DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LA 70118

REPLY TO
ATTENTION OF

Regional Planning and
Environment Division South
Environmental Planning Branch

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT TIGER PASS MARSH/RIDGE RESTORATION LOUISIANA COASTAL AREA (LCA) BENEFICIAL USE OF DREDGED MATERIAL PROGRAM (BUDMAT) PLAQUEMINES PARISH, LOUISIANA

SEA # 542.A

Description of the Action. The U.S. Army Corps of Engineers (USACE), New Orleans District (CEMVN), has prepared Supplemental Environmental Assessment #542.A (SEA #542.A) to present changes to the design of the previously approved action described in Environmental Assessment #542 (EA #542) titled "Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT) Plaquemines Parish, Louisiana". The Decision Record for EA #542 was approved by the CEMVN Commander on March 9, 2016. The approved Project Plan assessed in EA #542, included the construction of a 5,000-ft long, 23 acre (11.94 AAHUs) non-continuous ridge backed by a 500-ft wide, 55 acre (25.2 AAHUs) marsh platform beneficially utilizing dredged material from the hopper dredge disposal area (HDDA). The Project Area is located on the western side of the Mississippi River, adjacent to Spanish Pass, downstream of its intersection with Tiger Pass near Venice, in lower Plaquemines Parish, LA approximately 12 miles above Head of Passes, Southwest Pass, and South Pass near Venice, Louisiana. SEA #542.A is attached hereto and incorporated herein by reference.

The proposed action assessed in this SEA involves changes to the approved Project Plan for ridge restoration and marsh creation previously described in EA #542. Changes include adjustments to the design of the ridge and marsh platform in the Project Area, the expansion of the marsh platform to include perimeter dikes, borrow pits for the construction of the perimeter dikes, the addition of an equipment and pipeline staging area, and the impacts associated with the equipment needed for the jack and bore pipeline installation of a 42 inch pipeline casing under portions of Tide Water Road. Also being proposed is an alternative route to facilitate the transport of the dredged material from the marina located at the eastern end of Halliburton Road to the Project Area via a dredge material discharge pipeline. Utilization of the proposed alternative route would require dredging of a marine vessel slip located at the eastern end of Haliburton Road to accommodate barge traffic.

1. *Design Changes to Ridge Restoration and Marsh Platform*

Two (2) existing crude pipelines (an active 12-inch crude pipeline and an abandoned 6-inch crude pipeline) owned by Plains All American, traverse portions of the Project Area in the location of the proposed ridge restoration and marsh creation platform.

To avoid impacts to the pipelines, a no-work corridor has been established between the western and eastern sections of the ridge and marsh platform. With the exception of allowable placement of dredge fill over the pipelines to provide a land bridge for equipment access, no work will be performed within 50-feet of either pipeline. The no work area includes the outside toe of the earthen perimeter dikes that are to be constructed adjacent to and parallel to these pipelines, but offset by a minimum of 50-feet. The width of this no work corridor between the allowable dike toes, that is to be maintained at these pipeline crossings, will vary from approximately 140-feet on the north end to approximately 160-feet on the south end.

In order to accommodate the pipeline corridor, the ridge and marsh platform would be divided into two sections, the western section and the eastern section. The ridge would begin approximately 1.3 miles west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. It is expected that the ridge crown would settle to an elevation of approximately +6.0-feet NAVD88 within 1-2 years of completion of construction.

The marsh platform would be constructed to an initial fill height of +3.5-feet NAVD88 and would be surrounded by a perimeter dike. The western side would measure 450-feet on the backside and 40 to 50-feet on the south side of the ridge. It is expected that the marsh platform would settle/dewater to an elevation of approximately +2.0-feet NAVD88, an increase of +0.5-feet NAVD88 from previous expectations, within 10 years of completion of construction. Approximately 36.5 acres of marsh would be created within the western section and approximately 19.2 acres of marsh would be created within the eastern section.

The final placement of material being pumped through the dredge material discharge pipeline would be handled in a manner similar to the handling of dredged materials for the normal O&M dredging of the HDDA when it disposes of materials in the Delta National Wildlife Refuge. (DNWR), the Pass a Loutre Wildlife Management Area (PALWLMA), and the open waters of West Bay.

2. *Expansion of Marsh Platform to Include Perimeter Dikes*

EA #542 originally addressed impacts to approximately 78 acres (37.15 AAHUs) of open water and intermediate marsh associated with construction of the ridge restoration and marsh creation platform.

Design changes resulting from advanced engineering and design requires the construction of temporary perimeter dikes associated with the marsh creation platform. Earthen perimeter dikes would be needed in order to facilitate construction of the ridge and marsh platforms and maximize retention of the dredged material, as well as to prevent the material from entering adjacent lands, waterways, and pipeline rights-of-way. Any material necessary for dike, weir, and closure construction would come from within the area designated for the marsh creation platform, unless otherwise specified. Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these perimeter dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors.

The perimeter dikes would be constructed to a crown width of 5-feet, crown elevation of +5-feet NAVD88, and side slopes no steeper than 1V on 4H. The dikes to be constructed along the south side of the ridge would also include a 25-foot wide berm, to be constructed to elevation 0.0-feet NAVD88, and with slopes no steeper than 1V on 4H. The berm would tie into the southern slope of the perimeter dike, extend 25-feet at elevation 0.0-feet NAVD88, and then tie into natural ground (approximately -3.5-feet NAVD88) on a slope no steeper than 1V on 4H. Construction of the perimeter dikes would impact approximately 22.5 additional acres of open water (13.95 acres) mingled with patches of intermediate marsh (8.55 acres), with 13.8 acres within the western section and 8.7 acres within the eastern section.

