

Record of Decision  
Department of the Army Permit Application SWG-2006-00092 (Formerly 24071)  
Calhoun Port Authority's Proposed Matagorda Ship Channel Improvement Project

1. Name and Address of Applicant.

Calhoun Port Authority (CPA)  
P.O. Box 397  
Point Comfort, TX 77978

2. Project Introduction and Background.

In April 2005, the CPA submitted a Department of the Army (DA) Permit Application to widen and deepen approximately 26 miles of the Matagorda Ship Channel (MSC). The MSC In-Bay Channel is currently maintained by the Galveston District, U.S. Army Corps of Engineers (USACE) at a depth of -36 feet (ft) mean low tide (MLT) and width of 200 ft (all channel widths are bottom widths), and the MSC Entrance Channel to a depth of -38 ft MLT and a width of 300 ft. Maintenance dredging of the existing turning basin and bay reach of the MSC occurs approximately every 2 years, and the Gulf reach and entrance channel are maintaince dredged approximately every 2.5 years. Average annual volumes of maintenance material are 0.2 million cubic yards (mcy) from the turning basin, 2.6 mcy from the bay reach, none between the jetties due to scouring, and 0.26 mcy from the entrance channel, totaling approximately 3.0 mcy annually. The USACE places all maintenance material in a series of unconfined dredged material placement areas (PAs) within the bays and offshore. Throughout the remainder of this document, unless otherwise specified, channel dimensions refer to the In-Bay Channel portion of the MSC.

For the MSC Improvement Project (MSCIP), the applicant proposes to deepen the existing Point Comfort Turning Basin to -44 ft MLT, deepen the In-Bay Channel to -44 ft MLT and widen it to 400 ft, deepen the Entrance Channel to -46 ft MLT and widen it to 600 ft, and dredge a 3,000-foot-long extension of the Entrance Channel. The applicant also proposes to construct a new turning basin with a ship-turning circle of 1,650 ft and a depth of -44 ft MLT. New work and maintenance material would be placed in existing and proposed new PAs in the bays, offshore, and on land. It was determined that an Environmental Impact Statement (EIS) would be required for the proposed project. Since the 25 April 2006 Scoping Meeting held in the Bauer Community Center in Port Lavaca, Texas, the consulting firm of PBS&J, under the direction of the USACE, prepared Draft and Final Environmental Impact Statements (DEIS and FEIS, respectively) for the proposed project. The DEIS was made available for public and agency comment on 18 May 2007. A public hearing and workshop was held 9 August 2007 at the Bauer Community Center. Comments received during the comment period and at the public hearing have been considered in the evaluation of the project and incorporated into the MSCIP FEIS (July 2009). The FEIS was made available for public review and comment on 31 July 2009, with the comment period closing 31 August 2009.

The project is located in the MSC, in Calhoun County and Matagorda County, Texas. Specifically, the project site extends from the existing CPA berthing facilities at the Port of Port Lavaca-Point Comfort (Port), through Lavaca Bay and Matagorda Bay, and ends offshore in the Gulf of Mexico (Gulf). The project can be located on the U.S. Geological Survey quadrangle maps entitled Decros Point, Port O'Connor, Seadrift NE, Carancahua Pass, Keller Bay, Port Lavaca East, Turtle Bay, Olivia, and Point Comfort, Texas. The approximate UTM Zone 14 (NAD 83) coordinates for the western edge of the existing turning basin are Northing: 739,517; Easting: 3,170,920. Approximate UTM Zone 14 (NAD 83) coordinates for the project terminus in the Gulf (at Sta. -23+000) are Northing: 766,668; Easting: 3,142,394. Please see the attached vicinity map for the project location (Figure 1).

### 3. Preparation of the Environmental Impact Statement.

It was determined that an EIS would be required for the proposed project. On 24 March 2006, the USACE issued a Notice of Intent for the Public Scoping Meeting and Preparation of Draft Environmental Impact Statement for Widening and Deepening of the Matagorda Ship Channel in Calhoun County and Matagorda County, Texas. The Scoping Meeting was held on 25 April 2006. The DEIS was made available for a 45-day comment period on 18 May 2007. A public hearing and workshop was held 9 August 2007. Comments received during the comment period and at the public hearing have been considered in the evaluation of the project and incorporated into the FEIS. On 31 July 2009 the FEIS was made available for public review and comment. Comments received during the FEIS comment period are addressed in this Record of Decision.

To address the complex issues associated with the proposed project, USACE invited the following Federal and State agencies to provide technical advice during preparation of the EIS:

- National Marine Fisheries Service (NMFS)
- United States Coast Guard (USCG)
- United States Fish and Wildlife Service (FWS)
- Environmental Protection Agency (EPA)
- Texas Commission on Environmental Quality (TCEQ)
- Texas General Land Office (GLO)
- Texas Parks and Wildlife Department (TPWD)
- Texas Department of Transportation (TxDOT)
- Texas State Historic Preservation Officer (SHPO)

### 4. Authorities Applicable to the Proposed Project.

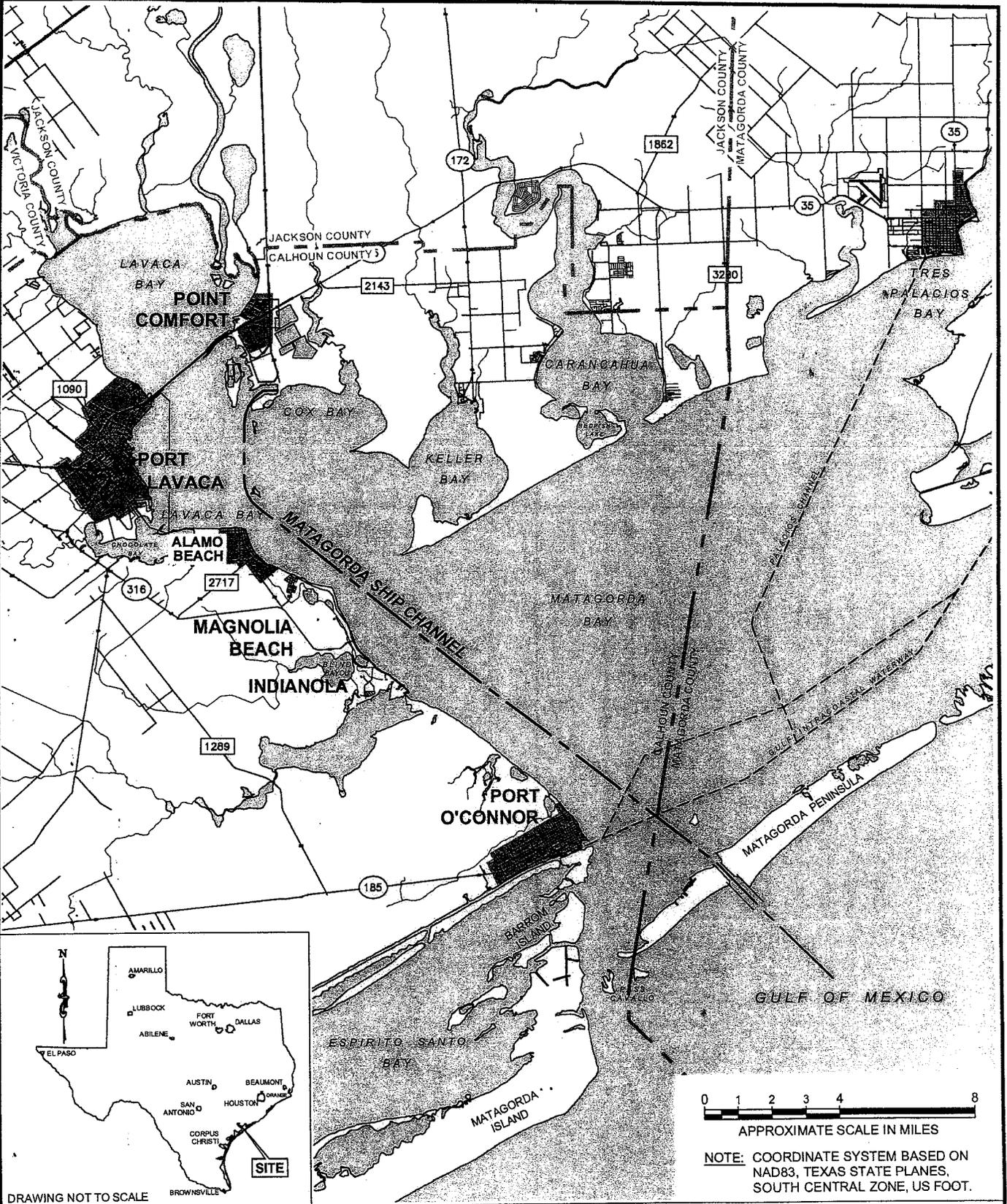
#### a. USACE Authorities.

Rivers and Harbors Act of 1899: Under Section 10 of the Rivers and Harbors Act, a permit is required for any structure and/or work in navigable waters of the United States.

Marine Protection, Research, and Sanctuaries Act (MPRSA): Under Section 103 of the MPRSA, a permit is required to authorize the transportation of dredged material by vessel or other vehicle for the purpose of placing it in ocean waters at placement areas (PAs) designated under 40 Code of Federal Regulations (CFR) Part 228.

Figure 1. Site Vicinity Map, MSCIP.

File: K:\ENG\25008809.Matagorda\_Ship\_Channel\_Improvement\_Project\05\_Dwgs\Acad\Permit\_Application-Section\_404\Figures (April 2009)\Fig 1 of 41 - Site Vicinity Map - April 2010.dwg Layout: VICINITY User: Norris\_Brown Plotted: Apr 27, 2010 - 1:17pm



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**SITE VICINITY MAP**

MATAGORDA SHIP CHANNEL IMPROVEMENT PROJECT  
MATAGORDA AND CALHOUN COUNTIES, TEXAS

CALHOUN COUNTY NAVIGATION DISTRICT



Clean Water Act (CWA): Under Section 404 of the CWA, a permit is required for the discharge of dredged or fill material into waters of the United States, including wetlands. Excavation and land-clearing activities may also be considered a discharge activity regulated under Section 404. Under Section 401 of the CWA, any action that may result in a discharge into waters of the United States requires a 401 certification from the state in which the discharge originates.

b. Other Authorities.

Refer to the FEIS for in-depth discussions of each authority.

National Environmental Policy Act (NEPA)  
Clean Air Act (CAA)  
Coastal Zone Management Act  
National Historic Preservation Act (NHPA)  
Fish and Wildlife Coordination Act  
Magnuson-Stevens Fishery Conservation and Management Act  
Endangered Species Act (ESA)  
Marine Mammal Protection Act of 1972  
Federal Water Project Recreation Act  
Coastal Barrier Improvement Act of 1990  
Farmland Protection Policy Act of 1981 and the Council on Environmental Quality  
Memorandum for Prime or Unique Farmlands  
Executive Order (EO) 11988, Floodplain Management  
EO 12898, Environmental Justice  
EO 11990, Protection of Wetlands

5. Project Description.

The applicant proposes to widen and deepen the MSC and add a turning basin and berthing area, as shown in the project plans (see Appendix A of the FEIS). The project includes widening and deepening the MSC from the Port marine slips and existing Point Comfort Turning Basin in Lavaca Bay (USACE Station 118+502) through Matagorda Bay and offshore into the Gulf (USACE Station -20+000). The total channel length would be increased to 27 miles by extending the Entrance Channel 3,000 feet into the Gulf (USACE Station -20+000 to -23+000). The applicant would construct a new turning basin at the intersection of the MSC and Alcoa Channel. Specifically, the applicant proposes deepening the In-Bay Channel from -36 ft MLT to -44 ft MLT, with 2 ft of advance maintenance and 2 ft of allowable overdepth. The In-Bay Channel would be widened from its existing width of 200 ft to a proposed width of 400 ft (see Figure 2.4-1 of the FEIS). The Entrance Channel would be deepened from -38 ft MLT to -46 ft MLT, with 3 ft of advance maintenance and 2 ft of allowable overdepth. The Entrance Channel width is proposed to be modified from 300 ft to 600 ft (see Figure 2.4-2 of the FEIS). The new turning basin would be constructed with a ship-turning circle of 1,650 ft, at a depth of -44 ft MLT, with 2 ft of advance maintenance and 2 ft of allowable overdepth. The project would generate approximately 46.5 mcy of new work dredged material, and 257.6 mcy of maintenance dredged material over a 50-year period (5.2 mcy of maintenance material annually). New work and maintenance material would be dredged using hydraulic pipeline dredges, clamshell dredges,

and hopper dredges. The dredged material placement plan would utilize new work and maintenance dredged material to:

- create an in-bay upland site (PA A1) located south of the Port at the existing USACE in-bay PAs 18 and 19 with 7 mcy of new work material and 74.4 mcy of maintenance material;
- create a marsh site (PA A2) near the northern shore of Cox Bay, to deter future erosion in this area, with 3.5 mcy of new work material;
- provide beach nourishment (PAs BN1, BN2, and BN3) on public beaches along the Magnolia-Indianola shoreline with 1.9 mcy of new work material;
- create an in-bay upland site (PA D) adjacent to the southwest side of an existing PA, Dredge Island, with 1.5 mcy of new work material and 17.4 mcy of maintenance material;
- place submerged cap and culch material to create oyster reefs (PA ER1/OR) on bottom sediments impacted with elevated levels of mercury within Lavaca Bay southwest of Dredge Island with 1.4 mcy of new work stiff clay material and 0.7 mcy of new work sand, creating oyster reefs on the mounded caps;
- cap in situ bottom sediments impacted with elevated levels of mercury (PA ER3) located on the northern edge of Dredge Island with 1.8 mcy of new work material and 22.1 mcy of maintenance material;
- protect the eroding shoreline at Sand Point by constructing armored earthen levees and in-bay marshes (PA G) with 4.7 mcy of new work material and 0.4 mcy of in situ material;
- create an upland placement site (PA P1) located immediately south of Alamo Beach on agriculture lands with 1.5 mcy of new work material and 21.1 mcy of maintenance material;
- place 108.9 mcy of maintenance material in existing in-bay unconfined USACE PAs 5 to 12) located northeast of the MSC in Matagorda Bay, on the existing unconfined Sundown (Bird) Island PA (USACE PA 116-A) near the intersection of the MSC and the GIWW in Matagorda Bay, and in an existing beach nourishment PA (USACE PA 117-A) at Port O'Connor Beach (new work material may also be placed at PA 116-A and PA 117-A);
- create a multi-use habitat site (PA H4) north of Port O'Connor along the MSC, to include marshes, submerged aquatic vegetation (SAV) platforms, and a bird island, with 10 mcy of new work material;
- place 13.6 mcy of maintenance material from the MSC Entrance Channel at the existing Matagorda Ocean Dredged Material Disposal Site (ODMDS) (PA 1), located 2 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline; and
- place 12 mcy of new work material from the Matagorda Bay In-Bay Channel and MSC Entrance Channel at a proposed one-time use ODMDS (PA O5) located

approximately 3 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline.

Unavoidable impacts would occur to estuarine wetlands, freshwater wetlands, oyster reefs, and bay and offshore bottom. Specifically, 19.0 acres (ac) of estuarine wetlands (1.1 ac of low marsh and 17.9 ac of high marsh) and 1.5 ac of freshwater farmed wetlands would be filled by PAs. A total of 162.7 ac of oyster reef would be adversely impacted by the proposed project: 132.6 ac of oyster reef would be directly impacted by widening the existing ship channel (129.2 ac) and by placement of dredged material (3.4 ac); and the loss of an additional 30.1 ac of reef represents the difference between reef negatively impacted and reef positively impacted indirectly by project-induced increases in salinity described in the Hydrodynamic Salinity Model Results Report (Appendix L of the FEIS). Approximately 7,218 ac of bay or offshore bottom would be impacted by the proposed project: 575 ac of bay bottom and 213 ac of offshore bottom dredged to deepwater habitat within the widened channel; 1,487 ac of bay bottom converted to in-bay uplands; 1,350 ac of bay bottom and 2,053 ac of offshore bottom impacted by unconfined placement of dredged material; and 1,540 ac of bay bottom enhanced by habitat creation (marsh, oyster reef, beach nourishment, or sand platform conducive to seagrass colonization).

Based on past mitigation requirements for estuaries and the findings of the Habitat Equivalency Analysis (HEA) (Appendix C of the FEIS), the applicant offered compensatory mitigation for unavoidable adverse impacts to aquatic habitats at creation:impact ratios of 3:1 for low marsh, approximately 2:1 for high marsh, and 1:1 for impacts, including salinity impacts, to oyster reefs as explained in the Oyster Reef Impact Assessment (Appendix O of the FEIS). Compensatory mitigation for impacts to farmed freshwater wetlands was offered at a ratio of 3:1. As compensatory mitigation for unavoidable impacts to aquatic resources, the applicant offered to create 3.3 ac of low marsh and 35.8 ac of high marsh to mitigate for impacts to estuarine wetlands, create 4.5 ac of emergent marsh to compensate for impacts to 1.5 ac of farmed freshwater wetlands, create 163 ac of oyster reef to compensate for the loss of oyster production resulting from direct and indirect project-related impacts to natural oyster reef habitats, and create 605.9 ac of low marsh to compensate for impacts to open-bay/offshore bottom, as explained in the Mitigation Plan (Appendix Q of the FEIS).

## 6. Scope of Analysis.

The determination of what is the appropriate scope of analysis governing the USACE's permit review and decision is guided by the USACE's NEPA regulations for the regulatory program, 33 CFR Part 325, Appendix B. Paragraph 7.b of Appendix B states that the scope of analysis should be limited to the specific activity requiring a DA permit and any additional portions of the entire project over which there is sufficient Federal control and responsibility to warrant NEPA review. Factors to consider in determining whether sufficient control and responsibility exist include: 1) whether or not the regulated activity comprises "merely a link" in a corridor type project; 2) whether there are aspects of the upland facility in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activity; 3) the extent to which the entire project will be within USACE jurisdiction; and 4) the extent of cumulative Federal control and responsibility. Generally, the USACE area of responsibility includes all waters of the United States, as well as any additional areas of non-jurisdictional waters or uplands where the district determines there is adequate Federal control and responsibility to justify including those areas within the USACE's NEPA scope of analysis. This normally includes upland areas in the immediate vicinity of the waters of the United States where the

regulated activity occurs (Standard Operating Procedures for the U.S. Army Corps of Engineers Regulatory Program – July 2009).

Regarding factors to consider in determining whether there is adequate Federal control and responsibility to warrant NEPA review at the project site, the regulated activities associated with the MSCIP do not comprise a link in a corridor-type project.

The design of the 246.5-acre upland portion of proposed PA P1 occurring in the immediate vicinity of regulated activities (fill of approximately 1.5 ac of adjacent jurisdictional wetlands in PA P1) does affect the location and configuration of the regulated activities. The wetland is surrounded by the uplands, and thus cannot be avoided due to the design of the upland portions of PA P1. The design of 85.3 ac of existing upland PAs occurring in the immediate vicinity of regulated activities (fill of waters of the US with dredged material during the construction and use of proposed PAs A1 and ER3/D) does affect the location and configuration of the regulated activities. Construction of the proposed PAs utilizing existing upland PAs is necessary to reduce aquatic impacts including impacts to nearby oyster reef, while maximizing PA capacity.

Regarding the extent to which the entire project will be within Corps jurisdiction, the MSCIP will directly or indirectly impact 19.0 ac of estuarine wetlands, 1.5 ac of freshwater farmed wetlands, 162.7 ac of oyster reefs, 7,218 ac of bay or offshore bottom (including 1,540 ac of bay bottom enhanced by habitat creation), and 330.0 ac of uplands. Uplands are not jurisdictional under the authorities of Section 404 of the CWA or Section 10 of the Rivers and Harbors Act of 1899, and uplands development frequently occurs in the Matagorda Bay area without the need for DA authorization.

