and

(D) selecting sites that will not increase incompatible human activity or require frequent dredge or fill maintenance activity in remote fish and wildlife areas.

Compliance: These requirements have been fulfilled. Placement Area No. 4 has been located at the same site for more than 24 years. The site will not be moved nor operations modified unless necessary. Any changes will be fully coordinated with the appropriate State and Federal resource agencies and required documentation for NEPA and the TCMP will be prepared.

(8) *Adverse effects from new channels and basins can be minimized by locating them at sites:*

(A) *that ensure adequate flushing and avoid stagnant pockets; or*

(B) *that will create the fewest practicable adverse effects on CNRAs from additional infrastructure such as roads, bridges, causeways, piers, docks, wharves, transmission line crossings, and ancillary channels reasonably likely to be constructed as a result of the project; or*

(C) *with the least practicable risk that increased vessel traffic could result in navigation hazards, spills, or other forms of contamination which could adversely affect CNRAs;*

(D) *provided that, for any dredging of new channels or basins subject to the requirements of §501.15 of this title (relating to Policy for Major Actions), data and information on minimization of secondary adverse effects need not be produced or evaluated to comply with this subparagraph if such data and information is produced and evaluated in compliance with §501.15(b)(1) of this title (relating to Policy for Major Actions).*

Compliance: All project channels and basins have been in place with their present dimensions since 1981. There are no modifications being planned at this time.

(c) *Disposal or placement of dredged material in existing contained dredge disposal sites identified and actively used as described in an environmental assessment or environmental impact statement issued prior to the effective date of this chapter shall be presumed to comply with the requirements of subsection (a) of this section unless modified in design, size, use, or function.*

Compliance: The proposed action is the expansion of existing Placement Area No. 4. See measures described under “Compliance” for subsection (a), above.

(d) *Dredged material from dredging projects in commercially navigable waterways is a potentially reusable resource and must be used beneficially in accordance with this policy.*

(1) If the costs of the beneficial use of dredged material are reasonably comparable to the costs of disposal in a non-beneficial manner, the material shall be used beneficially.

Compliance: The proposed action is to expand an existing dredged material placement area (PA). This proposed expanded PA is needed to provide long-term capacity for maintenance of the Chocolate Bayou Channel after beneficial uses are exhausted. No additional feasible beneficial uses were identified for dredged material from this channel.

(2) If the costs of the beneficial use of dredged material are significantly greater than the costs of disposal in a non-beneficial manner, the material shall be used beneficially unless it is demonstrated that the costs of using the material beneficially are not reasonably proportionate to the costs of the project and benefits that will result. Factors that shall be considered in determining whether the costs of the beneficial use are not reasonably proportionate to the benefits include, but are not limited to:

(A) environmental benefits, recreational benefits, flood or storm protection benefits, erosion prevention benefits, and economic development benefits;

(B) the proximity of the beneficial use site to the dredge site; and

(C) the quantity and quality of the dredged material and its suitability for beneficial use.

Compliance: Dredged material from this channel is currently used in a beneficial manner to create marsh habitat. The proposed expansion is needed because after the beneficial use sites are completed no additional feasible beneficial uses were identified for future dredged material from the Chocolate Bayou Channel.

(3) Examples of the beneficial use of dredged material include, but are not limited to:

(A) projects designed to reduce or minimize erosion or provide shoreline protection;

(B) projects designed to create or enhance public beaches or recreational areas;

(C) projects designed to benefit the sediment budget or littoral system;

(D) projects designed to improve or maintain terrestrial or aquatic wildlife habitat;

(E) projects designed to create new terrestrial or aquatic wildlife habitat, including the construction of marshlands, coastal wetlands, or other critical areas;

(F) projects designed and demonstrated to benefit benthic communities or aquatic vegetation;

(G) projects designed to create wildlife management areas, parks, airports, or other public facilities;

(H) projects designed to cap landfills or other waste disposal areas;

(I) projects designed to fill private property or upgrade agricultural land, if cost-effective public beneficial uses are not available; and

(J) projects designed to remediate past adverse impacts on the coastal zone.

Compliance: See Subsections d(1) and d(2), above.

(e) If dredged material cannot be used beneficially as provided in subsection (d)(2) of this section, to avoid and otherwise minimize adverse effects as required in subsection (a) of this section, preference will be given to the greatest extent practicable to disposal in:

(1) contained upland sites;

(2) other contained sites; and

(3) open water areas of relatively low productivity or low biological value.

Compliance: The proposed expanded PA would be an upland, fully-confined site.

(f) For new sites, dredged materials shall not be disposed of or placed directly on the boundaries of submerged lands or at such location so as to slump or migrate across the boundaries of submerged lands in the absence of an agreement between the affected public owner and the adjoining private owner or owners that defines the location of the boundary or boundaries affected by the deposition of the dredged material.

Compliance: Prior to designation of the expanded placement area, the site will be fully coordinated with appropriate State and Federal agencies and interested parties. All appropriate real estate requirements would be satisfied prior to use.

APPENDIX F

Distribution of the Draft Environmental Assessment

Distribution of the Draft Environmental Assessment

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APPENDIX G

Comments And Responses To The Draft Environmental Assessment