3. *Borrow Requirements*

Borrow would be required for construction of the perimeter dikes around the marsh creation platform. Material for construction of the perimeter dikes would be obtained from borrow sites either from within or outside of the ridge and marsh creation platform footprint. The potential borrow sources are identified as follows:

Approximately 28.2 acres could be impacted through interior and exterior borrow for the western cell:

a) Exterior Borrow Pit north of western section = 7.3 acres
b) Exterior Borrow Pit west of western section = 1.4 acres
c) Exterior Borrow Pit south of western section and within adjacent Spanish Pass = 5.8 acres
d) Interior Borrow Pit in western section, which would be backfilled during construction of the Project with dredged material = 13.7 acres

Approximately 15.3 acres could be impacted through interior and exterior borrow for the eastern cell:

a) Exterior Borrow Pit north of eastern section = 2.9 acres

b) Exterior Borrow Pit south of eastern section and within adjacent Spanish Pass = 4.4 acres
c) Interior Borrow Pit of eastern section, which would be backfilled during construction of the project with dredge material = 8.0 acres

The newly proposed borrow pits, and the stability berms for the borrow pits, would impact 6.80 acres of marsh and 36.7 acres of open water for a total of 43.5 acres of additional impacts beyond those identified in EA #542 which identified all borrow material as coming from the HDDA. Of the 43.5 acres of additional impacts, 21.7 acres would be backfilled during construction of the marsh creation platform. The remaining 21.8 acres (10.8 AAHUs) would be allowed to refill naturally over time. The construction of the ridge and marsh platform would require approximately 1,700,000 cubic yards of silty sandy material to be obtained solely from the HDDA. This is an increase of 50,000 cubic yards of material from the 1,650,000 previously estimated.

4. Dredge Material Transport Method

EA #542 included an assessment of transporting dredged material via barge from the HDDA to a designated off-loading site where the material would then be transferred via a dredge material discharge pipeline to the Project Area.

As detailed in EA #542, a cutterhead suction dredge working in the HDDA could be used to load hopper barges utilizing a spider barge. The arms of a spider barge are designed to optimize loading characteristics and production efficiency by loading the sediment into the hopper barges via multiple arms which allow for concurrent loading of multiple barges. This also allows for the cutterhead dredge to continue operating without having to shut down while waiting for the arrival of offloaded barges. As detailed in SEA 542.A, these loaded barges would now be transported to a slip located in Tiger Pass outside of the navigation channel at the eastern end of Haliburton Road in Venice, Louisiana, at which point an off-loader would empty the barges, and the material would be transported via a temporary dredge material discharge pipeline to the Project Area.

5. *Dredging of Vessel Slip at eastern end of Haliburton Road*

Once loaded with material from the HDDA, the hopper barges would be transported by tugboat to the designated pump-out location at an existing vessel slip at the eastern end of Haliburton Road located just outside of Tiger Pass and the navigation channel. In order for the off-loader to access the slip and off-load the material, the Contractor would be required to dredge for access to the slip and also inside of the slip. Any excavation deemed necessary would have to comply with the same allowable grades, slopes, etc., as well as disposal of any material dredged for access. The material would be transported from the slip via temporary dredge material discharge pipeline to the Project Area. The extent of the dredging of the slip would be the minimum that the contractor deems necessary. However, dredging would not exceed -11-feet MLG with dredging at this depth

no closer than 15-feet from the bulkheads. Any material dredged for both access to and within the slip would be transported to and placed within the designated disposal site, located within the Mississippi River and opposite of the entrance to Grand Pass at approximate river Mile 10.5 AHP. All earthen material dredged shall be disposed of beyond/ deeper than the -55-feet MLG contour.

6. *Transportation of Dredge Material from Slip to Project Area*

The dredge material discharge pipeline would begin at the slip at the eastern end of Haliburton Road, travel along the north side of Haliburton Road and be placed within the existing drainage canal paralleling Haliburton Road. A temporary ramp would be constructed over the dredge material discharge pipeline in order to provide vehicle ingress and egress at the eastern end of Haliburton Road. The ramp would measure approximately 12-feet in width by approximately 150-feet in length and consist of crushed stone. Upon completion of the project, the dredge material discharge pipeline would be removed and the ramp graded in order to restore the area to pre-existing conditions.

The dredge material discharge pipeline would then cross under Tide Water Road via a 42-inch casing to be jack and bored under the road. The dredge material discharge pipeline would then travel approximately 850-feet from the north end of the bored culvert to Spanish Pass Road via a corridor covering approximately 1.4 acres, of which approximately 1.1 acres is intermittent marsh that could be impacted. The dredge material discharge pipeline would then pass over Spanish Pass Road and enter Spanish Pass itself. Once in the open waters of Spanish Pass, the dredge material discharge pipeline would then traverse an approximate distance of 1.25 miles to reach the eastern end of the ridge and an additional 1.0 mile to reach the western edge of the proposed ridge. The dredge material discharge pipeline and all construction equipment would remain within the banks of Spanish Pass itself. It is not expected that any utilities or pipelines would be impacted along the access route, or within the entire ridge area. Delivery of dredge material to the Project Area would be in a manner that would avoid impacting pipeline rights-of-way and utilities passing through the access route. The proposed route would not require the dredge material discharge pipeline to traverse across any levees, federal or otherwise. The construction equipment would access the Project Area primarily through open water bodies in order to minimize damage to existing wetlands.