Regarding consideration of the extent of cumulative Federal control and responsibility for the proposed project, we appropriately relied on and fully considered information and reports from Federal and state agencies pursuant to their responsibilities under the Fish and Wildlife Coordination Act (FWS and TPWD) the Endangered Species Act (FWS and NMFS), and the Magnuson-Stevens Fishery Conservation and Management Act for Essential Fish Habitat (NMFS). ESA and Essential Fish Habitat coordination was successfully completed. Our staff archeologist reviewed the project site and determined that the permit area was likely to yield resources eligible for inclusion in the National Register of Historic Places. An investigation for the presence of potentially eligible historic places was conducted and coordinated with the SHPO under Section 106 of the National Historic Preservation Act. Anomalies were identified in PA footprints and in the new construction areas along the MSC, and additional surveys and coordination with the SHPO would be required.

Based on our examination of our NEPA regulations (33 CFR Part 325, Appendix B) and applicable program guidance (e.g. the Council on Environmental Quality's Considering Cumulative Effects Under the National Environmental Policy Act and the Standard Operating Procedures for the U.S. Army Corps of Engineers Regulatory Program – July 2009), we have determined that, with regard to sufficient Federal control and responsibility warranting NEPA review of the entire project site, the MSCIP does not meet the first, third, and fourth factors, its status as a link in a corridor type project, the extent to which the entire project will be within USACE jurisdiction, and the extent of cumulative Federal control and responsibility. However, it does meet the second factor, the aspects of the upland facility in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activities. Therefore, sufficient Federal control and responsibility does exist to warrant expanding our review under NEPA to areas outside our jurisdiction. Our Scope of Analysis for uplands will include the uplands which would be impacted by PA construction and use. Our

Scope of Analysis for waters of the U.S. will include all such areas to be impacted throughout the project site, as well as those existing areas involved in the proposed compensatory mitigation plan.

7. Environmental Assessment.

a. Purpose and Need for the Work.

The purpose of the project is to deepen and widen the MSC to eliminate existing operational constraints caused by draft limitations.

The project need is the elimination of existing operational constraints to avoid vessel delays, thereby reducing shipping costs and logistical problems. The concept of public and private need for the proposed project is important to the balancing process of the USACE public interest review (33 CFR 320.4(a)(2)(i)). A private applicant's proposal may satisfy a public as well as a private need. The vast majority of deep-draft commodity movement in the MSC is for the import of raw material for use by the chemical and alumina processing plants located at or near Point Comfort. The processing facilities are connected to the docks by pipelines or conveyor systems. Processed chemicals, plastics, and alumina are then distributed from the Port area on ships, barges, and rail. These major industrial processing facilities are critical to the local economy and are dependent on efficient and reliable Port operations. The USACE has completed two reconnaissance reports that have identified the present configuration as a constraint to a more efficient maritime commerce and have recommended improvements that would contribute to national economic development (NED) goals. Specifically, according to the reports, the current draft and width of the MSC limit modern deep-draft cargo vessels, which affects terminal capacity and economic efficiency of seaborne trade. These limitations are confirmed by current light-loading practices and one-way vessel access on the channel. A review of current liquid bulk (tankers) and dry bulk cargo vessels, the dominant deep-draft vessels operating in the MSC, indicates that these average ship dimensions exceed the capacity of the MSC and affect the delivery of supplies and commodities to the Port. Restrictive drafts associated with the current configuration of the MSC force deep-draft vessels to light-load, and constraints increase the cost of raw materials and products delivered to the Port and adjacent users. The proposed channel modifications would reduce transportation costs for existing commodities that are crucial to the regional economy. These issues are discussed in more detail in the FEIS.

b. Alternatives.

The goal of the alternatives analysis is to identify the environmentally preferable alternatives, the alternative(s) with the least overall adverse impacts to the existing environment. According to NEPA and the CWA, the "environmentally preferable" alternative promotes the national environmental policy. In general, the selected alternative(s) should minimize impacts to the biological and physical environment. NEPA requires that impacts to the human environment be addressed. The human environment "shall be interpreted comprehensively to include the natural and physical environment and the relationship of people to that environment" (40 CFR 1508.14).

While alternate sites might be considered alternatives for some projects that address a national or statewide need, such is not the case for the present permit application. There are no reasonable cost-effective options for diverting commodities or production to other

facilities in the United States. Therefore, the types of alternatives addressed are non-structural methods and combinations of MSC widening and deepening alternatives and dredged material placement alternatives at the project location.

Non-structural measures, which generally allow for greater unit vessel-loading economies without additional construction, were examined as a means of achieving the planning objectives. Examples are light-loading of vessels and split or coastwise deliveries currently in use at the Port. For the anticipated future shipments of liquefied natural gas (LNG), light loading or split shipments are not feasible since the structural design of the vessels does not allow for the shifting of weight that would occur in a partially loaded vessel. Use of tides cannot be used to increase vessel drafts because of the small tide range and long fetches, and because the depth available for navigation in Matagorda Bay is more highly influenced by meteorological conditions than by predictable tidal cycles. Lightering, or offshore transfer of cargo to smaller vessels, is not suitable for bauxite, bulk cargo such as pet-coke, or LNG. Therefore, non-structural alternatives were dropped from consideration, as they are currently in use to the extent practical.

Based on the dimensions of both the existing and potential ore carrier, chemical carrier, and LNG carrier vessels using the Port, a series of channel configuration alternatives (Channel Alternatives) selected to safely accommodate a range of vessels was developed (Table 1).

Table 1. Structural Channel Alternatives Evaluated for the MSCIP.

Channel Alternative No.	Turning Basins/ In-Bay Channel		Entrance Channel		Dredged Volume
	Depth (MLT) (ft)*	Width (ft)	Depth (MLT) (ft)*	Width (ft)	Total (mcy)
No Action	36	200	38	300	0.0
1989 Recon	42	200	44	300	12.50
1	40	350	42	450	28.14
2	42	350	44	600	33.10
3	44	400	46	600	46.50
4	51	400	53	600	60.81

\*Project depth without 2 or 3 ft of advance maintenance and 2 ft of allowable overdepth. Dredged volumes include advance maintenance and allowable overdepth.

During a screening process described in Section 2.2.2 of the FEIS, an evaluation framework was developed to measure, quantify, and report impacts from each channel alternative using criteria derived from USACE water resource planning guidance. Technical criteria were based on maximizing navigational attributes of the waterway for commercial vessel transportation in a manner that would achieve the stated purpose and need of the project with the least environmental effects.

Preliminary analysis resulted in elimination of the 200x42 channel (1989 Recon Alternative) for deepening only, because it would not accommodate larger LNG vessels, and the 350x40 channel (Channel Alternative 1) as it would result in increased light loading of dry bulk and chemical carriers compared to Channel Alternatives 2 and 3. The deepest (51-ft depth)

channel alternative (Channel Alternative 4) was eliminated from consideration because of the high cost of initial construction and small incremental transportation benefits over a 44-ft depth channel alternative (Channel Alternative 3). The 350x42 (Channel Alternative 2) and the 400x44 (Channel Alternative 3) alternatives were identified as the two channel alternatives for further evaluation.

A Dredged Material Management Plan (DMMP) Workgroup composed of resource agencies and other entities met to discuss the potential alternatives for new work and maintenance dredged material placement. A range of dredged material placement alternatives were considered, including upland confined placement, beneficial use, unconfined in-water placement, Gulf unconfined placement, and a combination of these placement locations. The DMMP Workgroup evaluated three placement options: Upland Confined Placement, Gulf Unconfined Placement, and Multi-Use Placement.

Under the Upland Confined Placement Alternative, all material dredged from the Entrance and In-Bay channels would be placed within upland confined sites. Two existing upland PAs currently used to place maintenance material from the MSC lack sufficient capacity to receive all of the new work and maintenance dredged material anticipated to be generated by the proposed MSCIP. Several other potential upland PAs were identified that cumulatively could accommodate both the new work and maintenance dredged material. However, because of environmental impacts including wetland impacts, financial costs associated with land acquisition and compensatory mitigation for wetland impacts, and long pumping distances, this alternative was dropped from further consideration.

Under the Gulf Unconfined Placement Alternative, all materials dredged from the Entrance and In-Bay channels would be placed within an existing ODMDS located offshore of the Matagorda Peninsula and adjacent to the southwest side of the Entrance Channel (PA 1), and within a potential new work material ODMDS (PA O5) for the one-time placement of the MSCIP new work dredged material. Both PA 1 and PA O5 are dispersive sites; therefore, their capacities are considered unlimited provided mounding does not exceed the permitted height. This alternative would minimize the conversion of bay bottom and open water to marsh or uplands by avoiding the placement of dredged material at in-bay sites. However, it does not provide any opportunities to use the dredged material beneficially, so the alternative was dropped from further consideration.

Under the Multi-Use Placement Alternative, new work and maintenance dredged material would be placed within a combination of existing and proposed upland, in-bay, and offshore PAs. Appendix B of the FEIS provides a complete description of each Multi-Use Placement Alternative. Five Multi-Use Placement Alternatives were developed for evaluation (see Section 2.3.2.1 in the FEIS) and compared in regards to environmental impacts and benefits, and practicability. Environmental impacts and outputs for each of the alternatives were determined using the HEA, as coordinated with the DMMP Workgroup (see Appendix C to the FEIS). Based upon comparing HEA outputs and cost to construct among the alternatives, it was concluded that Alternative 2A of the Multi-Use Placement Alternatives provided the greatest environmental output, and also had a practicable cost. However, based on information on environmental impacts received from the agencies and public during the

DEIS comment period, that alternative was slightly modified and reevaluated becoming the applicant's preferred DMMP alternative.

Under the Multi-Use Placement Alternatives, some dredged material would be placed in ODMDSs. Section 103 of the MPRSA authorizes the USACE to permit the placement of dredged material within an ODMDS, subject to EPA concurrence and use of EPA's dumping criteria (see Appendix N of the FEIS). To allow for the one-time placement of new work dredged material at PA O5 and for continued use of the existing maintenance material ODMDS (PA 1), a Section 103 permit from USACE is required.

Two action alternatives were developed, in addition to the proposed project and the No-Action Alternative. The three action alternatives included: 1) Channel Alternative 3 (400x44) with DMMP Alternative 2A, referred to as the "DEIS Proposed Alternative"; 2) Channel Alternative 3 (400x44) with DMMP Alternative 3, referred to as the "Applicant's Preferred Alternative"; and 3) Channel Alternative 2 (350x42) with DMMP Alternative 3 modified for reduced dredged material quantities. All are discussed in greater detail within the FEIS.

(1) No-Action Alternative.

The No-Action Alternative for this project is one that would result in no construction requiring a DA permit. Since the proposed project requires dredging activities in navigable waters, it could not be constructed without a DA permit. Thus, the No-Action Alternative is equivalent to USACE denial of the permit for proposed modifications to the MSC. In the event of permit denial, the channel and existing turning basin would not be widened or deepened, the new turning basin and berthing area would not be constructed, and the entrance channel would not be extended. The existing project would continue to be maintained at its current dimensions, maintenance dredged material would be placed in compliance with the applicable DMMP, current navigation restrictions as described in Section 3.10 of the FEIS would continue, and the Port would not benefit from the elimination of those operational constraints. There would be no opportunities to use new work dredged material beneficially. Without the proposed channel improvements, the following is likely to occur: long-term increase in transportation costs to navigation; and loss of potential for increased channel usage. The No-Action Alternative does not meet the purpose and need for the proposed project.

(2) Action Alternatives.

(a) Alternative 1.

Action Alternative 1, the DEIS Proposed Alternative, consists of a modified MSC with a -44 ft MLT, 400-foot-wide In-Bay Channel and a -46 ft MLT, 600-foot-wide Entrance Channel. The new turning basin would be constructed to a depth of -44 ft MLT. Because of scouring, no new work or maintenance dredging would be required through the Matagorda Peninsula and Jetties. The project would generate approximately 46.5 mcy of new work material, and 257.5 mcy of maintenance material over 50 years. New work and maintenance dredged material would be utilized to:

- create an in-bay upland site (PA A1) located south of the Port at the existing USACE in-bay PAs 18 and 19 with 3.3 mcy of new work material and 45.1 mcy of maintenance material;
- create a combination upland and marsh site (PA A2) along the northern shore of Cox Bay to deter future erosion in this area, with 6.2 mcy of new work material;
- create a clay-core oyster reef (PAs OR1 and OR2) within Lavaca Bay with approximately 1 mcy of new work material;
- provide beach nourishment (PAs BN1, BN2, and BN3) on public beaches along the Magnolia-Indianola shoreline with 1.9 mcy of new work material;
- create an in-bay upland site (PA D) adjacent to the southwest side of existing Dredge Island with 1.6 mcy of new work material and 14.8 mcy of maintenance material;
- place submerged cap and place culch material to create oyster reefs on (PA ER1) bottom sediments impacted with elevated levels of mercury within Lavaca Bay southwest of Dredge Island with 0.4 mcy of new work stiff clay material, creating oyster reefs on the mounded caps;
- cap in situ bottom sediments impacted with elevated levels of mercury located in shallow waters along State Highway 35 and then create an upland site (PA ER2) with 2.1 mcy of new work material and 6.9 mcy of maintenance material;
- cap in situ bottom sediments impacted with elevated levels of mercury located on the northern edge of Dredge Island and then create a transitional marsh and upland site (PA ER3) with 2.3 mcy of new work material and 13.2 mcy of maintenance material;
- protect the eroding shoreline at Sand Point by constructing armored earthen levees and in-bay marshes (PA G) with 4.7 mcy of new work material and 0.4 mcy of in situ material;
- create an upland placement site (PA P1) located immediately south of Alamo Beach on agriculture lands with 1 mcy of new work material and 55 mcy of maintenance material;
- place 108.9 mcy of maintenance material in existing in-bay unconfined PAs (PAs 5 to 12) located northeast of the MSC;
- create a multi-use habitat site (PA H4) located north of Port O'Connor along the MSC to include marshes, SAV platforms, and a bird island with 10 mcy of new work material;
- place 13.6 mcy of maintenance material from the MSC Entrance Channel at the existing Matagorda ODMDS (PA 1) located 2 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline; and
- place 8.8 mcy of new work soft clay material from the MSC In-Bay Channel and 3.2 mcy of new work mixed material from the MSC Entrance Channel at a proposed one-time use ODMDS (PA O5) located approximately 3 miles

offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline.

Figure 2.4-3 of the FEIS shows this proposed dredged material placement plan. Acreages of habitat impacted and created from implementation of the plan are provided in Table 2.4-1 of the FEIS, and Table 2.4-2 of the FEIS provides a list of placement features and the corresponding volume of dredged material to be placed in each feature for the DEIS Proposed Alternative.

Access channels with a draft of at least –6 ft MLT would be necessary for the placement of stone on the perimeter of some PAs and for providing access for the spill barges and support equipment for dredged material placement. PAs A1, A2, D, ER2, ER3, G, and G-Levee may require access channels. Material dredged from access corridors would be placed along the access channel alignment and pulled back into the access channel upon completion of construction. Section 2.4.2.3 of the FEIS includes additional detail regarding access channels for the DEIS Proposed Alternative.

This alternative would impact approximately 4,149 ac of open-bay bottom and 2,266 ac of offshore bottom. Impacts include 148.2 ac of oyster reef, 700 ac of agricultural land including 104 ac of palustrine emergent marsh and 1.5 ac of farmed wetland, and 36.4 ac of estuarine marsh. This alternative would create approximately 77 ac of open-bay bottom and 917 ac of ship channel bottom. It would create 298 ac of oyster reef, 588 ac of estuarine low marsh and 23 ac of estuarine high marsh, 325 ac of sand platform for SAV colonization, 125 ac of beach, and 25 ac of bird island. Construction would generate 4,889.9 tons of nitrogen oxide emissions, the highest amount generated for any action alternative. There would be an increase in noise at the nearest receptors during construction, and increased noise impacts at PA P1. The wider, deeper channel would reduce ship wakes with no expected change in shoreline erosion. This alternative would place 108.9 mcy of maintenance dredged material in unconfined PAs in Matagorda Bay, cause temporary impacts to water quality from construction and maintenance proportional to the channel size, and decrease the potential for redistribution of mercury during storm surge in part by capping 358 ac of mercury-impacted sediment (not including oyster mitigation). There would be reduced delays to navigation with the improved channel. Confined in-bay placement of dredged material would result in increased productivity in the bay compared to the No-Action Alternative, providing benefits to wildlife reflected in a HEA score of 4,889 (higher than Alternative 2 score of 4,492), protection of 250 ac of SAV in Keller Bay, creation of 325 ac of SAV suitable sand platform, and a net increase of 573 ac of estuarine marsh. The alternative may affect, but is not likely to adversely affect Kemp's ridley sea turtle, hawksbill sea turtle, leatherback sea turtle, nesting green sea turtle, loggerhead sea turtle, whooping crane, brown pelican, piping plover, and West Indian manatee if avoidance and minimization measures are implemented, and there is a chance of sea turtle takes during construction and maintenance dredging with hopper dredges. Short-term increase in employment during construction would be expected, as would the potential for economic growth from new development along the MSC.

(b) Alternative 2.

Action Alternative 2, the Applicant's Preferred Alternative, has channel modifications identical to Alternative 1, but with a different DMMP. The proposed channel modifications are an In-Bay Channel of -44 ft MLT by 400 ft, Entrance Channel of -46 ft MLT by 600 ft, and a new turning basin of -44 ft MLT with a 1,650-ft ship-turning circle. Like Alternative 1, the Applicant's Preferred Alternative would generate approximately 46.5 mcy of new work material and 257.5 mcy of maintenance material over 50 years. The DMMP is the result of modifications made per agency and public comment received on the DEIS. The Applicant's Preferred Alternative would utilize new work and maintenance dredged material to:

- create an in-bay upland site (PA A1) located south of the Port at the existing USACE in-bay dredged material PAs 18 and 19 with 7 mcy of new work material and 74.4 mcy of maintenance material;
- create a marsh site (PA A2) near the northern shore of Cox Bay, to deter future erosion in this area, with 3.5 mcy of new work material;
- provide beach nourishment (PAs BN1, BN2, and BN3) on public beaches along the Magnolia-Indianola shoreline with 1.9 mcy of new work material;
- create an in-bay upland site (PA D) adjacent to the southwest side of existing Dredge Island with 1.5 mcy of new work material and 17.4 mcy of maintenance material;
- place submerged cap and place culch material to create oyster reefs on (PA ER1/OR) bottom sediments impacted with elevated levels of mercury within Lavaca Bay southwest of Dredge Island with 1.4 mcy of new work stiff clay material and 0.7 mcy of new work sand, creating oyster reefs on the mounded caps;
- cap in situ bottom sediments impacted with elevated levels of mercury located on the northern edge of Dredge Island (PA ER3) with 1.8 mcy of new work material and 22.1 mcy of maintenance material;
- protect the eroding shoreline at Sand Point by constructing armored earthen levees and in-bay marshes (PA G) with 4.7 mcy of new work material and 0.4 mcy of in situ material;
- create an upland placement site (PA P1) located immediately south of Alamo Beach on agriculture lands with 1.5 mcy of new work material and 21.1 mcy of maintenance material;
- place 108.9 mcy of maintenance material in existing in-bay unconfined PAs (PAs 5 to 12) located northeast of the MSC in Matagorda Bay, on the existing unconfined Sundown (Bird) Island PA (PA 116-A) near the intersection of the MSC and the GIWW in Matagorda Bay, and in an existing beach nourishment PA (PA 117-A) at Port O'Connor Beach (new work material may also be placed at PA 116-A and PA 117-A);

- create a multi-use habitat site (PA H4) located north of Port O'Connor along the MSC to include marshes, SAV platforms, and a bird island with 10 mcy of new work material;
- place 13.6 mcy of maintenance material from the MSC Entrance Channel at the existing Matagorda ODMDS (PA 1) located 2 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline; and
- place 12 mcy of new work material from the Matagorda Bay In-Bay Channel and MSC Entrance Channel at a proposed one-time use ODMDS (PA O5) located approximately 3 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline.