7. *Additional Staging Area and Access Routes*

Construction of a permanent staging area would be necessary to facilitate the construction. The staging area would measure approximately 75-feet by 75-feet and would be located at the west end of Spanish Pass Road, and adjacent to Spanish Pass. The staging area would be comprised of crushed stone aggregate, placed over a geotextile base (if needed) and would remain in place upon completion of construction. Construction of the staging area would permanently impact approximately .13 acres (.19 AAHUs) of intermediate marsh. From the staging area, the dredge material discharge

pipeline would travel through an existing boat access corridor to the Project Area, a distance of 1.18 miles. Access to the staging area would take place via the existing Spanish Pass Road, which would require minor rehabilitation to handle the proposed truck traffic. Because the roadway is already in place, there would be no additional impacts to resources.

8. Jack and Bore Installation of Pipeline Casing under Tide Water Road.

The jack and bore, is a method of horizontal boring that involves the placement of a 42 inch pipeline casing to house a dredge material discharge pipeline beneath the surface of the earth, thereby eliminating above ground impacts. This method would be used to place the dredge material discharge pipeline beneath Tide Water Road. The equipment for the installation of the 42-inch casing and the dredge material discharge pipeline would impact approximately .27 acres on the north side (Spanish Pass Side) of Tide Water Road and .19 acres on the south side (Grand Pass Side) of Tide Water Road, for an overall impact of 0.46 acres of intermediate marsh impacted for placement of the dredge material discharge pipeline beneath Tide Water Road.

Factors Considered in Determination: This office has assessed the impacts of the Federal action on important resources including: navigation, wetlands, scrub-shrub, soils and water bottoms, aquatics, wildlife; essential fish habitat, threatened and endangered species; water quality, air quality, cultural resources; recreational resources; aesthetics (visual resources); and noise. On December 5, 2016, draft SEA #542.A and the associated draft FONSI were mailed out for a 30-day public review and comment period. No adverse comments were received during the review period. Environmental compliance for the Federal action was achieved based upon the following actions:

Coastal Zone Management Act of 1972: The Coastal Zone Management Act ("CZMA") requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination was prepared for the proposed Project and was coordinated with the Louisiana Department of Natural Resources (LADNR) in a letter dated September 9, 2016. LADNR concurred by letter dated October 13, 2016 with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; Consistency (C20150185, mod 2).

Clean Water Act of 1972 – Section 401 and Section 404: The Clean Water Act ("CWA") sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification from the Louisiana Department of Environmental Quality (LDEQ) that a proposed project does not violate established effluent limitations and water quality standards. State Water Quality Certification (WQC 151210-02) was

issued on October 13, 2016 for the proposed modifications to the Tiger Pass Ridge Restoration and Marsh Creation project.

As required by Section 404(b)(1) of the Clean Water Act (CWA), an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this Project has been completed. The Section 404(b)(1) public notice was mailed out for a public review comment period beginning December 5, 2016 and ending January 3, 2017. No comments were received during this time period and the Section 404(b)(1) was signed on January 6, 2017.

National Historic Preservation Act of 1966: Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how Federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") and any Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. Consultation pursuant to Section 106 has been completed and a finding of no historic properties affected, was coordinated for the original Project goals as presented in EA #542, with a letter dated May 8, 2015 to the SHPO, and a response dated May 20, 2015. (Appendix D) No other comments were received. In a letter dated December 19, 2016, SHPO concurred that the actions of this Supplemental EA are determined as having no additional potential to cause effect to any potential cultural resources.

Endangered Species Act of 1973: The Endangered Species Act ("ESA") is designed to protect and recover threatened and endangered ("T&E") species of fish, wildlife and plants. The USFWS identified in their coordination letter, five T&E species, the Pallid sturgeon, West Indian manatee, piping plover, red knot, and sea turtles that are known to occur or believed to occur within the vicinity of the Project area. No plants were identified as being threatened or endangered in the Project Area. CEMVN initiated coordination with the USFWS on September 19, 2016. In their letter dated September 28, 2016, the USFWS stated that "the project, as proposed, is not likely to adversely affect" Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS. This fulfills the requirements under Section 7(a)(2) of the Endangered Species Act.

Migratory Bird Treaty Act: The Project area is known to support colonial nesting water birds (e.g., herons, egrets, ibis, night-herons and roseate spoonbills). Based on review of existing data, preliminary field surveys, and with the implementation of USFWS guidelines and a nesting bird abatement plan, the CEMVN finds that the proposed action would have no effect on colonial nesting water birds.