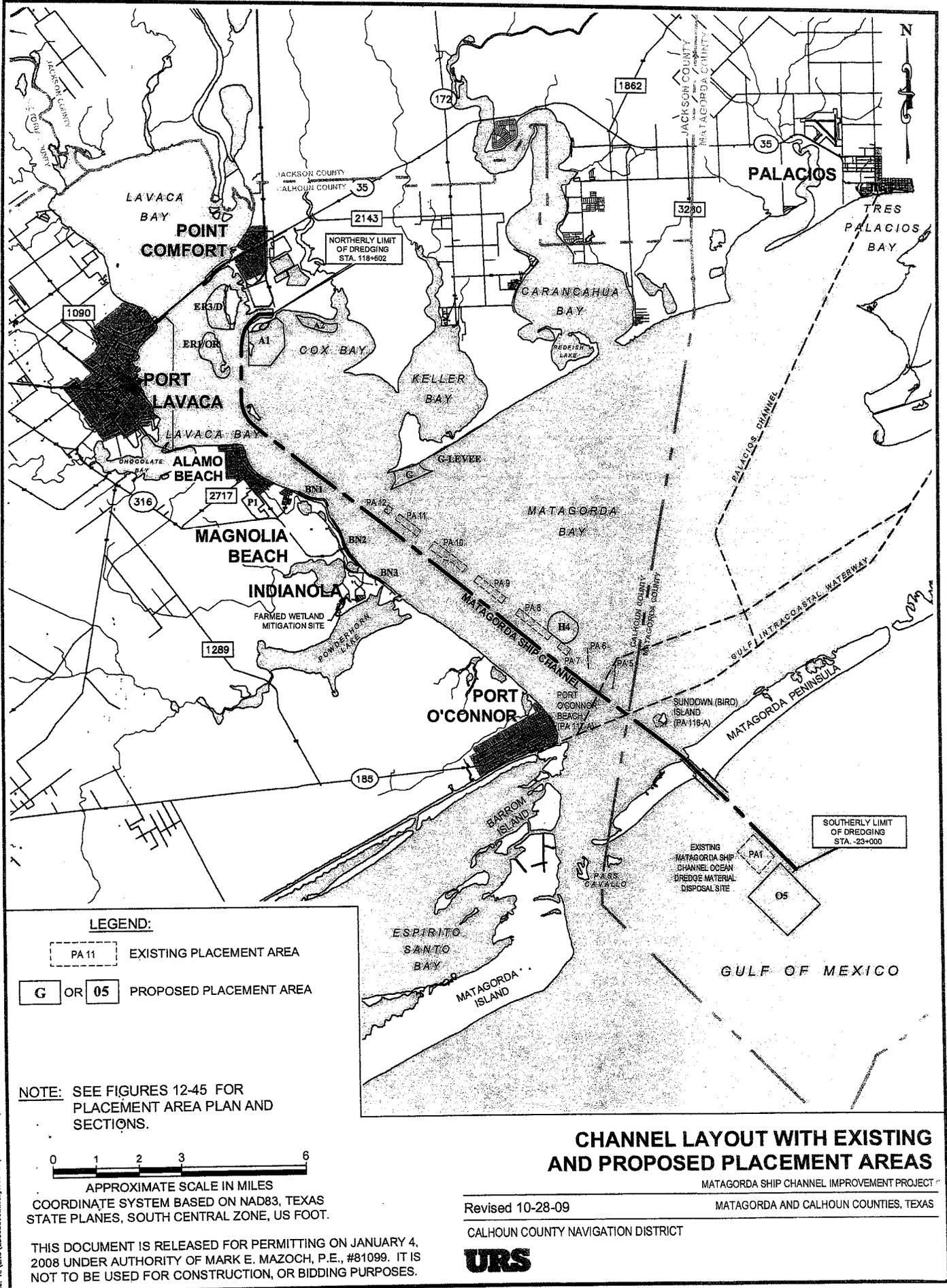
Figure 2 shows the proposed dredged material placement plan for the Applicant's Preferred Alternative. Acreages of habitat impacted and created from implementation of the plan are provided in Table 2.4-3 of the FEIS, and Table 2.4-4 of the FEIS provides a list of placement features and the corresponding volume of dredged material to be placed in each feature.

Access channels would be used primarily for the placement of stone on the perimeter of some PAs and for providing access for the spill barges and support equipment for dredged material placement. PAs A1, A2, ER3/D, G, and G-Levee may require access channels. Material dredged from access corridors would be placed along the access channel alignment and pulled back into the access channel upon completion of construction. Section 2.4.3.3 of the FEIS includes additional detail regarding access channels for the Applicant's Preferred Alternative.

The Applicant's Preferred Alternative would impact 14 more acres of open bay bottom than Alternative 1 and an equal amount of offshore bottom. The Applicant's Preferred Alternative would impact 15 less acres of oyster reef, 454 less acres of agricultural land, 17.4 less acres of marsh, and 104 less acres of palustrine emergent marsh, 325 ac of sand platform for SAV colonization, 125 ac of beach, and 25 ac of bird island.

Nitrogen oxide emissions from construction, 4,492.4 tons, would be lower than the amount generated for Action Alternative 1 (4,889.9). There would be less noise impacts during construction of the smaller Alternative 2 PA P1. In common with Alternative 1, Alternative 2 would result in the following environmental impacts: the wider, deeper channel would reduce ship wakes with no expected change in shoreline erosion; 108.9 mcy of maintenance dredged material would be placed in unconfined PAs in Matagorda Bay; there would be temporary impacts to water quality from construction and maintenance proportional to the channel size; a decrease in the potential for redistribution of mercury during storm surge in part from capping 358 ac of mercury-impacted sediment (not including oyster mitigation); and there would be reduced delays to navigation with the improved channel. Confined in-bay placement of dredged material would result in increased productivity in the bay over the No-Action Alternative, providing benefits to wildlife reflected in a HEA score of 4,492 (less than Alternative 1 HEA score of 4,889), protection of 250 ac of SAV in Keller Bay, creation of 325 ac of SAV suitable sand platform, and a net increase of 645 ac of

Figure 2. Channel Layout with Existing and Proposed Placement Areas, MSCIP.



File: K:\VMS\2500809.Matagorda\_Ship\_Channel\_Improvement\_Permit\_Application\_Section\_40A\Figures (April 2009)\Fig 2 of 41 - Existing and Potential Areas - April 2010.dwg  
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estuarine marsh. Impacts to endangered and threatened species are similar to Alternative 1. Short-term increase in employment during construction would be expected, as would the potential for economic growth from new development along the MSC.

(c) Alternative 3.

The proposed action under this alternative, termed the 350x42 Alternative, is similar to that described for the Applicant's Preferred Alternative, except that the channel would be narrower and shallower, widened to 350 ft instead of to 400 ft, deepened to 42 ft instead of 44 ft, and the DMMP for Alternative 3 has been modified for a reduced amount of new work and maintenance dredged material. This alternative includes deepening the Entrance Channel to -44 ft MLT and widening it to 600 ft. The new turning basin would be constructed with a ship-turning circle of 1,650 ft, at a depth of -42 ft MLT. Approximately 33.1 mcy of new work material would be generated, and 233.9 mcy of maintenance material would be generated over a period of 50 years. As described for the other action alternatives, no new work or maintenance dredging is expected through the Matagorda Peninsula and Jetties.

Alternative 3 of the Multi-Use Placement Alternatives was modified to meet the reduced dredged material quantities expected to result from the 350x42 channel. This dredged material placement plan is similar to that described for the Applicant's Preferred Alternative and entails features that would utilize new work and maintenance dredged material to:

- create an in-bay upland site (PA A1) located south of the Port at the existing USACE in-bay dredged material PAs 18 and 19 with 5.5 mcy of new work material and 74.4 mcy of maintenance material;
- create a marsh site (PA A2) near the northern shore of Cox Bay, to deter future erosion in this area, with 2.8 mcy of new work material;
- provide beach nourishment (PAs BN1, BN2, and BN3) on public beaches along the Magnolia-Indianola shoreline with 1.1 mcy of new work material;
- create an in-bay upland site (PA D) adjacent to the southwest side of existing Dredge Island with 1 mcy of new work material and 6.5 mcy of maintenance material;
- place submerged cap and place culch material to create oyster reefs on (PA ER1/OR) bottom sediments impacted with elevated levels of mercury within Lavaca Bay southwest of Dredge Island with 0.7 mcy of new work stiff clay material and 0.8 mcy of new work sand, creating oyster reefs on the mounded caps;
- cap in situ bottom sediments impacted with elevated levels of mercury located on the northern edge of Dredge Island (PA ER3) with 1.3 mcy of new work material and 22.1 mcy of maintenance material;
- protect the eroding shoreline at Sand Point by constructing armored earthen levees and in-bay marshes (PA G) with 1.6 mcy of new work material and 0.4 mcy of in situ material;

- create an upland placement site (PA P1) located immediately south of Alamo Beach on agriculture lands with 1.1 mcy of new work material and 21.1 mcy of maintenance material;
- place 96.4 mcy of maintenance material in existing in-bay unconfined PAs (PAs 5 to 12) located northeast of the MSC in Matagorda Bay;
- create a multi-use habitat site (PA H4) located north of Port O'Connor along the MSC to include marshes, SAV platforms, and a bird island with 7 mcy of new work material;
- place 13.4 mcy of maintenance material from the MSC Entrance Channel at the existing Matagorda ODMDS (PA 1) located 2 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline; and
- place 2.5 mcy of new work soft clay material from the MSC In-Bay Channel and 3.2 mcy of new work mixed material from the MSC Entrance Channel at a proposed one-time use ODMDS (PA O5) located approximately 3 miles offshore from the Matagorda Peninsula and 1,000 ft south of the MSC Entrance Channel centerline.

A figure of this proposed dredged material placement plan is provided as Figure 2.4-6 of the FEIS. Acreages of habitat impacted and created from implementation of the plan are provided in Table 2.4-5 of the FEIS, and Table 2.4-6 of the FEIS provides a list of placement features and the corresponding volume of dredged material to be placed in each feature.

As described for other alternatives, access channels would be used primarily for the placement of stone on the perimeter of some PAs and for providing access for the spill barges and support equipment for dredged material placement. Section 2.4.4.3 of the FEIS includes additional detail regarding access channels for the 350x42 Alternative.

The 350x42 Alternative would impact approximately 3,350 ac of open-bay bottom, less than the other two action alternatives, and 1,706 ac of offshore bottom, less than the 2,266 ac of the other alternatives. Aquatic habitat impacts also include 1 ac of estuarine low marsh and 16 ac of estuarine high marsh, 93 ac of oyster reef, and 1 ac of farmed wetland. When compared to the Applicant's Preferred Alternative, it would impact an equal amount of estuarine low marsh and 2 less acres of estuarine high marsh, and 40 less acres of oyster reef. This 350x42 Alternative would create approximately 367 ac of estuarine low marsh, 32 ac of estuarine high marsh, 256 ac of oyster reef, 125 ac of sand platform for SAV colonization, 75 ac of beach, and 25 ac of bird island.

With relatively less construction dredging, nitrogen oxide emissions from construction, 3,151.0 tons, would be lower than the other alternatives, and the shorter construction duration would shorten the period of noise impacts. There would be less reduction in ship wakes, and smaller areas of beach nourishment. This alternative would place less (96.4 mcy) maintenance dredged material in unconfined PAs in Matagorda Bay, with less temporary impacts to water quality from construction and

maintenance proportional to the channel size. However there would be less decrease in the potential for redistribution of mercury during storm surge, in part from capping less (225 ac) mercury-impacted sediment (not including oyster mitigation) than the other alternatives. There would be reduced delays to navigation with the improved channel, but a smaller increase in shipping efficiency than the Applicant's Preferred Alternative. Only 93.0 ac of oyster reef would be impacted, followed by the Applicant's Preferred Alternative (132.6 ac) and the DEIS Proposed Alternative (148.2 ac). Impacts to agricultural land (246.5 ac) are less than the DEIS Proposed Alternative (700 ac) and equal to that of the Applicant's Preferred Alternative. Marsh impacts (17.1 ac) would be less than the DEIS Proposed Alternative (36.4 ac) and the Applicant's Preferred Alternative (19.0). Confined in-bay placement of dredged material would result in increased productivity in the bay over the No-Action Alternative, providing benefits to wildlife reflected in a HEA score of 3,151; but that score was less than the HEA score of both other action alternatives, and the 350x42 Alternative will protect less (125 ac) SAV in Keller Bay compared to the 250 ac of the other action alternatives, will create less (125 ac) SAV suitable sand platform compared to the 325 ac of the other action alternatives, and will result in a net increase of 382 ac of estuarine marsh compared to 573 ac by Alternative 1 and 626 ac by Alternative 2. Impacts to endangered and threatened species are similar to the other action alternatives. A short-term increase in employment during construction would be expected, and there would be slightly less economic growth potential than the Applicant's Preferred Alternative.

### (3) Environmentally Preferred Alternative(s).

The No-Action Alternative does not meet the purpose and need defined for the project. In regards to channel configuration, although the smaller channel alternative (350x42) would result in smaller quantities of dredged material, it would also result in reduced ecological and economical benefits. Thus, the larger channel alternative (400x44) is preferred, and a comparison of the two larger channel alternatives (DEIS Proposed Alternative and Applicant's Preferred Alternative) is focused on the only difference between the two: ecological impacts and benefits. Based on results of the HEA analysis (see Appendix C of the FEIS), the DEIS Proposed Alternative would have a higher net increase in aquatic habitat functional value than the Applicant's Preferred Alternative (Table 2.7-1 of the FEIS). However, because the HEA analysis is focused on bay bottom impacts, potential impacts to wetlands and oysters must be considered separately. The Applicant's Preferred Alternative has fewer impacts to marsh habitat and oysters than the DEIS Proposed Alternative. Impacts to farmed wetlands resulting from construction of PA P1 would be equivalent. Overall, for the Applicant's Preferred Alternative, the revised configuration of PAs resulted in a net reduction in impacts to marsh of approximately 17.4 ac and an increase in marsh creation of about 34.2 ac. Additionally, oyster impacts would be reduced under the Applicant's Preferred Alternative.

In conclusion, because of the greater ecological gain from the 400x44 Channel Alternatives, the 350x42 Channel Alternative is not considered the Environmentally Preferable Alternative. Comparison of ecological benefits associated with the DEIS Proposed Alternative and the Applicant's Preferred Alternative indicate that, despite the lower HEA score, the Applicant's Preferred Alternative results in fewer impacts to

sensitive aquatic habitats such as wetlands and oyster reefs. Additionally, more marsh habitat would be created with the Applicant's Preferred Alternative.

(4) Practicable Alternative.

A key provision of the CWA 404(b)(1) guidelines is the "practicable alternative test", which requires that "no discharge of fill material shall be permitted if there is a practicable alternative to the proposed fill which would have a less severe adverse impact on the aquatic ecosystem." The applicant must demonstrate that there are no less damaging sites available and that all onsite impacts to waters of the U.S. have been avoided to the maximum practicable extent possible. For an alternative to be considered "practicable", it must be available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. The overall project purpose of the MSCIP is to eliminate existing operational constraints caused by draft limitations. The USACE believes the applicant has shown that, for the proposed project, all onsite impacts to waters of the United States have been avoided or minimized to the maximum extent practicable. Therefore, the Applicant's Preferred Alternative is the least environmentally damaging practicable alternative.

c. Environmental Setting.

The project area is limited to the MSC and the bays from the Port turning basin in Lavaca Bay through the southwest section of Matagorda Bay, through the Matagorda Peninsula land cut, and offshore into the Gulf. The cities of Port Lavaca (to the west) and Port Comfort (to the east) and the communities of Alamo Beach (to the west), Magnolia Bay (to the west), Indianola (to the west), and Port O'Conner (to the west) are adjacent to the project area bays. Land use in the project area includes agriculture, industrial, urban-residential and commercial development, and recreational and commercial fisheries. Wetlands are located in the study area, as mapped by the FWS National Wetland Inventory (NWI) (1980-1995). Wetland plant communities that occur in the study area include estuarine and fresh-intermediate submerged aquatic vegetation (SAV), tidal flats, marsh, and shrub-scrub wetlands.

The project area is located in the Gulf Prairies and Marshes Ecological Region. This ecoregion spans the Texas coastline, extending 30 to 80 miles inland. Elevations range from sea level to approximately 250 ft. The Gulf Marshes are low, wet areas with salinities ranging from fresh to saline. SAV, including seagrasses, grows in nearshore areas. The Gulf Prairies are primarily uplands, dominated by tallgrass and post oak savannah. However, woody encroachment by trees and scrub species, plus agricultural and urban development, has modified much of the coastline. Forest and woodland communities that occur in the Upper Coastal Prairie include various types of oak forest and mesquite/huisache shrublands. The upland grasslands within the Gulf Prairie include the following communities: pasture and range lands; coastal prairie; and beach and dune communities.

Beaches along the south Texas Gulf coastline are dynamic habitats subject to a variety of environmental influences such as wind and wave action, salt spray, high temperature, and moisture stress. The harsh conditions associated with the beach/dune system support a relatively small number of adapted animals and plants. The coastal shore areas serve as buffers protecting upland habitats from erosion and storm damage, and adjacent marshes and waterways from water-quality problems.

Although Calhoun, Jackson, Matagorda, and Victoria counties are highly agricultural areas, the immediate project area is developed with residential communities and industrial facilities including ore processing, gas, and chemical plants and associated infrastructure, such as tailings ponds, gas wells, electricity substations, and product transport and storage facilities. Numerous parks and recreational areas are located within the project area, in addition to opportunities for recreational fishing, sailing, and boating. Notable areas include the Matagorda Island Wildlife Management Area, Matagorda Bay Nature Park, and the Lighthouse Beach and Bird Sanctuary. Public-use airports near the project area include the Calhoun County Airport, located approximately 3 miles northwest of Port Lavaca, and the Palacios Municipal Airport, located approximately 3 miles northwest of Palacios. Calhoun and Matagorda counties showed population decreases from 1980 to 1990 and population increases between 1990 and 2000. Growth in all four counties is expected to continue through 2030.

Because the project area occurs within an area that is an important port in Texas history, including events during the American Civil War, cultural resources are likely present in the area. Several previous terrestrial and nautical archeological investigations have been completed in the Matagorda Bay area. Many of these investigations have been associated with oil and gas and other development projects.

d. Environmental Impacts.

The possible consequences of this proposed work were studied for environmental concerns, social well-being, and the public interest, in accordance with USACE permit regulations published in 33 CFR 320–330. All factors that may be relevant to the proposal must be considered. The following factors were determined to be particularly relevant to this application and were evaluated appropriately.

(1) Air Quality.

Calhoun, Jackson, and Matagorda counties border the proposed MSC project area, and each is currently designated as unclassifiable or in attainment for all criteria pollutants. Emissions from construction and maintenance of the proposed MSCIP were estimated using EPA-approved software and modeling tools. It is expected that air contaminant emissions from construction dredging for this alternative would result in an increase in emissions above those from existing sources in the Calhoun, Jackson, and Matagorda counties area, resulting in minor short-term impacts on air quality in the immediate vicinity of the dredging site; however, these emissions are expected to be within the National Ambient Air Quality Standards (NAAQS) and the rules and regulations of the EPA and the TCEQ. Air contaminant emissions from maintenance dredging the new turning basin and berthing area, areas dredged to widen the channel, and additional 3,000 feet of Entrance Channel would also result in minor short-term impacts on air quality in the immediate vicinity of the dredging sites. The estimated emission rates for these and the other products of combustion are relatively minor and would be intermittent and of relatively short-term duration for each segment being worked. Therefore, emissions from maintenance dredging are not expected to result in a serious impact to the regional air quality, nor differ significantly from present maintenance dredging activities.

(2) Noise.

The proposed project is not expected to result in long-term noise impacts. No permanent noise sources will be installed as part of this project. Short-term impacts from dredging equipment may include slightly elevated noise levels at noise-sensitive receivers located at Magnolia Beach and Alamo Beach. The proposed project's dredging noise levels at sensitive receivers would be less than the existing ambient conditions beyond 4,100 ft from the channel. Short-term impacts related to these operations, therefore, would be nearly identical to the short-term impacts that occur during current maintenance dredging.