Magnuson-Stevens Fisheries Conservation and Management Act: The Magnuson-Stevens Fishery Conservation and Management Act, as amended, Public Law 104-208, addresses the authorized responsibilities for the protection of Essential Fish Habitat (EFH) by NMFS in association with regional fishery management councils. The NMFS has a "findings" with the CEMVN on the fulfillment of coordination requirements under provisions of the Magnuson-Stevens Fishery Conservation and Management Act. In those findings, the CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on National Environmental Policy Act documents prepared for those projects. EA #542 was provided to the NMFS for review and comment on January 19, 2016. Comments and EFH conservation recommendations were received from the NMFS in their letter dated February 9, 2016. The CEMVN provided a detailed response on March 10, 2016 that included a description of measures to avoid, mitigate or offset the adverse impacts to EFH of the proposed action. On December 5, 2016, NMFS was provided with a copy of SEA #542.A and the draft FONSI for review/comment during the 30-day comment period.

In their response letter dated January 4, 2017, NMFS stated that they had "reviewed the draft SEA and finds the resources potentially affected have been adequately described and impacts to those resources adequately evaluated. As such, we have no recommended revisions to the draft SEA. Given the overall positive benefit of project implementation to habitat supportive of marine fishery resources, NMFS fully supports project implementation. Additionally, the NMFS concurs with the determination provided on page 46 of the draft SEA that project implementation would result in a net positive benefit to EFH supportive of federally managed fishery species."

Tribal Consultation: NEPA, Section 106 of the National Historic Preservation Act, EO 13175 ("Consultation and Coordination with Indian Tribal Governments"), the American Indian Religious Freedom Act, and related statutes and policies have a consultation component. In accordance with CEMVN's responsibilities under NEPA, Section 106, and EO 13175, CEMVN offered the following federally-recognized Indian Tribes the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands: Alabama-Coushatta Tribe of Texas, Caddo Nation of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and Tunica-Biloxi Tribe of Louisiana. On December 2, 2016, letters were mailed to the tribal leaders requesting input regarding the proposed action. There were

no responses received prior to January 3, 2017, which marked the end of the comment and review period.

Fish and Wildlife Coordination Act of 1934: The Fish and Wildlife Coordination Act ("FWCA") provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires Federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a Coordination Act Report ("FWCAR") that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project and recommendations for a project. The USFWS reviewed the proposed changes to the previously approved ridge restoration and marsh creation project described in EA 542 and provided a Final Fish and Wildlife Coordination Act Report (FWCAR) with project specific recommendations on January 4, 2017. This office has concurred with, or resolved, all recommendations contained in the final FWCAR, and project-specific recommendations have been addressed in this SEA 542.A and are incorporated into this FONSI.

Environmental Design Commitments.

The following commitments are an integral part of the proposed action:

1) Any design changes that may cause potential impacts to the human environment would be evaluated to determine whether additional NEPA analysis would be required.

2) If any unrecorded cultural resources are determined to exist within the project area boundaries, a CEMVN archeologist would be notified and coordination with the SHPO and THPO would occur.

3) Consideration will be given in the design of project features and timing of construction in an effort to avoid adverse impacts to wading bird colonies. A qualified biologist will inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season.

4) Bird abatement procedures would be implemented to prevent wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants from nesting during their nesting period. In the event that implementation of the bird abatement plan is not successful and nesting does occur, all activity occurring within 1,000 feet of a nesting colony would be restricted to the non-nesting period. For nesting brown pelicans activity should be avoided within 2,000 feet of the colony. Activity would be restricted within 650 feet of nesting black skimmers, gulls, and terns.

5) All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone of its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

6) Access corridors across existing wetlands would be avoided or minimized to the extent practicable. Impacted wetlands would be restored to a substrate elevation similar to the surrounding marsh following completion of construction. Any flotation access channels in open water would be backfilled upon project completion. If needed, at CEMVN's discretion, post-construction surveys (e.g., centerline surveys) would be taken to ensure access channels have been adequately backfilled.

7) Containment dikes would be breached or degraded to the settled elevation of the disposal area, if necessary. The final design elevations of the earthen retention dikes would be determined based on a detailed in situ soil analysis. Depending on soil conditions and the nature of the dredged material, the dikes could be designed in a manner to avoid the need for degrading in out years. The perimeter dikes would be expected to settle over time.

8) To the extent possible to achieve the desired project, CEMVN would minimize impacts to SAVs.

9) ESA consultation would be reinitiated if the proposed project features change significantly or are not implemented within one year of the last ESA consultation with USFWS.

Public Involvement. The proposed action has been coordinated with appropriate federal, state, and local agencies and businesses, organizations, and individuals through distribution of SEA #542.A for a 30-day review and comment period on December 5, 2016. There were no comments received from the public. Four agency comments were received during the comment period.

1. The US Department of Agriculture stated in a letter dated December 12, 2016 that the "proposed construction areas will not impact prime farmland and is therefore exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA) – Subtitle I of Title XV, Section 1539-1549."

2. In a letter dated December 27, 2016, the US Fish and Wildlife service stated that "the SEA adequately described existing fish and wildlife resources in the project area, as

well as the purpose and need for the proposed action." Additionally, they stated "the Service maintains our concurrence with the Corps' determination that the activities proposed in the DSEA are not likely to adversely affect any listed or proposed threatened or endangered species or their critical habitat." Additionally, USFWS made the following recommendations:

a. To ensure that dredged material is placed to each particular habitat's specified elevations, we recommend that the USACE use the current datum, NAVD88 (GEOID 12A), which is consistent with the datum that is referenced for the elevations of existing marsh and water level in the project area.

   Response: GEOID is a model of global mean sea level that is used to measure precise surface elevations. In the case of the Spanish Pass ridge surveys, the GEOID used for vertical control was the latest available - GEOID 12A, and this was used in developing the elevations that are referenced to NAVD88 (2009.55 Epoch) datum.

b. If containment dikes are constructed, they should be breached or degraded to the settled elevations of the disposal area. If soil conditions allow for dikes to be designed in a manner allowing naturally degradation and settlement, the Service recommends the USACE commitment to mechanically degrade the containment dikes in the case that anticipated settlement and degradation does not occur naturally ensuring tidal exchange is restored. Such breaches should be undertaken after consolidation of the dredged sediments and vegetative colonization of the exposed soil surface, or a maximum of 2 years after construction.

   Response: As described in Section 2.2 of SEA #542.A, containment dikes would be breached or degraded to the settled elevation of the disposal area, if necessary, by the Non-Federal Sponsors. The final design elevations of the earthen retention dikes would be determined based on a detailed in situ soil analysis. Depending on soil conditions and the nature of the dredged material, the dikes could be designed in a manner to avoid the need for degrading in out years. The perimeter dikes would be expected to settle over time.

3. In a letter dated January 4, 2017, The Louisiana Department of Wildlife and Fisheries stated "it is anticipated that this project will benefit wildlife resources; therefore, Ecological Studies has no objection."

4. The National Marine Fisheries Service noted in their response letter dated January 4, 2017 that "The NMFS has reviewed the draft SEA and finds the resources potentially affected have been adequately described and impacts to those resources adequately evaluated. As such, we have no recommended revisions to the draft SEA. Given the overall positive benefit of project implementation to habitat supportive of marine fishery resources, NMFS fully supports project implementation. Additionally, the

NMFS concurs with the determination provided on page 46 of the draft SEA that project implementation would result in a net positive benefit to EFH supportive of federally managed fishery species."

Conclusion. This office has assessed the potential environmental impacts of the proposed action and has determined that it would have beneficial environmental effects through the creation of approximately 74 acres (43.12 AAHUs) of intermediate marsh habitat and approximately 23 acres (9.79 AAHUs) of forested ridge habitat over the 50 year period of analysis, as discussed in SEA #542.A. Based on this assessment, which is attached hereto and made a part hereof, a review of the comments made on SEA #542.A, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not be prepared.

12 Jan 17
Date

MICHAEL N. CLANCY
Colonel, EN
Commanding

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LOUISIANA COASTAL AREA
BENEFICIAL USE OF DREDGED MATERIAL PROGRAM
AT TIGER PASS PROJECT
PLAQUEMINES PARISH, LOUISIANA

SEA # 542.A

U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environment Division South
New Orleans District

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BENEFICIAL USE OF DREDGED MATERIAL PROGRAM
AT TIGER PASS PROJECT
PLAQUEMINES PARISH, LOUISIANA

SEA # 542.A

1. Introduction

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Division, Regional Planning and Environment Division South, has prepared this Supplemental Environmental Assessment (SEA) for the New Orleans District (CEMVN) to present changes and additional potential impacts to the approved Project Plan described in Environmental Assessment #542 (EA #542) titled "Louisiana Coastal Area (LCA), Beneficial Use of Dredged Material Program at Tiger Pass Project, Plaquemines Parish, Louisiana". The Finding of No Significant Impact (FONSI) for EA #542 was approved by the CEMVN Commander on March 9, 2016. EA #542 and FONSI are hereby incorporated by reference. The approved Project Plan assessed in EA #542, included the construction of a 5,000-ft long, 23 acre (11.94 AAHUs) non-continuous ridge backed by a 500-ft wide, 55 acre (25.2 AAHUs) marsh platform beneficially utilizing dredged material from the hopper dredge disposal area (HDDA). The Project Area is located on the western side of the Mississippi River, adjacent to Spanish Pass, downstream of its intersection with Tiger Pass near Venice, in lower Plaquemines Parish, LA approximately 12 miles above Head of Passes, Southwest Pass, and South Pass near Venice, Louisiana.

The proposed action assessed in this SEA involves changes to the approved Project Plan for ridge restoration and marsh creation previously described in EA #542. Changes include adjustments to the design of the ridge and marsh platform in the Project Area, the expansion of the marsh platform to include perimeter dikes, borrow pits for perimeter dike construction, the addition of an equipment and pipeline staging area and the impacts associated with the equipment needed for the jack and bore pipeline casing installation of a 42 inch pipeline casing under portions of Tide Water Road. These modifications to the original Project Plan result in an additional 75.84 acres of impacts and requires an additional 50,000 cubic yards of dredge material. Also being proposed is an alternative route to facilitate the transport of the dredged material from the marina to the Project Area via a dredge material discharge pipeline. Utilization of the proposed alternative route would require dredging of a marine vessel slip located at the eastern end of Haliburton Road in order to accommodate barge traffic.

This SEA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2. This SEA provides sufficient information on the potential adverse and beneficial environmental effects of the proposed action to allow the District Commander to make an informed decision on the appropriateness of an Environmental Impact Statement (EIS) or a FONSI.