Temporary, short-term impacts would be expected to occur in close proximity to the equipment and machinery used during beach nourishment along the public beaches of the Magnolia-Indianola shoreline (proposed PAs BN1, BN2, and BN3). The proposed construction of levees and placement of dredged material in upland PA 1 over a 50-year period is not expected to substantially increase noise levels above current conditions at noise-sensitive receivers.

(3) Physiography, Topography, and Bathymetry.

Deepening and widening the navigation channel will result in a reduction in primary wave and secondary wave heights for existing vessels. Under the Applicant's Preferred Alternative, there is no significant change anticipated in the total wave energy and shoreline erosion potential attributable to vessel traffic (see Appendix K of the FEIS). Placement of dredged material would nourish approximately 3 miles of shoreline along the Magnolia-Indianola beaches, provide protection from a breach along the peninsula separating Keller Bay from Matagorda Bay, and create marsh habitat in open-bay areas. The placement of new work material will increase the elevation of the beach by 1 to 2 ft and move the shoreline contours out by 150 to 300 ft. Deepening and widening the channel would result in a reduction in drawdown and wake heights for existing vessels. While local changes would occur to bathymetry and topography during construction of the proposed project, these alterations would be expected to have negligible impacts on the regional physiography, topography, and bathymetry of the submerged and subaerial portions of the study area.

(4) Geology.

The impacts on the local geology during dredging associated with the proposed project would include redistribution of existing sediment, local increases in turbidity, and potential increases of local scouring and shoaling rates. Net impacts on local geology would be minimal from these operations. Additionally, no impacts or modifications to geologic hazards such as faulting and subsidence are expected.

A study was conducted to investigate whether Pass Cavallo would close or remain open as a result of widening the MSC. The proposed widening of the MSC is not expected to notably change the stability of Pass Cavallo, because the additional capture of the tidal prism by the ship channel would be small relative to past changes in tidal prism (see Appendix M of the FEIS).

(5) Energy and Mineral Resources.

A review of mineral resources, including oil and gas wells and pipelines, indicated that four plugged wells, five dry holes, two permitted well locations, eight natural gas pipelines, and one ammonia pipeline occur in the footprint of proposed dredged material PAs. PA boundaries may be reconfigured to avoid impacts, and pipeline relocations will be assessed by the owners with lines being relocated if conditions warrant. No mitigation is expected for well sites, plugged wells, or dry holes. The locations identified for dredged material placement are not expected to impact known areas of mineral production.

(6) Soils.

Material of appropriate quality will be dredged and used for beach nourishment at PAs BN1, BN2, and BN3. The new work material that is adjacent to these proposed PAs (Reaches 5, 6, 7, 8, and 9) contains a sufficient quantity of sand for beach nourishment. Impacts to surface soils exist from the potential release of petroleum products during construction and hazardous material spills from hazardous cargo during shipping operations. However, the use of best management practices (BMPs) in the project area would greatly minimize the potential for this type of impact. The proposed beach nourishment areas (PAs BN1, BN2, and BN3) located along public beaches of the Magnolia-Indianola shoreline would be impacted by placement of dredged material. However, due to ongoing shoreline erosion and periodic beach maintenance such as grooming and/or sand importation, impacts to native surface soils within the project area would be minimal. Therefore, adverse impacts are not expected to occur during dredge pipeline placement and discharge operations. The proposed terrestrial upland area PA P1, located south of Alamo Beach on existing agricultural land, would be impacted by the placement of dredged material. However, no prime or other important farmland would be impacted.

(7) Groundwater Hydrology.

Construction and operation activities associated with the proposed project are not expected to result in impacts to groundwater hydrology. In addition, no groundwater withdrawals are anticipated for the project. No apparent private, public, or industrial water wells registered with the Texas Water Development Board would be destroyed and/or affected by the proposed project based on their proximal distances and completed depths below surface grade. Potential impacts to groundwater could occur from an accidental spill of petroleum products during construction; however, use of BMPs that meet local, State, and Federal requirements as part of the Spill Response Plan for the project would minimize this potential.

(8) Safety.

The potential to encounter hazardous material during construction of the project is very limited. Impacts associated with regulated facilities are most likely to be encountered near the source of the contaminants, including industry located in the Point Comfort area. Industrial activity at the Alcoa Point Comfort Operation and Formosa has resulted in quantifiable impacts to groundwater, surface water, soil, and sediment. Recent corrective

action performed at both facilities has minimized, but not eliminated, the potential to encounter impacted material during project construction. The northern extent of the proposed project enters into an area defined as a National Priority List (Superfund) site, having been impacted by contaminant releases from the Alcoa facility. There are elevated levels of mercury within sediment in the vicinity of Dredge Island. Project dredged material is proposed to be used to create a clay cap over the impacted area of bay bottom, resulting in a positive impact to the environment by encapsulating mercury-impacted sediment and eliminating future exposure potential. The construction of these PAs in the bay will involve placement of new work material to build levees, which may result in displacement of the existing sediment from beneath the new levees in the form of a mud wave (see subsection 4.9.4 of the FEIS). Precautions will be taken to minimize displacement of impacted sediment, as described in subsection 4.9.4.2 of the FEIS.

The Matagorda Bay area has a history of 20<sup>th</sup> century military activity with the U.S. Army and Air Force using the bay and immediate vicinity for artillery and bombing ranges. In 1926 the Texas National Guard established Camp Palacios as a training base, later changing the name to Camp Hulén. Camp Hulén small arms, anti-tank, and artillery ranges and ordnance fan areas over a great extent of Lavaca and Matagorda Bays. Camp Hulén was taken over by the U.S. government as an anti-aircraft replacement training center and subsequently converted to the Palacios Army Air Base after the beginning of World War II. At this time part of the Matagorda Peninsula became a bombing range and air-to-ground gunnery ranges. Two aerial gunnery ranges were located on the west side of the MSC land cut and one was located west of the Greens Bayou pass, with the middle range encompassing the MSC at the cut. A bombing range was located on the west side of Greens Bayou pass. A portion of Matagorda Island was developed into an Army airfield in 1943 to support the Army as the "Matagorda Gunnery Range". In 1949 the range was re-commissioned by the Air Force and was used intermittently from 1951 through late 1956 by the Air Force's 559<sup>th</sup> Strategic Fighter Squadron. The Matagorda Island AF Range consisted of 3 air-to-ground ranges, 8 bombing ranges, and 2 small arms ranges. The facility was reported to have been deactivated in 1975.

No incidents of damage due to a residual ordnance explosion have been reported. However, an August 2007 report of the Final Site Inspection for the Former Matagorda Peninsula Bombing Range, Matagorda, TX site, performed by Parsons, Inc. for the USACE, reported the presence of confirmed munitions and explosives of concern (MEC) observed at the two westernmost aerial gunnery ranges in 1946 and the possibility that MEC is below the subsurface in the westernmost range, and recommended that portions of the Matagorda Peninsula Bombing Range proceed to remedial investigation and feasibility study. There is a potential for encountering unexploded ordnance during the PA construction and dredging activities of the proposed project due to the location of former artillery and bombing ranges in and near the MSCIP work areas.

No hazards to aircraft due to compensatory mitigation areas or project features with the potential to attract hazardous wildlife will be created by the project. The nearest public-use airports are a sufficient distance from the project, as defined in the Federal Aviation Administration Advisory Circular 150/5200-33B, "Hazardous Wildlife Attractants on or Near Airports", August 28, 2007,

(9) Water and Sediment Quality.

A less than 1 percent increase in tidal range may result from the proposed project. The biggest salinity effects are expected to occur following larger freshwater inflow events when the deeper channel would be expected to reduce the time required for the density current to move higher salinity Gulf water to Lavaca Bay, increasing the average salinity in the upper Matagorda and Lavaca bays. During dry periods when salinity levels are relatively high throughout the bays, the deeper channel would have little effect. No significant impacts are expected to result from dissolved oxygen or turbidity changes, and no significant change in ambient or sediment mercury concentrations are expected. Routine tests of maintenance material dredged from the channel have not indicated cause for concern regarding use of the material. Proposed capping of mercury-impacted sediment in Lavaca Bay would prevent resuspension of sediment with higher mercury concentrations during future actions. Construction of barge access channels through areas in Cox Bay with known at-depth mercury-impacted sediments may be unavoidable. If such sediments are encountered, they will be placed in an approved upland confined PA. Mud waves from the placement of dredged material to construct PAs A1, A2, ER1/OR, and ER3/D in Cox Bay and Lavaca Bay are not expected to result in the release of mercury-impacted sediment. However, because there is a potential risk of increasing the surface sediment mercury concentration through the disturbance of mercury-impacted sediments. Post-construction sampling and analysis will be performed to determine whether the surficial sediment mercury levels at PAs A1, A2, ER1/OR, and ER3/D exceed the Remedial Action Objective (RAO) of 0.5 milligrams/kilogram established for open-water habitats during the Remedial Investigation for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site. If the sediment mercury levels are found to exceed the RAO, then the sediments will be managed in a manner consistent with the Alcoa/Lavaca Bay Superfund Site requirements, which include the process for identifying, quantifying, reporting, transporting, and disposing of impacted material. Past testing of maintenance dredged material with chemical analyses, whole mud bioassays, and bioaccumulation studies has indicated no cause for concern, and the method of placement would not change in Matagorda Bay. However, all material maintenance dredged from the channel in Lavaca Bay will be confined.

(10) Navigation.

During channel improvement construction, dredging operations conducted along the MSC will impose minor temporary delays to commercial navigation and require slow speeds. Upon completion, the wider and deeper channel would allow larger vessels to call on the Port. This would reduce the number of vessel trips, allowing greater shipping efficiencies. Recreational vessels would also experience delays during construction; however, no significant effects on recreational navigation uses of the channel are expected.

(11) Vegetation.

The Applicant's Preferred Alternative would have no direct impact on existing areas of upland vegetation associated with the channel modifications. However, the DMMP would result in the creation, protection, and modification of uplands. Approximately 248

ac of agricultural lands (rice farms/pastures) would be converted to a PA at PA P1, located south of Alamo Beach. This area is described in the DMMP as agricultural lands and is mapped by the NWI as both farmed wetland (i.e., palustrine emergent, farmed) and upland. The USACE determined that 1.5 ac of these farmed wetlands are jurisdictional. Most of the area is in-rotation for rice farming (i.e., agricultural wetland). Creation of a 4.5-ac freshwater emergent marsh is proposed as compensation for impacts to farmed wetlands in PA P1 (see Section 6.0 of the FEIS for more details). Additionally, approximately 1,595 ac of in-bay uplands would be created, as shown in Table 4.11-1 of the FEIS. The DMMP does not include habitat development on the new in-bay uplands, with the exceptions as noted, because they will be subject to considerable disturbance through the years, and quality habitats may not persist. Where no planting is planned, grasses, forbs, and shrubs would be expected to naturally vegetate these islands.

#### (12) Wetlands/Special Aquatic Sites.

The wetlands in the study area, as mapped by the NWI (1980–1995), appear in the Affected Environment Section of the FEIS (see Figure 3.12-1 of the FEIS). Wetland delineations have been performed at Dredge Island within the footprints of PAs D and ER3, and on parts of PA P1. This area is described in the DMMP as agricultural lands and is mapped by the NWI as both farmed wetland (i.e., palustrine emergent, farmed) and upland. The USACE determined that 1.5 ac of these farmed wetlands are jurisdictional. Creation of a 4.5-ac freshwater emergent marsh is proposed as compensation for impacts to farmed wetlands in PA P1 (see Section 6.0 of the FEIS for more details). USACE verification was received on 2 February 2009 (see Appendix G of the FEIS). See appendices A and B of the FEIS for maps of these wetlands and Appendix F2 of the FEIS for a list of plant species observed during a site visit to PA P1 in August 2007.

There are no known occurrences of SAV in the footprint of the proposed dredging or placement of dredged material, so SAV would not be directly impacted by excavation or burial. There may be short-term rises in turbidity and associated reduced water clarity during the channel dredging and placement, but these would not be expected to have any lasting, measurable effect on SAV beds. The Hydrosalinity Model (Appendix L of the FEIS) predicts an increase of less than 1 ppt in average annual salinity throughout the project area over most of the growing season under low flow conditions (i.e., periods of highest absolute salinities). This would not be expected to have a measurable impact on any wetland communities, including SAV. Although high flow conditions show greater differences insalinity, the absolute values would be relatively low, and so would not stress the estuarine SAV beds. The Shoreline Erosion Report (see FEIS Appendix K) concluded that the proposed project would result in lower wave energy, so SAV beds along the shoreline north of Port O'Connor would not be negatively impacted and may experience some minor benefit. Additionally, approximately 250 ac of SAV would be protected by placement of dredged material and approximately 325 ac of SAV-suitable sand platforms would be created by placement of dredged material.

There would be no losses of tidal flats expected with the Applicant's Preferred Alternative greater than what would be expected for the No-Action Alternative. The predicted increases in tidal amplitude from the Applicant's Preferred Alternative are expected to be less than 1/3 inch (see Appendix L of the FEIS). Thus, it is unlikely tidal

flats would be impacted. Although the DMMP does not specifically address tidal flats, marsh creation would be expected to also create some associated flats (PAs A2, G, and H4). In particular, PA G would likely result in the development of flats deposited by longshore currents on the northeastern side of the created marsh.

No estuarine marsh occurs within the footprint of the proposed dredging, but 1.1 ac of low estuarine marsh and 17.9 ac of high estuarine marsh would be impacted by the construction of PAs D and ER3. The potential slight increase in tidal amplitude may produce minor shifts in the distribution of vegetation; if there is any response, it is likely that small areas of high salt/brackish marshes may transition to low marsh. The DMMP would result in a net increase of 626 ac of marsh by creating approximately 645 ac of estuarine marsh (609.2 ac low marsh and 35.8 ac high marsh). The DMMP would also protect an additional 432 ac of marsh in Keller Bay. The location of PA G, which would create 320 ac of marsh, may lead to sediment build-up (deposited by longshore currents) on the northeastern side of the created marsh. This may create additional flats and marsh. The HEA indicates that the largest contribution to the increased functional value associated with the Applicant's Preferred Alternative (via the DMMP) is due to marsh creation.

(13) Terrestrial Wildlife.

The primary direct adverse impact of the Applicant's Preferred Alternative on wildlife would result from the placement of dredged material over the 50-year life of the project. The proposed DMMP would result in the loss of 331.8 ac of existing terrestrial habitat (proposed PA P1's 246.5 ac of cropland and 85.3 ac of upland PAs in Lavaca Bay). The site of PA P1 and adjacent areas provide important habitat for a variety of migratory bird species, and placement of dredged material within this site would result in the direct loss of habitat currently used by many species of shorebirds, waders, waterfowl, raptors, and songbirds. However, these habitat impacts would be offset by the creation of 1,817.6 ac of terrestrial habitat (20 ac of bird island in Matagorda Bay and 1,797.6 ac of upland PAs in the bays and on land) and the net gain, as a result of the proposed DMMP, of approximately 609.2 ac of low marsh and 35.8 ac of high marsh. Temporary, local impacts to terrestrial communities and habitats may occur during dredging and PA construction activities, as aquatic organisms that serve as a food source are negatively impacted. However, these sedimentation and turbidity impacts to aquatic communities are expected to be minor and short term.

During beach nourishment activities, potential direct and immediate adverse effects on breeding shorebirds could include the possible destruction of nests and nesting habitat loss (if beach nourishment activities occur during breeding season), or the direct loss of roosting or foraging habitat. Although existing habitat would be altered, new, longer-term habitat would be created through beach nourishment efforts. Despite these potential direct and immediate adverse effects, beach nourishment activities are expected to result in substantial long-term benefits to the shorebird guild.

(14) Aquatic Ecology and Essential Fish Habitat (EFH).

Dredging activities and placement of dredged material would affect the benthic community where bay bottom is disturbed. Benthic communities are likely to shift from

current composition to that of more-opportunistic species. Repeated dredging may prevent the benthic community from fully developing to pre-construction communities. However, these species would still provide a food source to other organisms. Similar shifts in community composition can be expected at the maintenance material ODMDS. The benthic community at the new work material ODMDS is expected to recover fairly quickly following placement of the new work material.

No adverse impacts are expected to occur to finfish populations as a result of anticipated salinity changes in the bays. The Applicant's Preferred Alternative is expected to increase the annual and cumulative habitat functional value in the bays, resulting in a significant benefit to the Matagorda Bay system as a whole, despite the loss or conversion to other habitat type of approximately 4,133 ac of open-bay bottom.

Construction of the Applicant's Preferred Alternative is expected to result in the loss of approximately 132.6 ac of oyster reefs and habitat. Additionally, salinity changes anticipated in the bays are estimated to result in a loss of about 30.1 ac of oyster reef production. However, approximately 163 ac of oyster reef would be created by placement of new work dredged material from construction of the Applicant's Preferred Alternative. Thus, recreational and commercial fisheries are not expected to be negatively impacted.

Channel improvements would have unavoidable impacts to EFH. These impacts would be compensated for through the protection and creation of marshes, seagrass beds, and oyster reefs, increasing the amount of nursery areas, protective habitat, and food sources within the Matagorda Bay estuary. An EFH Assessment (see Appendix H of the FEIS) outlining potential effects to EFH potentially occurring in the area was prepared and submitted to the NMFS and the Gulf of Mexico Fisheries Management Council (GMFMC) for review. Concurrence was provided by the GMFMC on 15 August 2008, and by the NMFS on 10 September 2008 (see Appendix G of the FEIS).

#### (15) Federally Listed Threatened and/or Endangered (T&E) Species.

A Biological Assessment (BA) prepared for the project to fulfill USACE requirements as outlined in Section 7(c) of the ESA was submitted to the FWS and the NMFS with the FEIS as Appendix P1. This submission also requested ESA section 7 consultation for listed species. The BA concluded the proposed action could potentially impact sea turtles. Additional information was requested by the NMFS, which the USACE provided on 13 July 2007. The NMFS issued a Biological Opinion (BO) for the proposed project's new work dredging and new work placement on 24 October 2007. The NMFS anticipates incidental take, by injury or mortality, will consist of 33 turtles by hopper dredges and 1 turtle by relocation trawlers, and 181 non-injurious takes by relocation trawling over the course of the proposed project. The NMFS BO concluded that the anticipated reduction in numbers and reproduction by take of sea turtles by hopper dredges and relocation trawlers associated with the proposed action, combined with the non-lethal takes resulting from relocation trawling, are not expected to jeopardize the continued existence of Kemp's ridley, loggerhead, hawksbill, leatherback, and/or green sea turtles. The NMFS provided reasonable and prudent measures that NMFS believes are necessary to minimize impacts of the incidental take of sea turtles during the proposed action, including the use of temporal dredging windows, intake and overflow

screening, use of sea turtle deflector dragheads, observer and reporting requirements, and sea turtle relocation trawling. Hopper dredging activities shall be completed, whenever possible, between December 1 and March 31, and pipeline or hydraulic dredges, because they are not known to take turtles, must be used whenever possible between April 1 and November 30. For additional information, refer to the NMFS BO (see Appendix P2 of the FEIS), which addresses impacts to sea turtles during new work dredging and placement activities. The proposed project maintenance dredging using hopper dredging must comply with the terms and conditions implementing the reasonable and prudent measures of the NMFS January 2007 revised Biological Opinion of the November 2003 Gulf of Mexico Regional Biological Opinion (GRBO) for ESA section 7 consultation on the maintenance dredging of Gulf of Mexico navigation channels using hopper dredging and dredging of sand mining (“borrow”) areas using hopper dredges by COE Galveston, New Orleans, Mobile, and Jacksonville Districts.

Increases and protection of marsh habitat and SAV, as well as beach nourishment, may provide some benefit to protected species in the area. Based on the project description, location, temporary nature of impacts and avoidance and minimization measures to be implemented for species, the FWS provided concurrence in their 6 April 2009 letter with the BA determination of may affect, but not likely to adversely affect, for Kemp’s ridley sea turtle, hawksbill sea turtle, leatherback sea turtle, nesting green sea turtle, loggerhead sea turtle, whooping crane, brown pelican, piping plover, and West Indian manatee (see Appendix G of the FEIS). There are no federally or state-listed threatened or endangered plant species in the study area; thus, no impacts to such species are expected.

(16) Historic and Cultural Resources.

A total of 14 magnetic anomalies have been identified within the project footprint as a result of marine remote sensing surveys. The 14 magnetic anomalies will either be avoided or additional investigations will need to be conducted to determine the exact nature of the anomalies. In addition, the project footprint of PAs has changed subsequent to the completion of the marine remote sensing surveys; as a result of these changes, additional areas will need to be inventoried for Historic Properties. The additional work has been identified in the scope of work titled “Historic Properties, Matagorda Ship Channel Improvement Project, Matagorda and Lavaca Bays, Texas” dated June 2009, and prepared by PBS&J. If the proposed MSCIP is permitted, the permit will include special conditions to ensure compliance with Section 106 of the NHPA.

(17) Land Use/Recreation/Aesthetics.

Significant impacts to land use, recreation, or aesthetics are not expected as a result of the proposed project. Construction of an offshore levee (PA G) would alter the landscape of the shoreline at Sand Point Ranch; however, it would provide protection for the shoreline and would be considered beneficial for future land development. Placement of dredged material at the proposed 248-acre upland PA P1 would change the use of this land from rice cultivation to a PA. The most significant long-term land use consequence would likely be a change in future land uses that would occur in response to the improvements to the channel. These future land uses are not considered part of the proposed project but would be less likely to occur without it. The applicant currently owns property along the

MSC that is available for industrial development. When the proposed project is completed, the deeper and wider ship channel would provide an incentive for new industrial development at all of the Port properties.

The proposed project would have a minimal effect on recreation within the study area. The proposed PAs are expected to have a beneficial impact to recreational activities such as fishing and bird watching by providing additional habitat. Placement of dredged material in PAs BN1, BN2, and BN3, located along the public beaches of the Magnolia-Indianola shoreline, would enhance and extend the life of these public beaches for recreational use.

The proposed project would have a minimal effect on the overall visual quality within the study area. There would be no negative effect to the appearance of the shorelines with the exception of PA G. A potential visual impact would be the obstruction of the horizon from the shoreline at PA G. Other PAs are consistent with the bay setting or existing viewscape, with the exception of upland terrestrial PA P1, which would be visible from Alamo Beach and Magnolia Beach.

#### (18) Socioeconomics.

Population within the area is projected to grow at a moderate rate regardless of the proposed project; therefore, demand for community facilities, services, and housing would increase at a rate that is consistent with the projected population growth. The location of these resources would generally follow development and land use plans currently identified. Most of the construction workers are likely to come from the labor force that is already living within Calhoun, Jackson, Matagorda, and Victoria counties. Therefore, immigration to the study area would be minor, and it is unlikely there would be an increase in single-family home construction. However, were such development to occur in the study area, it would likely be within and near the cities of Point Comfort, Port Lavaca, and Victoria. This slight increase in new residents within the study area would also potentially increase the demand for commercial development, schools, roads, and other services, but would not result in negative impacts.

The proposed MSCIP is not located within a minority or low-income area. Minority and low-income populations within the larger study area would likely not experience adverse changes to the demographic, economic, or community cohesion characteristics as a result of the proposed project. In general, populations within the study area are expected to benefit from the proposed project through increased economic vitality resulting from increased efficiency at the Port. Therefore, the proposed project would not result in disproportionately high and adverse impacts on minority and low-income persons living within the study area.

#### (19) Community Infrastructure and Municipal Services.

The proposed project would not affect the delivery of local services, including water, wastewater, or other utilities; therefore, no impacts on utilities within the study area will occur. The project would result in minor temporary or no impacts to local community services such as police, fire, medical, and waste disposal. Local communities have adequate infrastructure and community services to meet the needs of the nonlocal workers that would be required. No impacts to schools and libraries are expected. Parks

and recreational facilities would be positively impacted by placement of dredged material to enhance public beaches and to protect areas used for recreation in Keller Bay. There would be minor disruption to use of the public beaches and recreational facilities during placement of dredged material on beaches. The existing transportation system within the study area could be temporarily affected by the influx of construction workers and the delivery of construction equipment and materials to the project area. The addition of employees accessing the project area on a daily basis would not result in a significant increase in volume adversely affecting traffic on area roadways. The proposed project would potentially benefit water-based transportation by providing a safer navigation channel. No impacts to rail transportation are anticipated.

(20) Federal Projects.

The proposed channel deepening and widening would occur in navigational waters of the U.S. that are under the jurisdiction of USACE. Coordination has been ongoing throughout the project with USACE Galveston District's Operations Branch, Navigation Branch, Regulatory Branch, and Programs and Project Management Division. No negative impacts to the MSC or the Gulf Intracoastal Waterway (GIWW) were identified.

(21) Other Federal, State, or Local Requirements.

All required Federal, State, and/or local authorization or certifications necessary to complete processing of this application have been obtained except for water quality certification and coastal zone consistency certification. A review of each of these authorizations, certifications, and permits can be found in the FEIS, Section 11.

This project is considered a Tier II project. The TCEQ has not yet acted on the applicant's request for water quality certification under Section 401 of the CWA. The USACE will provide the TCEQ with a copy of this permit decision document when finalized. The final permit decision document will contain the FEIS and §404(b)(1) analysis. The TCEQ will then make its determination whether the project will comply with state surface water quality standards in accordance with Section 401 of the CWA. The USACE will provide a permit decision to the applicant when the following procedures have been completed. The TCEQ will either provide its certification decision (issuance or denial) to, or request an extension from, the USACE within 10 working days from receipt of the USACE decision document. If the TCEQ does not provide a certification decision or request an extension within the 10-day period, the USACE will presume waiver of certification in accordance with 33 CFR 325.2(b) and proceed with the issuance or denial of the permit. If the TCEQ requests an extension of time, the USACE will determine the merit of the time extension request and the length of the extension based on 33 CFR 325.2(b) and notify the TCEQ of its intended decision. If the USACE decides to deny or modify a request for extension, the TCEQ will have 10 working days from the date it is notified of the intended action of the USACE on the request for extension in which to either certify or deny certification.

The applicant has stated that the proposed activity complies with Texas' approved Coastal Management Program (CMP) and will be conducted in a manner consistent with such program. The Texas Coastal Coordination Council (CCC) submitted a letter, dated 17 August 2009, stating it has been determined that this project is above the TCEQ thresholds for referral

to the CCC. The TCEQ will be solely responsible for determining the project's consistency with the goals and policies of the CMP. This determination will accompany TCEQ's Section 401 certification.

(22) Other Factors Considered.

The following factor was considered during the evaluation process but was determined to not be particularly relevant to this application: conservation.

e. Cumulative Impacts.

A cumulative impacts assessment takes into consideration the impact on the environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Impacts include both direct effects, which are caused by an action and occur at the same time and place as the proposed action, and indirect effects, which are also caused by the action and occur later in time and are farther removed in distance, but which are still reasonably foreseeable.

Ecological effects refer to effects on natural resources and on the components, structures, and functioning of affected ecosystems, whether direct, indirect, or cumulative.

Cumulative effects for the proposed channel deepening and widening were determined by identifying the appropriate past, present, and reasonably foreseeable actions to include in the assessment, reviewing impacts as described in project documents for each action, and determining impacts based on information obtained from FEIS Section 3. The complete cumulative impacts assessment is provided in Section 5 of the FEIS.

Cumulative effects considered for several ecological, physical/chemical, and socioeconomic resources are not expected to have significant adverse effects in the study area. Many of the projects that occur in the general vicinity of the MSC are part of the continued urbanization and industrialization of Calhoun and Matagorda counties. Impacts associated with these projects would be minor and/or temporary and are related to construction activities, and some result in positive impacts for the area, with or without mitigation. Coordination and regulation of resources through State and Federal permitting regulations, such as the Texas Coastal Management Program (TCMP), the CWA, and the CAA, should prevent or minimize negative impacts that could threaten the general health and sustainability of the region.

f. Findings of Significant Impact.

There have been significant environmental effects identified resulting from the proposed work. The impact of this proposed activity on aspects affecting the quality of the human environment has been evaluated, and it was determined that this action required an EIS. The USACE, as the lead Federal agency, released the FEIS on 31 July 2009.

8. Statement of Findings.

a. Coordination.

The formal evaluation process began with publication of a 30-day public notice on 31 July 2009. The comment period for the public notice on the FEIS closed 31 August 2009. Copies of the public notice and the FEIS were forwarded to all Federal, State, and local agencies,

organizations, and individuals on the project mailing list. The list included but was not limited to the following entities:

- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- National Oceanic and Atmospheric Administration
- Environmental Protection Agency
- U.S. Coast Guard
- U.S. Department of the Interior
- Texas Commission on Environmental Quality
- Texas Parks and Wildlife Department
- State Historic Preservation Officer
- Texas Coastal Coordination Council
- Texas General Land Office
- Texas Department of Transportation
- Texas Water Development Board
- Native American Groups
- Federal and State Representatives and Senators
- County and Municipal Government Agencies
- Cities and Municipalities
- Interested Companies and Organizations
- Interested Property Owners and members of the public

Copies of the FEIS were also made available in local public libraries and on the USACE website. See Section 13 of the FEIS for a complete distribution list for the FEIS.

b. Response to the Public Notice.

(1) Federal Agencies.

The FWS submitted a letter dated 31 August 2009 providing a general review of the role FWS had in development of project impacts, use of dredged material, and review of potential protected species impacts. A summary of the measures to be incorporated into the final project plans was provided for sea turtles, whooping crane, brown pelican, piping plover, and West Indian manatee. These measures are consistent with those included in the BA prepared for the project (Appendix P of the FEIS). The letter also recommended that the USACE and applicant continue to coordinate with the work group prior to initiation of the project and for subsequent maintenance dredging cycles. Concern was expressed regarding PA H4, the proposed multi-use habitat site, and considerations of sea level rise and use of dredged material for creation and maintenance of colonial waterbird nesting islands. Specifically, it was recommended that guidelines in the Southeast Regional Waterbird Conservation Plan be incorporated into the design and management of PA H4 to reduce potential for stimulating human disturbance and ease removal of predators that could get to the islands. Finally, the FWS recommended that the dredging plan remain a “living document” and that additional coordination and

review occur prior to project implementation (specifically for components such as the oyster reef and marsh areas).

(2) Federally Recognized Native American Tribes and Affiliated Groups.

A letter dated 26 August 2009 was submitted by the Alabama-Coushatta Tribe of Texas (Tribe). The letter noted that no known impacts to religious, cultural, or historical assets of the Tribe are expected to occur as a result of the proposed action. The Tribe also concurred with the recommendations identified for compliance with the NHPA. The Tribe requested that the appropriate authorities, including the Tribe, be notified and activity cease if human remains and/or archeological artifacts are inadvertently discovered during construction activities.

(3) State and Local Agencies.

The TPWD submitted two letters dated 2 September 2009. One letter was specific to the permit application and the other was specific to the FEIS. In regards to the permit application, the TPWD noted that comments and recommendations detailed in their 26 June 2009 and 31 August 2009 letters continue to be recommended. They noted that written response may be required and directed the reader to Texas Parks and Wildlife Code Section 12.0011. In the letter, the TPWD acknowledged that PA P1, the proposed upland PA on agricultural land, was reduced in size but that they continue to recommend that PA P1 be avoided and that dredged material intended to be placed there instead be used beneficially to create habitat in Lavaca and Matagorda bays. The TPWD also requested that a USACE-verified wetland determination or delineation be conducted for the impact area and provided to resource agencies.

The second letter from TPWD was specific to the FEIS. This letter also noted that written response may be required and directed the reader to Texas Parks and Wildlife Code Section 12.0011. In the letter, TPWD expressed the opinion that the DEIS and FEIS do not accurately evaluate the potential impacts associated with the proposed action and that both documents underestimate the total impact to fish and wildlife resources and habitat resulting from the proposed action. Specific concern was expressed for direct and indirect impacts from continued placement of unconfined dredged material in Matagorda Bay, lost function and value (not just production) from oyster reefs from increased salinity, and impacts to habitat resulting from PA P1. It was noted that concerns expressed in previous TPWD letters were not addressed to their satisfaction. In regards to oysters, TPWD contended that the Oyster Impact Assessment underestimates the total impacts to oysters because no consideration was given to habitat loss from dissolution. (Habitat loss from dissolution occurs when organic and inorganic acids and chelators dissolve calcium carbonate in shells.) They also stated that the assessment continues to make determinations on the significance of an impact and excludes potential impacts from the analysis. In regards to PA P1, TPWD stated that the FEIS does not fully address their concern regarding a wetland determination or delineation and a site visit by the resource agencies. A request was made for a verified wetland delineation and description of habitat within the 248-ac impact area. In regards to a management plan, TPWD indicated that the FEIS does not address previous concerns expressed regarding a mechanism to protect and manage the beneficial use areas for fish and wildlife habitat, a

description of target habitat types, and the capability of the desired vegetation to grow and survive on dredged material. The TPWD stated that the response to their comment directed them to the Dredged Material Management Plan (Appendix B of the FEIS), and this information was not found in the plan. In regards to the continued placement of dredged material in unconfined areas in Matagorda Bay, TPWD stated that their previous concern about increased suspended solids in the bay was not addressed in the FEIS. In conclusion, TPWD stated that the FEIS does not include all known and reasonable potential impacts and is incomplete, thus not allowing for a meaningful review of the project and associated impacts. TPWD letters submitted as comments on the DEIS and permit application, dated 26 June 2007 and 31 August 2007, were included as attachments.

The TCEQ submitted a letter dated 31 August 2009 that outlined additional information that TCEQ requests in order to make a water quality certification determination following issuance of a Record of Decision (ROD) by the USACE. The letter requested additional explanation regarding alternatives to the continued placement of dredged material in open water PAs within Matagorda Bay. TCEQ also requested a review of alternatives information presented in Table 2.2-4, more-detailed information on options considered to minimize impacts to aquatic resources, and an explanation why other alternatives are not feasible, why oyster mitigation is being offered at a 1:1 ratio, and more information on how the potential impacts to oyster communities were quantified, based on the statement in a comment response that no adverse impacts are expected from changes in salinity. In closing, the TCEQ requested other agency, public, and applicant comments. Information regarding State Water Quality Certification was attached.

#### (4) Individuals and Organized Groups.

In a letter dated 31 August 2009, Audubon Texas expressed concern that the proposed configuration of PA H4, the proposed multi-use habitat site PA, was not suitable or manageable as waterbird nesting habitat. They recommended that construction of the PA follow recommendations from the Southeast U.S. Regional Waterbird Conservation Plan, Appendix I. Specifically, concern was expressed that the proposed PA H4 is large enough to support and increase a problematic predator presence and that the PA would serve as a population sink because resulting seagrass and marshes would draw recreational activity to the area, disturbing nesting activities. Thus, Audubon Texas recommended reducing the overall size of PA H4 to between 75 and 100 ac and increasing the elevation of the island to reduce marsh creation. Finally, Audubon Texas recommended a management and monitoring program that included the appropriate agency or organization.

Mr. R. L. Bolleter submitted a letter dated 6 August 2009. Mr. Bolleter expressed support for the project in general, but was concerned that the proposed MSCIP may contribute to siltation in the natural pass between Carancahua Bay and Matagorda Bay. Mr. Bolleter asked what the effects would be if the Carancahua Bay Pass were substantially blocked. He suggested that the MSCIP include requirements to measure present conditions in the Carancahua Bay Pass to compare with future measurements, in order to determine the significance of additional accumulation and requirements to dredge, mark, and maintain a useful entrance into Carancahua Bay.

Mr. Jay Corzine submitted a letter dated 9 August 2009 stating that the MSC does not need to be deepened or widened based on a series of reasons:

- No need for larger ships entering the Port;
- The negative effect of wakes caused by larger ships on beach nourishment programs within Matagorda Bay;
- The stability of the present jetty system at Matagorda Peninsula and the negative effect of enlarging the channel on that system;
- Effects on Pass Cavallo and potential for it closing with resulting impacts to the commercial fishery;
- Consideration of an offshore port facility to reduce costs and effects associated with dredging the MSC; and
- Negative effects of security zones around natural gas carriers entering the bay system on local commercial, recreational, and barge traffic.

Mr. Corzine also noted that the map included with the 31 August 2009 notice was out of date since the GIWW realignment was not depicted properly.

Ms. Diane Wilson and the Calhoun County Resource Watch submitted a letter dated 28 August 2009 expressing concern regarding dredging or dredging activity near sediments containing mercury at or above 0.5 milligrams per kilogram (mg/kg), and the potential to mobilize and redistribute mercury in Lavaca Bay. They stated that the FEIS did not adequately address issues related to mercury-contaminated sediments and does not show compliance with Section 404 of the CWA. Specific concerns expressed in the letter are as follows:

- Negative influence of construction and maintenance dredging in the turning basin expansion and channel expansion immediately south of the turning basin:
  - Testing for mercury;
  - Processing and reporting of results; and
  - Management of mercury levels near turning basin from potentially indirect disturbance;
- Process for ensuring integrity of caps north and west of Dredge Island (ER3/D and ER1/OR);
- Acknowledgement that capping replaces “enhanced natural recovery” remedy north of Dredge Island specified in the EPA ROD with Alcoa; and
- Mercury input from emissions at NuCoastal and Formosa Plastics Corporation sites.
- The commenters recommend that an explicit and transparent plan and process be drafted to:

Measure and monitor sediment mercury levels in dredged material (new work and maintenance material) prior to, during, and after dredging;

Identify parties responsible for measuring and monitoring sediment mercury levels in areas adjacent to dredging activity in the turning basin and channel south of the turning basin;

Measure and monitor mercury levels in red drum, juvenile blue crab, and other shellfish and finfish in the vicinity of the turning basin; and

Ensure the integrity of and safety afforded by proposed capping activity at ER3/D and ER1/OR, including identifying the responsible party(ies).

The commenters also suggested that the applicant codraft a statement with EPA and Alcoa stating an agreement among these parties that the responsibility for the ROD remedy action of “enhanced natural recovery,” initially the responsibility of Alcoa, is now the responsibility of the Calhoun Port Authority or other such identified responsible party(ies). Additionally, the commenters suggested that the mercury emissions and deposition into the Lavaca Bay and vicinity from proposed petro-coke and coal combustion at facilities planned and operated by NuCoastal and Formosa Plastics Corporation be assessed. Ms. Wilson and the Calhoun County Resource Watch requested that, if approved, the permit for the MSCIP include mention of the concept of offsetting the cumulative contaminant effects among local and regional residents by using a portion of the revenue and resources generated from the channel improvement activities to address, mitigate, retain, and improve ecological health concerns and problems identified and requested by the community stakeholders.

c. Consideration of Public Notice Comments.

The following provides responses to comments described above. Comment responses were prepared using information provided by the applicant and independently evaluated by the Corps.

(1) Federal Agencies.