The LCA Beneficial Use of Dredged Material (BUDMAT) Program authorization is based on the Programmatic EIS entitled *Louisiana Coastal Area, Louisiana, Ecosystem Restoration* and Record of Decision (ROD) signed 18 November 2005. The LCA BUDMAT at Tiger Pass Project (the "Project") is authorized under the LCA BUDMAT Program which has an approved

Programmatic EIS entitled *Louisiana Coastal Area Beneficial Use of Dredge Material Programmatic EIS* and ROD dated August 13, 2010 which ROD is attached hereto as Appendix A. This SEA #542.A supplements EA #542, which tiers off of the LCA BUDMAT Programmatic EIS. Both documents are hereby incorporated by reference.

1.1 Proposed Action

Modifications to the Approved Tiger Pass Project

The proposed action assessed in this SEA involves changes to the approved Project Plan for ridge restoration and marsh creation previously described in EA #542. Changes include adjustments to the design of the ridge and marsh platform in the Project Area, the expansion of the marsh platform to include perimeter dikes, borrow pits for the construction of the perimeter dikes, the addition of an equipment and pipeline staging area, and the impacts associated with the equipment needed for the jack and bore pipeline casing installation of a 42 inch pipeline casing under portions of Tide Water Road. Also being proposed is an alternative route to facilitate the transport of the dredged material from the marina via a dredge material discharge pipeline. Utilization of the proposed alternative route would require dredging of a marine vessel slip located at the eastern end of Haliburton Road to accommodate a barge traffic

The Proposed Action is also referred to in this SEA as the Proposed Project.