In response to the FWS request for continued coordination, the applicant will continue to coordinate with FWS prior to project initiation and throughout implementation, especially regarding the oyster and marsh PAs. In regard to the FWS comments regarding PA H4 and considerations of sea level rise and the use of dredged material for creation and maintenance of colonial waterbird nesting islands, the National Audubon Society’s Southeast U.S. Regional Waterbird Conservation Plan (Plan) was considered when evaluating construction plans, and design and implementation of a monitoring plan for PA H4. The levee surrounding PA H4 will be armored with stones up to its maximum height of 8 ft, which will be well above the predicted relative sea level rise over the 50-year project life. The interior levee of the bird island has a gradual slope to the interior submerged sandy area, so habitats would be expected to adjust along the slope in response to sea level rise. PA H4 would only be used for placement of new work dredged material. The site was designed to take advantage of the availability of sand to create desirable habitat such as a bird island and shallow areas suitable for seagrass colonization. The opening in the levee will allow tidal exchange between the interior of the PA containing marsh and area suitable for seagrass colonization, and the bay. Signs will be posted to discourage human disturbance of the bird island. The National Audubon Society will be consulted to seek their expertise in managing bird islands. The

following describes features of PA H4 that are in compliance with the recommendations from the Plan:

- *Location: The Plan recommends at least 2 kilometers of open water with a deep channel and tidal flow and that proximity to foraging areas must be considered.*
  - PA H4 would be over 3 kilometers from the mainland, on the opposite side of the MSC, and would have tidal flow. It would also be located near Sundown Island, an existing bird island.
- *Dike: The Plan recommends islands should have a dike, should not have fine substrate (silt), and should have a gentle slope to the water.*
  - PA H4 would have an armored exterior levee to protect the site from erosion, but the interior of the area would have a sloped sandy area that is not diked.
- *Slope: The Plan recommends a slope of 30:1 but islands with steeper slopes leading to an upper flat terrace can be suitable.*
  - PA H4 would have a slope of 10:1 and an upper flat terrace.
- *Substrate: The Plan recommends a substrate composed of at least 90 percent sand.*
  - The interior of PA H4 would be composed of sand/silty sand.
- *Size: The Plan recommends islands between 2 and 20 hectares.*
  - While the entire footprint of PA H4 is over 180 hectares, the bird island portion of the site is approximately 10 hectares. Since PA H4 is located over 3 kilometers from the mainland and on the opposite side of the MSC, colonization by predators would be difficult. The interior of the site would have openings to allow circulation of salt water, so the site is not anticipated to have a significant source of fresh water to support predator populations that may potentially reach the island.
- *Elevation: The Plan recommends an elevation from 1 to 3 meters.*
  - The elevation of the bird island at PA H4 would be approximately 2.5 meters.
- *Shoreline Stabilization: The Plan recommends shoreline stabilization for prevention of erosion, but recognizes some species prefer not to have shoreline stabilization for better access to the water.*
  - PA H4 has exterior armoring to prevent erosion, but does not have shoreline stabilization of the interior, allowing access to the water.
- *Management and Monitoring: The Plan recommends developing a management and monitoring plan to prevent human disturbance.*
  - Measures will be taken at PA H4 to prevent disturbance. Signs will be posted to discourage human disturbance of the bird island. Coordination and review prior to project implementation will continue with the FWS. The National Audubon Society will be consulted to develop a plan for management and monitoring of the site.

(2) Federally Recognized Native American Tribes and Affiliated Groups.

In regard to the Alabama-Coushatta Tribe of Texas's comment, should human remains and/or archeological artifacts be inadvertently discovered during construction activities, construction would cease and the appropriate authorities, including the Tribe, would be notified.

(3) State and Local Agencies.

In response to TPWD's comments regarding the proposed terrestrial upland confined PA P1, and a wetland delineation not found in the FEIS; a wetland delineation of the project site was performed by the applicant. A 1.5-ac wetland, classified as a Farmed Wetland, was determined to be jurisdictional. On 2 February 2009 the USACE verified the wetland delineation (Verification #SWG-2007-0835) (see Appendix G of the FEIS). Appendix F2 of the FEIS lists the plant species observed during a site visit to PA P1 in August 2007. Since the 2007 site visit, this size of the PA has been reduced; therefore, not all of the species listed would necessarily occur within the new footprint. Agency correspondence regarding the jurisdictional determination can be found in Appendix G of the FEIS. To mitigate for impacts to 1.5 ac of jurisdictional wetlands, 4.5 ac of emergent marsh would be created at a former saltwater plant nursery area that would only require minor modifications to achieve self-sustaining wetland hydrology. Post-construction monitoring would be conducted and a report will be submitted to the USACE. Monitoring would continue every year until the performance standards are met, which include hydrology and vegetation. Corrective actions would be taken if the performance standards are not met. PA P1 is included in the Preferred Alternative because it was not feasible to use the dredged material proposed to be placed in PA P1 beneficially to create habitat in Lavaca or Matagorda bays because it lacks stiff clay for construction of containment levees and is more appropriate for placement in an upland confined PA. In order to use the material beneficially, stiff or hard clay would need to be mined from either within the channel or within the footprint of the proposed PAs. Mining material would result in additional ecological impacts and a significant additional cost for the project (see Section 4.2.3.2 of Appendix B of the FEIS).

The evaluation of potential impacts in the FEIS associated with the proposed MSCIP was based on information provided by the applicant, information collected independently, results of project-related workshops and interagency meetings, and professional opinion regarding each resource evaluated. Estimates of potential impacts were made by the applicant through coordination with interagency workgroups and, in some cases such as the oyster impact evaluation, were evaluated independently. The TPWD was involved in all project-related interagency working groups.

The applicant proposes to use approximately 70 percent of new work dredged material beneficially and almost half of the maintenance dredged material beneficially. The only areas where dredged material would not be used beneficially are existing open-bay PAs in Matagorda Bay, an existing maintenance material ODMDS, a proposed new work ODMDS, and one proposed upland terrestrial PA. The existing open-bay PAs in Lavaca Bay would not be used, and any potential for increased turbidity from continued placement of the material in the existing open-bay PAs in Matagorda Bay would be temporary. As discussed in Section 4.14.2 of the FEIS, studies have shown localized and

temporary effects from turbidity associated with dredging activities. A thorough discussion of potential effects to the benthic community is provided in Section 4.14.4.2 of the FEIS. It should be noted that these effects are no different from current impacts in Matagorda Bay resulting from open-bay placement of maintenance-dredged material. Additionally, there are no special aquatic resources such as oysters or seagrasses in close proximity to the open-bay PAs, and use of these PAs does not result in a permanent loss of aquatic habitat and does not require impacts to additional areas within the bay to mine clay for confinement structures. Mining material would result in additional ecological impacts and a significant additional cost for the project. Although open-bay placement would continue within Matagorda Bay, with an increase in the amount of material deposited, the applicant has developed a DMMP that uses material beneficially to the extent practical and includes a variety of dredged material PAs to increase productivity in the bay, reduce bay-bottom impacts, and reduce upland impacts.

In response to the TPWD comments regarding the Oyster Impact Assessment, impacts to oysters are estimated in the Oyster Impact Assessment (Appendix O of the FEIS) based on either increases or decreases in abundance of live oysters and the area of reef affected. The amount of oyster meat produced is not a factor in the Oyster Impact Assessment. The Oyster Impact Assessment uses sampling data from the TPWD and existing oyster reef maps to define the acreage and location of reefs. The abundance of oysters on these reefs under varying environmental conditions is based on TPWD data. Under direction of a resource agency-approved group of experts on oyster population dynamics (the Oyster Panel), relationships between oyster abundance and existing and past environmental conditions were identified. The project impacts are based on the acreage of reef predicted to increase in abundance, compared to the acreage of reef predicted to decrease in abundance. These methods and results were approved by the Oyster Panel.

Dissolution would be expected to be more likely to occur in areas that the Oyster Impact Assessment predicts would decrease in oyster abundance; these areas are included in the analysis as having a negative impact. Conversely, dissolution would be expected to be less likely to occur in areas that are predicted to increase in oyster abundance, and these areas are predicted to have a positive impact. The Oyster Impact Assessment is based on the difference between these negative and positive impacts.

Regarding the TPWD comment on the management plan, the TPWD was referred to the incorrect FEIS appendix. Detailed information regarding the Mitigation Plan is included in Section 6.0 and Appendix Q of the FEIS. Mitigation for project impacts includes creation of 645 ac of estuarine marsh (609.2 ac of low marsh and 35.8 ac of high marsh), 163 ac of oyster reef, and 4.5 ac of freshwater emergent marsh. Elevation surveys would take place prior to planting to identify target elevations for each marsh type. Marsh grass plantings would occur within 90 days after consolidation and dewatering of the mitigation sites to marsh elevations. Low marsh mitigation would be considered successful if, within 3 years, native, noninvasive marsh vegetation covers 70 percent foliar cover (excluding areas designed to be open water), and no more than 20 percent of vegetative cover consists of high marsh species. Monitoring and coordination with the resource agencies will facilitate adaptive management. An initial transplant survival survey would be conducted approximately 90 days after completion of the initial planting (and replanting, if needed) and a written report submitted to the USACE and resource

agencies. If there is less than 50 percent survival, the resource agencies would be consulted to determine appropriate actions prior to replanting. Post-planting monitoring efforts (at 6 months, 1 year, 2 years, and 3 years) will consist of site surveys to determine transplant survival and colonization. A written report detailing the results of each survey will be submitted to the USACE and resource agencies.

Oyster reef will be created using a base of stiff clay and cultch materials that will provide appropriate attachment surfaces for oysters. Cultch material will be placed prior to spat set between April and June. Post-construction surveys will be conducted in the fall, and a written report will be submitted to the USACE. Once the performance criteria have been met, oyster reef monitoring will be conducted at scheduled intervals and a report will be submitted to the USACE following each monitoring event. Adaptive management is part of the mitigation plan, and corrective actions may include reworking existing base material, reconstruction, or augmentation of reef base, or mechanical manipulation of the upper reef surface, and would require approval from the USACE.

In response to the TCEQ request for additional explanation regarding alternatives to the continued placement of dredged material in open-water PAs within Matagorda Bay, as discussed in Section 4.2.3 of the DMMP, continued unconfined open-bay placement of maintenance material in the Matagorda Bay reach is considered a viable option for the proposed project because of the following factors:

- No special aquatic resource such as oyster reef or seagrass is located in close proximity to the PAs;
- Analysis of the Matagorda Bay sedimentation process indicates that use of these areas will not increase the volume of maintenance dredging required; and
- In-bay, unconfined PAs have less of an ecological impact than in-bay confined PAs of similar size because the confined areas result in a permanent loss of the aquatic habitat.

The Matagorda Bay reach of the MSCIP has a limited amount (2.3 mcy) of stiff and hard clay for constructing levees to confine maintenance and softer new work material. As a result, the amount of marsh, platforms for seagrass colonization, or in-bay confined PAs that can be built from dredged material is limited. Stiff or hard clay would need to be mined from either within the channel or within the footprint of the proposed PAs to fully confine all material in Matagorda Bay. Mining material would result in additional ecological impacts and a significant additional cost for the project.

Other options for placement of dredged material include using it to nourish beaches, protect shorelines, or create bird islands, offshore placement, or in existing open-bay unconfined PAs. Input from public meetings indicated a desire for PAs other than beach placement to be located away from the shoreline. Based on this restriction, proposed PAs are located on the northeast side of the ship channel, away from shore. Suitable locations for onshore upland PAs were not available along Matagorda Bay.

Sandy material available in the Matagorda Bay reaches could be used for nourishment of eroding beaches along the Indianola-Magnolia shoreline. Material could also be used for Matagorda shoreline protection to prevent the loss of marsh and seagrass habitat in and around Keller Bay. Marsh, bird island, and sand platform habitat location restrictions are

the same as those for in-bay uplands, so these habitats could also be located northeast of the ship channel. The sand platforms would provide habitat suitable for seagrass colonization, and these areas would be allowed to vegetate naturally.

Material dredged from the Matagorda Bay reach that is not suitable for mitigation or habitat creation could be economically placed in an ODMDS. Unconfined placement in Matagorda Bay was considered for some Multi-Use Placement Alternatives.

Based on the HEA, Alternatives 1A and 1B do not include using unconfined placement of material in Matagorda Bay. These alternatives would instead have large in-bay upland confined PAs, which would permanently impact open bay bottom. Alternatives 2A, 2B, and 3 have unconfined placement of material in Matagorda Bay, and instead of in-bay upland confined PAs, these alternatives have proposed PA H4, which would include marshes, a bird island, and shallow sandy areas. Alternatives 2A, 2B, and 3 can include PA H4 because available stiff clay can be used to create this multi-use area, rather than simply confining the maintenance material. The HEA shows that the benefits to the aquatic environment provided by PA H4, along with impacts from unconfined placement, result in more ecologically acceptable alternatives (2A, 2B, and 3) than the impacts of creating large in-bay confined PAs and confining all maintenance material in Matagorda Bay (Alternatives 1A and 1B).

The TCEQ also requested additional information regarding options considered to minimize unavoidable impacts to aquatic resources. The primary means of avoiding and minimizing impacts to aquatic resources was through analysis of dredged material placement options and configuration of PAs. The first option considered was to place all dredged material in upland confined placement areas. As described in Section 2.3.1 of the FEIS, the existing upland PAs do not have capacity to support the proposed project. Several optional sites were considered for construction of new upland PAs (Appendix B to the FEIS provides additional detail). However, construction of upland PAs would result in potentially significant impacts to wetland and terrestrial habitats. Additionally, this would not allow for mitigation using dredged material or for beneficial use of dredged material. For these reasons, this option was considered but not carried forward in the FEIS. Placement of all material in unconfined ODMDSs was also considered but determined to be cost prohibitive because of the need to transport the material long distances. This alternative was also dropped from further consideration. As described in Section 2.3.2 of the FEIS, a multi-use placement alternative was designed and presented for public review in April 2006. Additionally, the applicant met with an interagency coordination team to develop the DMMP. Through coordination with the public and agencies, the placement areas were designed in locations to avoid potential impacts, and construction practices were developed to avoid potential impacts during construction. To avoid and minimize impacts from placement of in-bay confined PAs, surveys were conducted for aquatic resources such as seagrass and oysters, and wetland delineations were performed and verified by the USACE for PAs with unavoidable wetland impacts. Surveys were also conducted for cultural resources and oil and gas facilities. In-bay PAs were located to avoid or minimize impacts to all aquatic resources. The one upland terrestrial PA (PA P1) was reconfigured to avoid impacts to all but 1.5 ac of farmed wetland. Methodologies used to avoid resuspension of mercury in areas with known elevated mercury levels include constructing from the outside in, installing rigid barriers,

and constructing submerged toe berms (see Section 4.9.4.2.1 of the FEIS for additional detail). Features were also incorporated into the design of PAs to reduce future impacts to aquatic resources. For example, PAs A1, A2, ER3/D, G, and H4 incorporate shoreline protection into their design, including planting grass for erosion prevention on portions of the levees above the wave influence.

Table 2.2-4 in the FEIS was intended to provide as much information as was available for each of the channel configurations initially considered. The purpose of the table was not to identify the environmentally preferred alternative, which is discussed in Section 10 of the FEIS. However, in response to TCEQ's comment, the "Physiography, Topography, and Bathymetry," "Water and Sediment Quality," and "Wildlife" rows in the table were revised based on a more critical look at anticipated project impacts. As can be seen in the revised table (Table 2), for these resources, the impacts associated with each of the channel configuration alternatives is proportional to the size of the channel. However, the benefits associated with each are also proportional. Section 2.2.2 of the FEIS includes a description of the channel alternatives screening process and why the 200x42 and the 350x40 channel alternatives were not carried forward for further analysis. The reasons are primarily due to the monetary cost of the alternatives compared to the economic benefits anticipated from each. In regard to dredged material management options, Section 2.3.1.2 of the FEIS provides a description of the screening process used to identify the most cost-effective and environmentally beneficial placement alternatives. As discussed in Section 10 of the FEIS, identification of the Applicant's Preferred Alternative as the environmentally preferred alternative is based on potential impacts to sensitive features, creation of highly productive habitats within the bay, and whether the alternative is practicable.

In response to TCEQ's inquiry why the oyster mitigation is a 1:1 ratio, and their request for more information on how the potential impacts to oyster communities were quantified, the maximum relative functional value of created oyster reef habitat compared to natural oyster reef habitat was assessed by the Federal and State Natural Resource Trustees for the Lavaca Bay Superfund Site. The trustees concluded that created oyster reef can reach a functional value of 95 percent of natural oyster reef habitat, based on primary production, secondary production, benefits to fish and decapods, organic detritus production, and decomposition and remineralization (see Appendix C of the FEIS). Experience in Galveston Bay oyster reef creation sites has indicated that if the reefs have an appropriate elevation, substrate, and orientation to currents, they mature rapidly to a high level of function. In Galveston Bay, created oyster reefs produced oysters within 2 years of construction.

In response to TCEQ's comment concerning the impacts of elevated salinity on oyster reefs, the statement in the FEIS, "The predicted increase in salinity is small and adverse effects are not expected to occur to community structure or productivity of finfish or shellfish as a result of salinity changes that may occur as a result of the project" was part of the aquatic communities (Section 4.14.2 of the FEIS) discussion of impacts. This section was not intended to be a discussion of impacts to oysters (which should have been made clear in this section), and any mention of oysters in this section should have been removed (including in Table 4.14-1 in the FEIS). A thorough discussion of impacts to oysters is included in Section 4.14.5 of the FEIS and in the Oyster Evaluation presented

Table 2. Revised Table 2.2-4: FEIS MSCIP Channel Alternatives Comparison Table

Alternatives	No Action (200x36)	DEIS Alternatives (DMMP Multi-Use Alternative 2A)				FEIS Revised Alternatives (DMMP Multi-Use Alternative 3)	
		1989 Reconnaissance Alternative (200x42)	Channel Alternative 1 (350x40)	Channel Alternative 2 (350x42)	DEIS Proposed Alternative 3 (400x44)	Channel Alternative 2 (350x42)	Applicant's Preferred Alternative 3 (400x44)
Construction Dredged Material Quantity (mcy)	0.00	12.50	28.14	33.10	46.50	33.10	46.50
Maintenance Dredged Material Quantity (mcy)	152.2	184.7	228.3	233.9	257.5	233.9	257.5
Air Quality	In attainment area, air contaminants would increase due to continued operational constraints, possible increase in ship traffic	Lower NO <sub>x</sub> emissions than larger channel alternatives		3,150.99 tons NO <sub>x</sub> emissions from construction	4,889.9 tons NO <sub>x</sub> emissions from construction	3,150.99 tons NO <sub>x</sub> emissions from construction	4,492.4 tons NO <sub>x</sub> emissions from construction
Noise	No change; continued periodic disturbance during maintenance dredging	Increase from ambient noise at nearest receptors during construction (5 dBA more than current maintenance dredging); construction duration is shorter than for the 400x44 Channel Alternative, so shorter time of noise impacts			Increase from ambient noise at nearest receptors during construction (5 dBA more than current maintenance dredging); noise impacts increased at PA P1	Increase from ambient noise at nearest receptors during construction (5 dBA more than current maintenance dredging); construction duration is shorter than Applicant's Preferred Alternative, so shorter time of noise impacts	Increase from ambient noise at nearest receptors during construction (5 dBA more than current maintenance dredging)
Physiography, Topography, and Bathymetry	No change; shoreline erosion would continue at current rate	Reduction in ship wakes would be smaller for smaller channel; smaller channel would have smaller PAs resulting in reduced changes to topography; BN areas would create 72 acres of beach	Reduction in ship wakes would be smaller for smaller channel; smaller channel would have smaller PAs resulting in reduced changes to topography; BN areas would create 72 acres of beach	Reduction in ship wakes would be smaller for smaller channel; smaller channel would have smaller PAs resulting in reduced changes to topography; BN areas would create 118 acres of beach	Wider, deeper channel would reduce ship wakes with no expected change in shoreline erosion; creation of PAs would change topography; BN areas would create 125 acres of beach	Reduction in ship wakes would be smaller for smaller channel; smaller channel would have smaller PAs resulting in reduced changes to topography; BN areas would create 118 acres of beach	Wider, deeper channel would reduce ship wakes with no expected change in shoreline erosion; creation of PAs would change topography; BN areas would create 125 acres of beach
		Placement of material along the Magnolia-Indianola beaches results in 1 to 2 ft increase in elevation and moves the shoreline contours out by 150 to 300 ft (see acreage of beach created for each alternative above); groins would help reduce shoreline erosion rates					
Geology	No change	Minimal changes: redistribution of existing sediments, local increases in turbidity, potential increase in local shoaling and scouring rates					
Energy and Mineral Resources	No change	5 active pipelines located in PAs A1, BN1, and BN2; 3 natural gas pipelines cross the drainage ditch associated with PA P1					
Soils	No change	Potential impact from spill during construction					
Groundwater Hydrology	No change	Potential impact from spill during construction					
Hazardous Material	No change	Slight potential to encounter contaminated material and unexploded ordnance during construction					
Water and Sediment Quality	No change; continued periodic, short-term effects for maintenance dredging, continued unconfined placement of dredged material in Matagorda and Lavaca bays	Placement of smaller amount of maintenance dredged material in unconfined PAs (proportional to channel configuration) in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge (less than for 400x44 channel), no mercury-impacted sediment capped	Placement of smaller amount of maintenance dredged material in unconfined PAs (proportional to channel configuration) in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge (less than for 400x44 channel), no mercury-impacted sediment capped	Placement of 96.4 mcy of maintenance dredged material in unconfined PAs in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge (less than for 400x44 channel); cap 178 acres of mercury-impacted sediment (not including oyster mitigation)	Placement of 108.9 mcy of maintenance dredged material in unconfined PAs in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge; cap 358 acres of mercury-impacted sediment (not including oyster mitigation)	Placement of 96.4 mcy of maintenance dredged material in unconfined PAs in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge (less than for 400x44 channel); cap 225 acres of mercury-impacted sediment (not including oyster mitigation)	Placement of 108.9 mcy of maintenance dredged material in unconfined PAs in Matagorda Bay; temporary impacts to water quality from construction and maintenance (proportional to channel size); decreased potential for redistribution of mercury during storm surge; cap 253 acres of mercury-impacted sediment (not including oyster mitigation)
		No unconfined placement of dredged material in Lavaca Bay					
Commercial and Recreational Navigation	No change	Reduced delays and maintain safety; smaller increase in shipping efficiency than the 400x44 Channel Alternative			Reduced delays and maintain safety	Reduced delays and maintain safety; smaller increase in shipping efficiency than the Applicant's Preferred Alternative	Reduced delays and maintain safety
Vegetation	No change from current trend of shoreline erosion, sea level rise, and upland development	700 ac agricultural land impacted; 0 ac upland impacted; 562.6 ac created	700 ac agricultural land impacted; 40 ac upland impacted; 987.4 ac created	700 ac agricultural land impacted; 40 ac upland impacted; 1,078.5 ac created	700 ac agricultural land impacted; 40 ac upland impacted; 1,343.4 ac created	246.5 ac agricultural land impacted; 75.3 ac upland impacted; 1,374.0 ac created	246.5 ac agricultural land impacted; 85.3 ac upland impacted; 1,569.6 ac created
Wetlands and Submerged Aquatic Vegetation	No change from current trend of sea level rise; would lose SAV when Keller Bay peninsula is breached	0 ac marsh impacted; 19.3 ac created; 1.5 ac farmed wetland impacted; 35 ac created wetland impacted; 4.5 ac freshwater emergent wetland created	12.9 ac marsh impacted; 324.6 ac created; 1.5 ac farmed wetland impacted; 35 ac created wetland impacted; 4.5 ac freshwater emergent wetland created	17.1 ac marsh impacted; 366.5 ac created; 1.5 ac farmed wetland impacted; 35 ac created wetland impacted; 4.5 ac freshwater emergent wetland created	36.4 ac marsh impacted; 610.8 ac created; 1.5 ac farmed wetland impacted; 35 ac created wetland impacted; 4.5 ac freshwater emergent wetland created	17.1 ac marsh impacted; 399 ac created; 1.5 ac farmed wetland impacted; 4.5 ac freshwater emergent wetland created	19 ac marsh impacted; 645 ac created; 1.5 ac farmed wetland impacted; 4.5 ac freshwater emergent wetland created
Wildlife	No change; effects from development; continued periodic, short-term effects for maintenance dredging	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 4737); impacts to terrestrial habitat from PA P1 (700 ac)	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 4332); impacts to terrestrial habitat from PA P1 (700 ac)	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 4350); impacts to terrestrial habitat from PA P1 (700 ac)	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 4889); impacts to terrestrial habitat from PA P1 (700 ac)	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 3151); reduced impacts to terrestrial habitat (PA P1 = 248 ac)	Confined in-bay placement of material would result in increased productivity in bay providing benefits to wildlife (HEA score = 4492); fewer impacts to marsh and oysters than DEIS Proposed Alternative; reduced impacts to terrestrial habitat (PA P1 = 248 ac)
		Short-term displacement during construction; risk of spill during construction, 25 ac bird island created					
Aquatic Ecology	No change; short-term turbidity and effects to fishing grounds and benthic communities during maintenance dredging	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 28-ac oyster reef impacted	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 81-ac oyster reef impacted	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 100.6-ac oyster reef impacted	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 148.2-ac oyster reef impacted	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 93-ac oyster reef impacted	Short-term turbidity increases during construction and placement operations; impacts to benthic communities, fishing grounds, oyster reefs, and EFH during construction and placement operations; 132.6-ac oyster reef impacted
Endangered and Threatened Species	No change; continued chance of sea turtle takes during maintenance dredging using hopper dredges	May affect, not likely to adversely affect, the Kemp's ridley, hawksbill, leatherback, nesting green, and loggerhead sea turtles, and the whooping crane, brown pelican, piping plover, and West Indian manatee if avoidance and minimization measures agreed to with USFWS are implemented; chance of sea turtle takes during construction and maintenance dredging; slightly reduced risk compared to 400x44 Channel Alternative because of less dredging required			May affect, not likely to adversely affect, species listed at left if avoidance and minimization measures agreed to with USFWS are implemented; chance of sea turtle takes during construction and maintenance dredging using hopper dredges	May affect, not likely to adversely affect, species listed at left if avoidance and minimization measures agreed to with USFWS are implemented; chance of sea turtle takes during construction and maintenance dredging; slightly reduced risk compared to Applicant's Preferred Alternative because of less dredging required	May affect, not likely to adversely affect, species listed at left if avoidance and minimization measures agreed to with USFWS are implemented; chance of sea turtle takes during construction and maintenance dredging using hopper dredges
Cultural Resources	No change	14 potentially significant targets would be impacted; additional surveys required prior to construction					
Land Use/Recreation/Aesthetics	No change	Possible future industrial development; short-term increase in traffic and demand on community services during construction					
Socioeconomic Resources	Potential for lost business due to increased delays as ship size increases	Short-term increase in employment during construction; potential for economic growth from new development along the MSC; slightly less growth potential than 400x44 Channel Alternative			Short-term increase in employment during construction; potential for economic growth from new development along the MSC	Short-term increase in employment during construction; potential for economic growth from new development along the MSC; slightly less growth potential than Applicant's Preferred Alternative	Short-term increase in employment during construction; potential for economic growth from new development along the MSC
Community Infrastructure and Municipal Services	No change; growth and development would continue along its current trend	A minimal number of nonlocal workers for construction, minor temporary increased demands on community services; improved water-based transportation efficiency					

NO<sub>x</sub> = nitrogen oxide; dBA = A-weighted sound level; EFH = Essential Fish Habitat; USFWS = U.S. Fish and Wildlife Service

in Appendix O of the FEIS. As discussed in the FEIS (Section 4.14.5.2), indirect effects to oyster reef habitat may result from a higher salinity regime due to the effects of channel improvements. This has the potential to cause an increase in oyster predators such as oyster drills and pathogens such as dermo (*Perkinsus marinus*). Studies conducted on the effects of temperature and salinity on dermo found that both temperature and salinity increased infection intensity; however, it was demonstrated that temperature was more important. The intensity of dermo infection increases during the warmer months (August and September) when salinities are greater. Conversely, a survey of Gulf oysters found that variation in disease intensity between sites studied had no relationship to temperature. Long-term monitoring in the Gulf showed that long-term climate changes through the years as influenced by the El Niño Southern Oscillation may have a significant effect on the presence and intensity of dermo in this region. Although rising salinities and temperatures have significant impact on the intensity of dermo, there is also a combination of factors related to oyster health that should be considered, such as availability of food, siltation, current flow, crowding, and harvest intensity (see Appendix O1 of the FEIS). With the improved channel, an overall rise in salinity of about 2 to 4 parts per thousand could be expected based on the hydrodynamic salinity model. Dr. Sammy Ray of the Oyster Panel believes that the higher salinities would intensify the impact of dermo on oysters and, when combined with higher water temperatures, could cause losses of oysters of 10 to 40 percent in years when the arrival of cool weather is delayed (Appendix O1 of the FEIS).

#### (4) Individuals and Organized Groups.

In response to Audubon Texas expressing concern that the proposed configuration of PA H4 was not suitable or manageable as waterbird nesting habitat, the National Audubon Society's Southeast U.S. Regional Waterbird Conservation Plan (Plan) was considered when evaluating construction plans, and design and implementation of a monitoring plan for PA H4. The response in Section 7.c.(1) above provided for the FWS comments describes in detail the PA H4 features that are in compliance with the recommendations from the Plan. Marsh and seagrass habitats are important components of the H4 complex and add ecological value to the bay system as a whole by increasing productivity and providing habitat for fauna within the bay. The Plan recommends an elevation of between 1 and 3 meters, and the proposed bird island portion of PA H4 is 2.5 meters in height. The levee surrounding PA H4 is armored with stones up to its maximum height of 8 ft, which will be well above the predicted relative sea level rise over the 50-year project life. The interior levee of the bird island has a gradual slope to the interior submerged sandy area, so habitats would be expected to adjust along the slope in response to sea level rise. PA H4 would only be used for placement of new work material. The site was designed to take advantage of the availability of sand to create desirable habitat such as a bird island and shallow areas suitable for seagrass colonization. The marsh and area suitable for seagrass colonization are in the interior of the site, and although there will be openings to allow for water exchange with the outside of the site, signs will be posted to discourage human disturbance of the bird island. The National Audubon Society will be consulted to seek their expertise in managing bird islands.

In regard to Mr. Bolleter's concern that the proposed MSCIP would contribute to siltation in the natural pass between Carancahua Bay and Matagorda Bay, there are at least three main processes that may cause an increase in sedimentation:

1. *Increase in suspended sediment concentrations due to the dredging operations.* During the dredging process and placement of dredged materials into designated areas, a certain amount of sediments are released into the water column. These sediments produce a dredge plume and a run-off plume, which are moved by currents, waves, wind, and dispersion away from the dredging or release areas. It would be anticipated that the contribution of such a plume would be minor. Moffatt & Nichol (Shoreline Impact Analysis, Appendix K of the FEIS) did not perform an analysis of the dredge plume distribution and has not assessed its effect on siltation in and adjacent to the PAs. However, Carancahua Bay is not in close proximity to dredging operations, and because of the shallowness of this bay, it already has a lot of wind-generated sediment in the water column.
2. *Increase in sediment supply.* The only increase in sediment supply is expected during the dredging operations (discussed above). After the project is finished, most of the dredged material adjacent to Carancahua Bay will be located in confined PAs. This will restrict its mobility. The dredged channel will not generate a new source of sediments.
3. *Localized change in waves and currents at the Carancahua Bay inlet.* Waves are expected to be the primary cause of transport of sediments along the shore. Moffatt & Nichol did not assess changes in wave conditions in this area. However, it is not expected that the wind-wave climate will change due to deepening of the navigation channel. Also, because of the distance from the proposed dredged material PAs to the inlet, the wave climate at the Carancahua Bay inlet should not be affected. The project will not have a significant effect on current velocities in the Carancahua Bay inlet. There are no modifications planned for the inlet, Carancahua Bay, or any area in close proximity to the bay. This means that the bay's tidal prism (total volume of water entering the bay on every tide cycle) and inlet cross-section area will remain the same. This will result in the same average velocities. However, local scour/siltation may occur (not related to the proposed project), which may change the configuration/location or number of inlets. These may be due to sea level rise/subsidence, changes in sediment supply, or other factors. These changes are local and are likely to occur regardless of implementation of the proposed MSCIP.

In response to Mr. Corzine's opinion that the MSC does not need to be deepened or widened based on the following reasons:

- *The need for larger ships entering the Port.*
  - As discussed in Section 1.3 of the FEIS, the present configuration of the MSC is a constraint to more efficient maritime commerce. The current draft and width of the MSC limit modern deep-draft cargo vessels, which affects terminal capacity and economic efficiency of seaborne trade. These limitations are confirmed by current light loading practices and one-way vessel access on the channel. With restrictive drafts, deep-draft vessels will continue to experience constrained calls by light-loading and delivery routing, which generate increase channel traffic and

do not maximize terminal capacity. These constraints increase the cost of raw materials and products delivered to the Port and adjacent users. The reductions in allowable maximum cargo load are significant.

- *The negative effect of wakes caused by larger ships on beach nourishment programs within Matagorda Bay.*
  - As discussed in Section 4.3.2 and Appendix K of the FEIS, deepening and widening the navigation channel will result in a reduction in primary wave (drawdown) and secondary wave (wake) heights for existing vessels. A larger LNG vessel passing through the modified channel will result in a greater drawdown than an existing vessel passing through the existing channel at a comparable vessel speed, but the increase in the depth of the channel is projected to result in a reduction of wave energy from passing vessel wakes. For example, a larger LNG vessel passing through the modified channel will result in a smaller wake than an existing vessel passing through the existing channel. Under the Applicant's Preferred Alternative, there is anticipated to be no significant change in the total wave energy and shoreline erosion potential attributable to vessel traffic.
- *The stability of the present jetty system at Matagorda Peninsula and the effects of enlarging the channel on that system.*
  - A study for jetty stability at the MSC Entrance Channel is being conducted by the USACE. In May 2000, an Initial Appraisal Report under Section 216 authority recommended the initiation of a reconnaissance study in Fiscal Year 2002. The purpose was to determine the best alternative to reduce flow velocity through the jetties and repair the current scour areas. According to the report, the natural narrowing of Pass Cavallo Inlet along with Matagorda Bay currents and other influences has increased current velocities through the jetties, causing severe erosion. Multibeam survey results show extreme scour at the throat of the jetties and at locations along the north and south jetties. The scour ranges from depths of 36 ft to depths over 100 ft. Subsequently, a Reconnaissance Report Section 905(b) Analysis for MSC was completed in March 2004. This report concluded that jetty stabilization to improve the efficiency and safety of the channel appeared feasible. In August 2006, a Jetty Stability Study was completed by the USACE Coastal and Hydraulics Laboratory to identify and evaluate alternatives to stabilize the jetties at the entrance to the MSC through reduction of the current velocity. The report for this study concluded that the alternatives judged to provide the best performance are compatible with possible future plans for channel deepening and widening of the MSC.

As discussed in Section 4.3.2 and Appendix K of the FEIS, deepening and widening the navigation channel will result in a reduction in primary wave (drawdown) and secondary wave (wake) heights for existing vessels. As discussed in the above bullet, under the Applicant's Preferred Alternative, there is anticipated to be no significant change in the total wave energy attributable to vessel traffic and therefore the proposed project poses no increased threat to the stability of the jetties.

- *Effects to Pass Cavallo and potential for it closing with resulting impacts to the commercial fishery.*
  - Results of a study concerning the cross-sectional area stability of Pass Cavallo were disclosed by the USACE in October 2006. According to the study, the width of Pass Cavallo has decreased since construction of the MSC into Matagorda Bay in 1966. The purpose of the study was to investigate whether Pass Cavallo would remain open or gradually close as a result of improving the MSC. Subject to the uncertainties that enter all coastal sediment processes studies, it was concluded that Pass Cavallo would remain open at its present cross-sectional channel area or increase in area. In addition, the proposed widening of the MSC is not expected to notably change the stability of Pass Cavallo because the additional capture of the tidal prism by the ship channel would be small relative to past changes in tidal prism (Appendix M of the FEIS).
- *Consideration of an offshore port facility to reduce costs and effects associated with dredging the MSC.*
  - The proposed Texas Offshore Port System (TOPS) project is designed to handle crude oil, which is not a significant commodity on the MSC. Therefore, the TOPS project would not reduce the need for channel improvements to allow efficient delivery of other commodities, and does not impact the benefits associated with the proposed MSCIP.
- *Negative effects of security zones around natural gas carriers entering the bay system on local commercial, recreational, and barge traffic.*
  - The proposed channel widening project has no connection to whether or not moving security zones would be present accompanying LNG carriers. It is stated in the June 2006 Calhoun LNG Terminal and Pipeline Project Draft EIS that safety measures to be imposed may include moored vessel security and moving safety zones around the LNG carriers, a waterway traffic management plan, escorts by armed law enforcement vessels, and a variety of waterway and shoreline surveillance measures.
- *Map included with the August 31 notice was out of date.*
  - Mr. Corzine is correct, this map was not updated. The updated maps are included in this ROD. Figure 1 is the site vicinity map and Figure 2 shows the channel layout with the existing and proposed PAs.

In response to Ms. Wilson's and the Calhoun County Resource Watch's concerns regarding dredging or dredging activity near sediments containing mercury at or above 0.5 mg/kg and the potential to mobilize and redistribute mercury in Lavaca Bay, the applicant responded:

- *Testing new work and maintenance dredged spoil/material from the proposed turning basin expansion and the channel expansion immediately south of the turning basin for potentially high levels of sediment mercury.*
  - As described in Section 4.9.4.2 of the FEIS, analysis of sediment samples in areas that would be dredged determined that, using the expected dredging methods, all

average mercury concentrations would be below the Remedial Action Objective (RAO) of 0.25 mg/kg established for critical habitats (fringe marsh-type) during the Remedial Investigation for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site. This, coupled with the use of BMPs while dredging and during placement of material, should reduce the risk of mercury resuspension during project construction.

Although mercury has not been present in the maintenance material at levels that would require it to be placed in confined PAs, all maintenance material in Lavaca Bay will be placed in confined PAs instead of the current practice of placing it in unconfined PAs along the channel. Confining the material would prevent any potential for mobilization of mercury in the bay.

- *Process for identifying, quantifying, reporting, transport and disposal of, and public notification of such process and results regarding levels of mercury in dredged improvement and maintenance sediments.*
  - As described above, areas where new work dredging would occur have been tested for sediment mercury levels, and based on the anticipated dredging methods, all average mercury concentrations would be below the RAO of 0.25 mg/kg. All maintenance dredged material in Lavaca Bay would be placed in confined PAs. Post-construction sampling and analysis will be performed to determine whether the surficial sediments exceed the RAO of 0.5 mg/kg for open-water habitats and if so, the sediments will be managed in a manner consistent with the Lavaca Bay Superfund Site requirements.
  - The following considerations and measures described in the DMMP (Appendix B of the FEIS) will be implemented during construction to minimize and reduce the risk of potential disturbance of the mercury-impacted bay sediments:
    - For PA ER3, work in this area, including barge access routes, is planned to progress from the outside to the inside of contaminated areas, which provides for any disturbed area to be covered by the subsequent placement of clean dredged material. For barge access channels, if sediment testing identifies impacted material, then it will be handled appropriately and clean material will be placed in the dredged access channel. Several measures will be employed to reduce the potential disturbance of mercury-impacted sediment. First, a rigid barrier will be installed along the levee alignment, approximately 100 ft from the toe of the levee. This will allow suspended material to be confined and covered by subsequent mudflow (dredged material that becomes part of the slurry) from the construction of the toe berm and levee. Next, a 50-ft-wide submerged toe berm will be constructed, with the work progressing from the outside to the inside of the PA. This toe berm will reduce the mudwaving that may occur during construction of the PA levee. Also, the toe berm will cover the sediments that may be disturbed due to a mudwave. Levee construction will also progress from the outside to the inside of the PA. This sequencing will allow for a potential mudwave to progress to the inside of the PA, covering disturbed sediment. These measures, taken together, will

reduce the likelihood that the surface mercury concentration will exceed the RAO.

- For PA ER1/OR, the entire area will be covered with a minimum of 1 ft of clay or sand, with the oyster reef areas being a minimum of 1 ft above adjacent fill areas. This will allow any disturbed area to be covered with additional clean fill. Also, covering the area with fill will prevent future disturbance of the areas adjacent to the oyster reefs during oyster harvesting.
- Alcoa is responsible for monitoring sediment, red drum and juvenile blue crab tissue mercury concentrations per Operations, Maintenance and Monitoring Plans (OMMPs) that are attached to the Consent Decree between the EPA and Alcoa. The areas where samples are collected are described in the OMMPs. Alcoa has an active agreement with the applicant that requires Alcoa to assume responsibility for any additional activities related to the presence of mercury in sediments present within submerged lands under the control of the applicant.