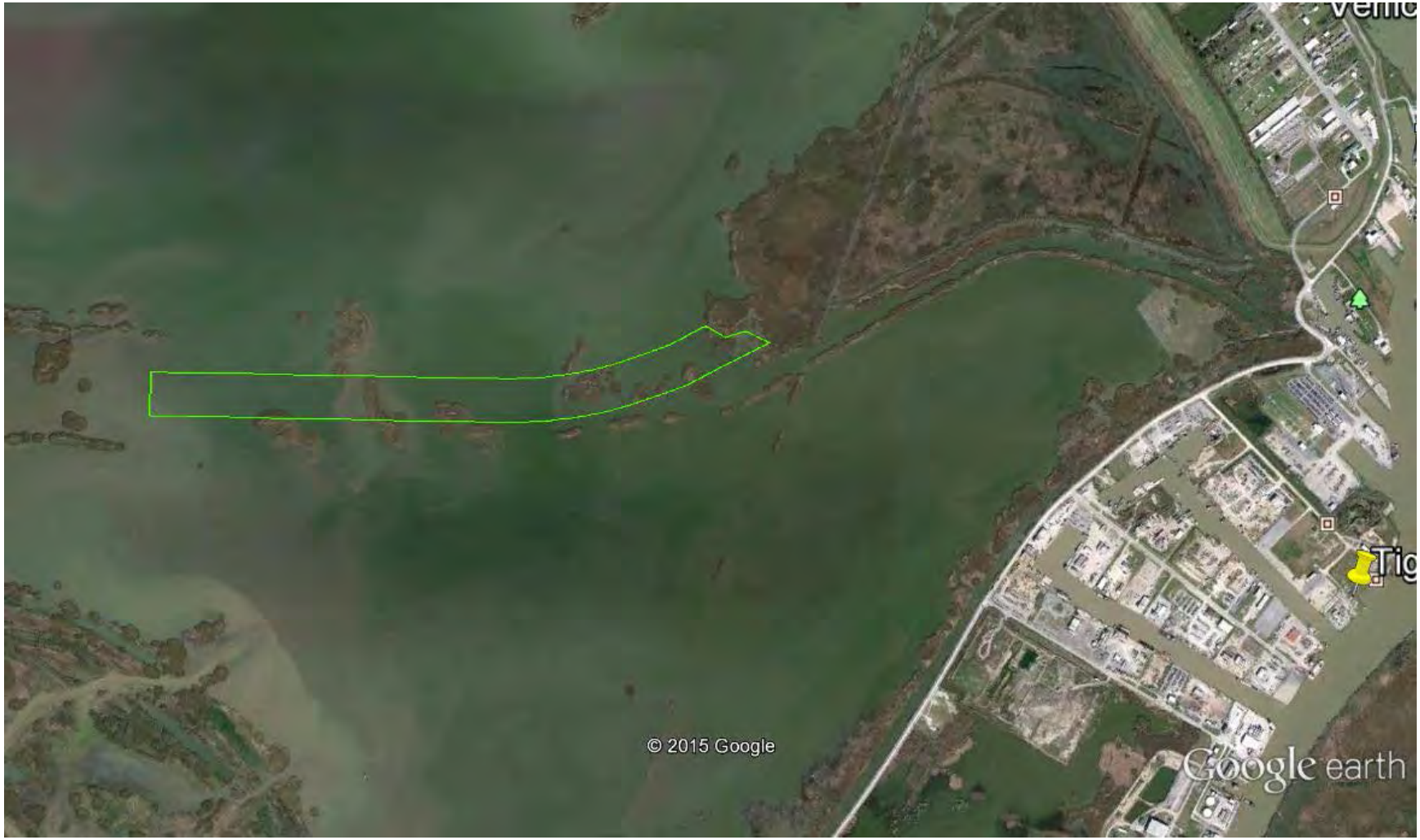

Figure 1: Project Location

1.2 Authority

Title VII of the Water Resources Development Act of 2007 ("WRDA 2007") (PL 110-114) authorized an ecosystem restoration Program for the Louisiana Coastal Area substantially in accordance with the Near-Term Plan identified in the 2005 Chief's Report. Section 7006(d) of WRDA 2007 authorizes the Secretary, substantially in accordance with the Report of the Chief of Engineers dated January 31, 2005, to implement a program for the Beneficial Use of Dredged Material dredged from federally maintained waterways in the coastal Louisiana ecosystem. The LCA Beneficial Use of Dredged Material Program, January 2010, Final Programmatic Study Report and Programmatic Environmental Impact Statement 2010 Report, a component of the 2004 LCA Study, was approved by the Director of Civil Works on March 12, 2010, the ASA (CW) signed a Record of Decision dated August 13, 2010. The 2010 Report recommended an implementation plan for the LCA Program that beneficially uses material dredged from federally maintained waterways. The authorized LCA Plan includes $100 million in programmatic authority to allow for the extra cost needed for beneficial use of dredged material over a 10-year period. Funds from the BUDMAT Program are used for disposal activities associated with separate, cost-shared, individual ecosystem restoration beneficial use projects that are above and beyond the disposal activities that are covered under the USACE O&M maintenance dredging Federal standard. The Federal standard for dredged material disposal is the least costly alternative, consistent with sound engineering and scientific practices and meeting applicable Federal environmental statutes.

Construction of the subject Project would be implemented using materials dredged from the HDDA in association with the operation and maintenance of the Mississippi River Ship Channel, Baton Rouge to the Gulf of Mexico, Louisiana project, which is authorized under the Rivers and Harbors Act of 1945 (PL 79-14); Rivers and Harbors Act and 1962 (PL 87-874); the Supplemental Appropriations Act of 1985 (PL 99-88); and the Water Resources Development Act of 1986 (PL 99-662), as amended.

1.3 Purpose and Need for the Proposed Action

The proposed action involves changes to the ridge restoration and marsh creation project previously detailed in EA #542. A supplemental document was deemed necessary to address potential impacts associated with design changes including, expansion of the Project Area footprint, staging, and equipment (jack and bore) placement, as well as additional options for transportation and dredging outside of those items previously approved in EA #542.

Louisiana has 30 percent of the total coastal marsh and accounts for 90 percent of the coastal marsh loss in the lower 48 states (Dahl 2000, Field et al. 1991, USGS 2003). There is widespread public support to avert further loss of coastal habitats and to beneficially use dredged material in support of that effort. In response to the recognition of the need to reduce Louisiana Coastal wetland loss, activities like the proposed project, that are conducted under the LCA BUDMAT Program would optimize the use of dredged materials resulting from the maintenance of the federally maintained navigation channels in the Mississippi River in support of ecosystem restoration beneficial use projects.

Maintenance dredging of the Gulf of Mexico entrance channels to the Mississippi River is needed to ensure safe passage of commercial shipping from the Gulf to upriver ports of call. The Southwest Pass of the Mississippi River provides deep-draft access to the New Orleans – Baton Rouge port corridor and its associated, commerce and industries. Hopper-dredged material dredged in connection with maintenance dredging of Southwest Pass is either deposited at the

HDDA or deposited in a designated ocean dredged material disposal site. When the HDDA is nearly full, dredged material is excavated and moved to permanent disposal locations, thereby maintaining storage capacity in the HDDA so that maintenance dredging in Southwest Pass may continue uninterrupted.

Projects proposed and constructed under the LCA BUDMAT Program call for the beneficial use placement of these dredged materials in locations identified as supporting ecosystem restoration efforts in coastal Louisiana. These BUDMAT disposal locations are located beyond the disposal areas that would otherwise be identified under the Federal Standard - that is, the least costly, environmentally compliant placement of dredged material that meets sound engineering practices as the base operations and maintenance disposal plan for a navigation project.

Federal General Investigation's funds for Fiscal Year 2013, included funds for USACE to initiate the design of the LCA Program, which can include individual beneficial use of dredged material projects located in Plaquemines Parish, Louisiana which are elements of the overall LCA Program. A Project Partnership Agreement between the Department of the Army and the Plaquemines Parish Government of Louisiana and the Coastal Protection and Restoration Authority Board of Louisiana (collectively the "Non-Federal Sponsors") was executed on July 15, 2016 for the placement of material dredged during maintenance dredging of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana Project in the vicinity of Spanish Pass which is generally located in the Gulf of Mexico approximately 12 miles above Head of Passes, Southwest Pass, and South Pass near Venice, Louisiana, for purposes of wetland/marsh creation, and Chenier and ridge restoration and development.

The objective of the proposed action is to: (1) restore critical coastal geomorphic landscape and habitat in the vicinity of Tiger Pass, LA to a condition intended to remain in part, through the year 2066, and (2) restore coastal wetland habitat in the vicinity of Tiger Pass, LA to a condition intended to remain in part, through the year 2066.

1.4 Prior NEPA Documents

EA #542 entitled "Louisiana Coastal Area Beneficial Use of Dredged Material Program at Tiger Pass Project Plaquemines Parish, Louisiana" with a signed FONSI dated March 9, 2016.

EA #535 entitled "West Bay Marsh Creation Tier 1, Louisiana Coastal Area Beneficial Use of Dredge Material Program, Plaquemines Parish, Louisiana" with a signed FONSI dated March 23, 2015.