- *Process for ensuring the integrity of caps north and west of Dredge Island (ER3/D and ER1/OR).*

PA ER3/D is not a cap; it will be a confined upland PA surrounded by a levee. This area would be maintained by the permittee, or the USACE if the project is approved for the Federal Assumption of Maintenance. ER1/OR is also not designed as simply a cap; it provides additional material to prevent disturbance of underlying material. As identified in the DMMP, post-construction monitoring will occur to determine whether the area remains below the RAO.

- *Acknowledgment that capping replaces “enhanced natural recovery” remedy north of Dredge Island specified in the EPA ROD with Alcoa.*
  - The capping activities proposed in the MSCIP do not replace the enhanced natural recovery remedy north of Dredge Island. The enhanced natural recovery remedy north of Dredge Island was not needed because sediment mercury concentrations in the area of the proposed remedy met the mercury remediation goal before the remedy was implemented. This decision is documented in an Explanation of Significant Difference dated 23 May 2007. Although the Enhanced Natural Recovery action north of Dredge Island is no longer a necessary component of remedial action for the Site, any non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions that facilitate the acceleration of sediment recovery rates will provide a benefit to the ecosystem and decrease the time to recovery of the system.
- *Mercury input from emissions at NuCoastal and Formosa Plastics Corporation Sites.*
  - Information available in public documents has been included in the cumulative impacts assessment in Section 5.0 of the FEIS.

- *Draft a plan and process for measuring and monitoring sediment mercury levels in dredged material (new work and maintenance material) prior to, during, and after dredging.*
  - As described in previous responses to comments, areas where new work dredging would occur have been sampled for existing mercury levels; BMPs would be employed to prevent mercury resuspension during placement of material; and all maintenance material from Lavaca Bay will be placed in confined PAs. Post-construction sampling and analysis will be performed to determine whether the surficial sediments exceed the RAO of 0.5 mg/kg for open-water habitats and if so, the sediments will be managed in a manner consistent with the Lavaca Bay Superfund Site requirements, which includes the process for identifying, quantifying, reporting, transport, and disposal of impacted material. As previously stated, Alcoa is responsible for monitoring sediment, and red drum and juvenile blue crab tissue mercury concentrations per OMMPs that are attached to the Consent Decree between the EPA and Alcoa. Alcoa has an active agreement with the applicant that requires Alcoa to assume responsibility for any additional activities related to the presence of mercury in sediments present within submerged lands under the control of the applicant.
- *Draft an explicit plan including identifying the responsible party(ies) for measuring and monitoring sediment mercury levels in areas adjacent to any physical dredging activity in the turning basin expansion and the channel expansion immediately south of the turning basin. This should include a plan and process for measuring and monitoring mercury levels in red drum, juvenile blue crab, and possibly other shellfish and finfish in these specific areas.*
  - Alcoa is responsible for monitoring sediment, and red drum and juvenile blue crab tissue mercury concentrations per OMMPs that are attached to the Consent Decree between the EPA and Alcoa. The areas where samples are collected are described in the OMMPs. Alcoa has an active agreement with the applicant that requires Alcoa to assume responsibility for any additional activities related to the presence of mercury in sediments present within submerged lands under the control of the applicant.
- *Draft an explicit plan and process for ensuring the integrity of and safety afforded by proposed capping activity in areas designated ER3/D and ER1/OR including identification of the responsible party(ies).*
  - PA ER3/D is not a cap; it will be a confined upland PA surrounded by a levee. This area would be maintained by the permittee, or the USACE if the project is approved for the Federal Assumption of Maintenance. ER1/OR is also not designed as simply a cap; it provides additional material to prevent disturbance of underlying material. As identified in the DMMP, post-construction monitoring will occur to determine whether the area remains below the RAO.
- *Codraft a statement with the EPA and Alcoa explicitly stating an agreement among these parties that the responsibility for the ROD remedy action of “enhanced natural recovery” initially the responsibility of Alcoa is now the responsibility of the CPA or other such identified responsible party(ies).*

- The enhanced natural recovery remedy north of Dredge Island was not needed because sediment mercury concentrations in the area of the proposed remedy met the mercury remediation goal before the remedy was implemented. This decision is documented in an Explanation of Significant Difference dated 23 May 2007. See previous comment regarding the additional benefits of further non-CERCLA methods that can accelerate the overall natural sediment recovery rates.
- *Assess the expected mercury emissions and deposition into the area and Lavaca Bay that will result from the proposed petroleum coke and coal combustion at the energy and thermal production facilities planned and operated by NuCoastal and Formosa Plastics Corporation. Because this will be an additional source of mercury input into an already heavily mercury-contaminated area and bay system (Lavaca, Cox, Keller, and Matagorda bays), a reasonable estimate and understanding of this contribution to the existing mercury burden is warranted. Any future changes to fuel consumption by either of these facilities once operational should necessarily trigger a reevaluation of that change in the operation's contribution to the environmental mercury inventory and burden in the area and the bay system.*
  - Information available in public documents has been included in the cumulative impacts assessment in Section 5.0 of the FEIS.

The presence of mercury in the bay is a concern for the development of the project. There is a potential to encounter mercury during the initial dredging and construction of the PAs as well as during maintenance of the channel. Investigations have been undertaken to understand where the mercury is located and the potential for disturbance. The proposed project would cover approximately 698 ac of mercury-impacted bay bottom. Although mercury has not been present in the maintenance material at levels that would require it to be placed in confined PAs, all the maintenance material from Lavaca Bay will be placed in confined PAs instead of the current practice of placing it in unconfined PAs along the channel. Also, construction measures have been developed to reduce the potential for disturbance of the mercury. These collective measures should improve the condition of the bay.

d. Findings.

We believe structural and nonstructural alternatives for the project were properly considered, and reasonable and practical channel configuration alternatives were evaluated appropriately. We find that alternatives carried through the impact evaluation process in the EIS were reasonable and sufficient to meet the need for alternatives evaluation.

The proposed project would have some unavoidable adverse impacts to the existing environment. Air contaminant emissions from new work dredging would result in minor short-term impacts on air quality in the immediate vicinity of the dredging site. Short-term noise impacts would occur in close proximity to the equipment and machinery used during beach nourishment along the Magnolia-Indianola shoreline. Aesthetically, an offshore levee would alter the landscape of the Sand Point Ranch shoreline, and levees of the proposed upland terrestrial PA would be visible from Alamo Beach and Magnolia Beach. New work dredging operations conducted along the MSC will impose minor temporary delays to commercial navigation and require slow speeds, and recreational vessels would also

experience delays during construction, though no significant effects on recreational uses of the channel are expected. A less than 1 percent increase in tidal range and changes in salinity may result from the proposed project, which may impact oyster production, though finfish are not expected to be impacted. Dredging impacts would include redistribution of existing sediment, local increases in turbidity, and potential increases of local scouring and shoaling rates, with minimal net impacts. The proposed project would result in unavoidable adverse impacts to terrestrial and aquatic wildlife and their habitat. The impacts of these losses would be offset by the applicant's plan to protect and create marshes, seagrass beds, oyster reefs, and a bird island, increasing the amount of nursery areas, protective habitat, and food sources within the Matagorda Bay estuary.

We recognize that there is a potential to encounter mercury-impacted sediments in Lavaca Bay during new work dredging, maintenance dredging, and construction of PAs. We believe that construction and maintenance considerations and measures described in the applicant's DMMP would sufficiently minimize disturbance of mercury-impacted bay sediments. These measures, including sediment testing, construction of temporary rigid barriers and submerged toe berms, placement of all Lavaca Bay maintenance material in confined PAs, and capping contaminated sediments, would reduce the risk of mercury resuspension, and significantly reduce the likelihood that surface mercury concentration would exceed the RAO established for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site. A special condition will require post-construction sampling and analysis to determine whether surficial sediment mercury levels at PAs A1, A2, ER1/OR, and ER3/D exceed the RAO of 0.5 mg/kg established for open-water habitats during the Remedial Investigation for the superfund site and if so, then the sediments will be managed in a manner consistent with the superfund site requirements. The construction and maintenance considerations and measures, Alcoa's monitoring responsibilities under their Consent Decree with the EPA, and Alcoa's active agreement with the applicant requiring Alcoa to assume responsibility for any additional activities related to the presence of mercury in sediments present within submerged lands under the control of the applicant, will ensure Lavaca Bay sediments will be managed in a manner consistent with the Lavaca Bay Superfund Site requirements. We do not expect a significant adverse change in ambient or sediment mercury concentrations, and find that upland placement of all Lavaca Bay maintenance-dredged material and capping of contaminated material with clean sediments should improve the condition of the bay.

We recognize that there is a potential to encounter MEC during PA construction and dredging activities. In order to ensure public safety, should a permit be authorized, we would add a special condition requiring the permittee to coordinate with the USACE Baltimore District Military Munitions Design Center (MMDC) concerning the possible presence of munitions and explosives of concern within the project area, and to take whatever steps the MMDC recommends to ensure contractor and public safety. Since initial construction of the proposed project is projected to take place over a two-year period, and the project area is geographically expansive, we believe that the special condition should allow conducting coordination for discrete geographic areas of the project area. This would allow the permittee to begin PA construction and dredging in a geographic portion of the project area for which coordination is complete, prior to completing coordination for the entire project area.

Endangered Species Act Section 7 consultation with the FWS was completed informally, and construction activities may affect but are not likely to adversely affect species federally listed as threatened or endangered under jurisdiction of the FWS. Hopper dredging activities are likely to adversely affect individual loggerhead, hawksbill, leatherback, Kemp's ridley, and green sea turtles but are not likely to jeopardize their continued existence, and a biological opinion was issued by the NMFS outlining measures to be taken to avoid and minimize potential sea turtle takes.

Nautical cultural resource surveys have been conducted and cleared by the SHPO for a portion of the proposed PAs and for the new construction areas along the MSC. However, additional nautical and terrestrial surveys must be completed prior to construction in order to comply with Section 106 of the NHPA, and a special condition coordinated by the Staff Archaeologist with the SHPO will be added to the authorization to ensure the permittee shall not engage in any ground disturbing activities within the unsurveyed areas until Historic Properties have been identified and adverse effects assessed and resolved if present. The Site Management and Monitoring Plan signed by the EPA and USACE for use of the ODMDSs under MPRSA, Section 103, went into effect on 20 October 2009.

We find that the proposed project conforms with the CWA Section 404 (b)(1) guidelines published for the discharge of dredged or fill materials into waters of the U.S. As required by the Ocean Dumping Regulations (40 CFR Parts 220 to 229) promulgated to interpret the MPRSA, the proposed new work material ODMDS for one-time use was examined relative to the general and specific factors, and was found to be in compliance.

We find that the applicant has satisfactorily addressed concerns raised in response to the USACE public notice. Additionally, the applicant coordinated with appropriate regulatory agencies to ensure compliance with applicable State and Federal regulations throughout the permitting process.

The following special conditions will be added to the authorization, if issued:

1. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S. Army Corps of Engineers (USACE), to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
2. The permittee must notify the USACE, Regulatory Branch, Chief, Compliance Section, P.O. Box 1229, Galveston, Texas 77553-1229, in writing within 14 days of beginning work in jurisdictional areas.
3. The permittee must coordinate with the USACE, Galveston District's Northern Area Office, Navigation Branch, and Operations Branch, at least 60 days prior to conducting any dredging, pipeline, levee, or jetty work in or affecting the Matagorda Ship Channel and the Gulf Intracoastal Waterway, or using any dredged material placement areas, to assure that the work will not

conflict with United States Government dredging or disposal area management activities.

4. The permittee must obtain a USACE, Galveston District Real Estate Out Grant prior to performing work within the Matagorda Ship Channel and Gulf Intracoastal Waterway, and prior to using associated dredged material placement areas.

5. When structures or work authorized by this permit are determined by the USACE to have become abandoned, obstructive to navigation, or cease to be used for the purpose for which they were permitted, such structures or other work must be removed, the area cleared of all obstructions within a timeframe to be determined by USACE, and written notice given to the USACE within 30 calendar days of removal.

6. This Corps permit does not authorize you to take an endangered species, in particular the loggerhead, Kemp's ridley, hawksbill, leatherback, and green sea turtles. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a biological opinion [BO] under ESA Section 7, with "incidental take" provisions with which you must comply). The enclosed National Marine Fisheries Service (NMFS) BO, dated October 24, 2007, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this USACE permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your USACE permit. The NMFS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

7. All measures to avoid and minimize impacts on federally listed endangered and threatened species, in particular the Kemp's ridley sea turtle, hawksbill sea turtle, leatherback sea turtle, nesting green sea turtle, loggerhead sea turtle, whooping crane, brown pelican, piping plover, and West Indian manatee, described in the enclosed April 6, 2009, letter prepared by the U.S. Fish and Wildlife Service for the proposed project, must be followed.

8. All conditions described in the Ocean Dredged Material Disposal Site (ODMDS) Analysis, Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 Section 102/103 Evaluation Report, and the associated Site Management Plan authorized by the Environmental Protection Agency and USACE on October 20, 2009, must be followed.

9. Dredging and dredged material disposal and monitoring of dredging projects using the Silent Inspector (SI) system shall be implemented for this permit. The permittee's SI system must have been certified by the SI National Support Center within one calendar year prior to the initiation of the dredging/disposal.

Questions regarding certification should be addressed to the SI Support Center at 877-840-8024. Additional information about the Si System can be found at <http://si.usace.army.mil>. The permittee is responsible for ensuring that the SI system is operational throughout the dredging and disposal project and that project data are submitted to the SI National Support Center in accordance with the specifications provided at the aforementioned website. The data collected by the SI System shall, upon request, be made available to the Regulatory Branch of the USACE, Galveston District.

10. All terms and conditions set forth in the NMFS November 19, 2003, Gulf of Mexico Regional Biological Opinion (GRBO) to the USACE on Hopper Dredging of Navigation Channels and Borrow Areas in the United States Gulf of Mexico, and Revision 2 to the GRBO, issued January 9, 2007, will be adhered to and implemented, including onboard NMFS-approved protected species observers for sea turtles and Gulf sturgeon, when conducting maintenance dredging with a hopper dredge. A copy of the GRBO and Revision 2 to the GRBO can be viewed on the Engineer Research and Development Center web site at the following link: <http://el.erdc.usace.army.mil/seaturtles/refs-bo.cfm>. The permittee must initiate consultation with the USACE, Galveston District Regulatory Branch to ensure compliance with the GRBO and will be issued a set of special conditions by USACE that must be adhered to and implemented prior to the initiation of maintenance dredging with a hopper dredge.

11. The permittee shall not engage in any ground disturbing activities within the unsurveyed areas described in the Scope of Work entitled, Historic Properties Matagorda Ship Channel Improvement Project, Matagorda and Lavaca Bays, Texas, Texas Antiquities Permit No. 4080. PBS&J Job No. 0441652, prepared by PBS&J and dated June 12, 2009 until the unsurveyed areas have been inventoried for historic properties. In order to ensure this project is in compliance with the National Historic Preservation Act, the permittee shall take the following steps:

- a. The permittee shall be responsible for the identification of Historic Properties, following the procedures described in 36 CFR 800.4.
- b. If Historic Properties are present, the permittee shall be responsible for the Assessment of Adverse Effects, following the procedures described in 36 CFR 800.5.
- c. If the project would result in adverse effect(s) to historic properties, the permittee shall be responsible for Resolving the Adverse Effect(s), following the procedures described in 36 CFR 800.6.

The permittee shall submit all scopes of work, recommendations, and reports to the USACE for approval. The USACE shall coordinate all scopes of work, recommendation, and reports with the State Historic Preservation Officer for concurrence or comment. This condition shall be considered fulfilled upon written acceptance of the final report by the USACE.

12. All construction of mitigation, including planting, must be complete within 35 months after start of construction within jurisdictional areas. The permittee will notify the USACE, Chief of Compliance Galveston Regulatory Branch in writing when the work begins in jurisdictional areas. Monitoring and maintenance will proceed according to the mitigation plan.
13. The mitigation success criteria, as indicated in the mitigation plan included in Attachment 1 as "Performance Criteria" or "Performance standards" on Sheets 15, 16, 18, and 23 of 24, must be achieved for the mitigation requirement to be considered complete.
14. Should mitigation be determined to be unsuccessful by USACE personnel at the end of the monitoring period, the permittee will be required to take necessary corrective measures, as approved by the USACE. Once the corrective measures are completed, the permittee will notify the USACE and a determination will be made regarding success of the mitigation.
15. A transplant survival survey of the planted mitigation area must be performed within 90 calendar days following the initial planting effort. If at least 50 percent survival of transplants is not achieved within 90 calendar days of planting, a second planting effort will be completed within 60 calendar days of completing the initial survival survey. If optimal seasonal requirements for re-planting targeted species is not suitable when re-planting would be required, the permittee must submit a re-planting schedule for USACE approval.
16. Written reports detailing plant survival must be submitted to the USACE, Chief of Compliance Galveston Regulatory Branch within 30 calendar days of completing the initial survival survey and any subsequent replanting effort.
17. If after one year from the initial planting effort (or subsequent planting efforts) the site does not have at least 35 percent aerial coverage of targeted vegetation, those areas that are not vegetated will be replanted using the original planting specifications.
18. If after three years from the initial planting effort (or subsequent planting efforts) the site does not have at least 70 percent aerial coverage of targeted vegetation, the permittee will be required to take necessary corrective measures, as approved by the USACE. Once the corrective measures are completed, the permittee will notify the USACE and a determination will be made regarding success of the mitigation.
19. In addition to the initial survey report, progress reports will be submitted to the USACE Chief of Compliance Galveston Regulatory Branch at 6 months, 1 year, 2 year, and 3-year intervals following the initial transplanting effort or subsequent replanting efforts. Photos of the mitigation site will be included.
20. The area subject to this permit is being studied by the USACE for possible improvements or modifications. The permittee is hereby notified that if these or future operations occur and require any facility, pipeline, or other structure to be moved to accommodate a Federal navigation or flood control improvement in navigable waters, the owners of said facility, pipeline, or other structure will be required to remove or relocate the facility, pipeline or other structure at the owner's expense.

21. The permittee shall not engage in any ground-disturbing activities within any geographic portion of the project area prior to completing coordination with the USACE Baltimore District Military Munitions Design Center (MMDC) concerning the possible presence of munitions and explosives of concern (MEC) within that geographic portion of the project area and taking whatever steps the Baltimore District MMDC recommends to ensure contractor and public safety within that geographic portion of the project area. The Baltimore District MMDC can be contacted at: U.S. Army Corps of Engineers, Baltimore District, MM Design Center, P.O. Box 1715, Baltimore, MD 21203. The Baltimore District MMDC Point of Contact (POC) is Mr. George C. Follett, phone 410-962-6743, email [George.C.Follett@usace.army.mil](mailto:George.C.Follett@usace.army.mil), and the secondary POC is Mr. Paul Greene, phone 410-962-6741, email [Paul.E.Greene@usace.army.mil](mailto:Paul.E.Greene@usace.army.mil).

22. The permittee shall conduct post-construction sampling and analysis to determine whether the surficial sediment mercury levels at dredged material placement areas A1, A2, ER1/OR, and ER3/D exceed the Remedial Action Objective of 0.5 milligrams per kilogram established for open-water habitats during the Remedial Investigation for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site and, if so, then the sediments will be managed in a manner consistent with the Alcoa/Lavaca Bay Superfund Site requirements, which include the process for identifying, quantifying, reporting, transport, and disposal of impacted material.

e. Conclusion.

The USACE has reviewed and evaluated, in light of the overall public interest, the documents and factors concerning this permit application, as well as the stated views of other interested Federal and non-Federal agencies and the concerned public, relative to the proposed work in waters of the United States. This evaluation is in accordance with the guidelines contained in 40 CFR Part 230 pursuant to Section 404(b)(1) of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act.

Based on our review, I find that the proposed project is not contrary to the Public Interest and that a Department of the Army permit, with conditions, should be issued.

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(Date)



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CHRISTOPHER W. SALLESE  
COL EN, COMMANDING