EA #517 entitled "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana Designation of Additional Disposal Areas for Head of Passes, Southwest Pass, and South Pass, Plaquemines Parish, Louisiana" with a signed FONSI dated November 22, 2013.

Programmatic EIS entitled "Louisiana Coastal Area Beneficial Use of Dredged Material Program" with a signed ROD dated August 13, 2010.

Programmatic EIS entitled "Louisiana Coastal Area, Louisiana, Ecosystem Restoration Program, November 2004" with a signed ROD dated November 18, 2005.

1.5 Prior Beneficial Use Studies and Reports

Additional information on other BUDMAT activities in the vicinity of this project is available online as New Orleans District Environmental Dredging Conference materials and beneficial use reports: http://www.mvn.usace.army.mil/About/Offices/Operations/BeneficialUseofDredgedMaterial.aspx

A number of studies, reports, and environmental documents on water resources development in the Project Area have been prepared by the USACE, other Federal, state, and local agencies, research institutes, and individuals. The more relevant prior studies, reports, and projects are described as follows in Table 1.

Table 1: Prior Studies and Reports

Project Year	Study/Report/Environmental Document Title	Document Type
1945	Mississippi River, Baton Rouge to the Gulf of Mexico, LA (USACE)	Study Report
1964	Mississippi River and Tributaries project (USACE)	Study Report
1976	Mississippi River and Tributaries, Levees and Channel Improvement	Environmental Impact Statement (EIS)
1980	Mississippi Deltaic Plain Region Ecological Characterization (USFWS)	Technical Report
1981	Deep-Draft Access to the Ports of New Orleans and Baton Rouge, LA (USACE)	Report
1982	Louisiana's Eroding Coastline: Recommendations for Protection (LADNR)	Report
1982	Proceedings of the Conference on Coastal Erosion and Wetland Modification in Louisiana: Causes, Consequences, and Options (USFWS)	Conference Proceedings
1982	Mississippi River Ship Channel, Gulf to Baton Rouge, Louisiana (USACE)	Environmental Assessment (EA) #62
1984	Mississippi and Louisiana Estuarine Areas (USACE)	Feasibility Report
1988	Marsh Creation, Mississippi River Outlets, Louisiana (USACE)	EA #77
1989	Louisiana Coastal Area (LCA), Hurricane Protection (USACE)	Recon Report
1990	Land Loss and Marsh Creation, St. Bernard, Plaquemines, and Jefferson Parishes, LA (USACE)	Study Report
1990	Louisiana Coastal Authority entitled Mississippi River Delta Study (USACE)	Recon Study
1993	The Louisiana Coastal Wetlands Restoration Plan (CWPPRA)	Plan
1994	An Environmental –Economic Blueprint for Restoring the Louisiana Coastal Zone: The State Plan for the Wetlands Conservation and Restoration Authority (Governor's Office of Coastal Activities Science Advisory Panel)	Report
1995	A White Paper-The State of Louisiana's Policy for Coastal Restoration Activities. (state of Louisiana)	Report
1997	Mississippi River and Tributaries	EIS
1998	Coast 2050: Toward a Sustainable Coastal Louisiana (CWPPRA/State joint effort)	Report
1999	Section 905(b) (WRDA1986) Analysis Louisiana Coastal Area, Louisiana –Ecosystem Restoration (USACE)	905(b) Report
2000	Mississippi River Outlets, Vicinity of Venice, LA, Baptiste Collette Maintenance Dredging, Beneficial Use of Dredged Material, Plaquemines Parish, LA	EA #305
2000	Mississippi River Sediment, Nutrient and Freshwater Redistribution (CWPPRA)	Feasibility Study
2004	LCA, Louisiana, Ecosystem Restoration Study	Study and Programmatic Environmental Impact Statement (PEIS)

2008	Mississippi River, Baton Rouge to the Gulf of Mexico, LA. Designation of Additional Disposal Area, Pass a Loutre, South Pass, Plaquemines Parish, LA	EA #268b
2010	LCA, Beneficial Use of Dredge Material Program	Programmatic Study Report and PEIS
2011	LCA, Medium Diversion at White Ditch	Feasibility Study and EIS
2013	Mississippi River, Baton Rouge to the Gulf of Mexico, LA, Designation of Additional Disposal Areas for Head of Passes, Southwest Pass, and South Pass, Plaquemines Parish, LA	EA #517
2015	LCA, Beneficial Use of Dredged Material at West Bay	Design and Implementation Report and EA #535

1.6 Public Concerns

The public is concerned about maintaining safe and efficient navigable channels in support of commercial activity associated with Mississippi River ports. Additionally, as described in greater detail in Section 2.1 of 2004 LCA BUDMAT Programmatic EIS, Louisiana has 30 percent of the total coastal marsh and accounts for 90 percent of the coastal marsh loss in the lower 48 states (Dahl 2000, Field et al. 1991, USGS 2003). There is widespread public support to avert further loss of coastal habitats and to beneficially use dredged material in support of that effort.

1.7 Data Gaps and Uncertainties

Because natural systems are complex and consist of an intricate web of variables that influence the existence and condition of other variables within the system, all restoration projects contain certain inherent uncertainties. The effects of tropical storms, increased sea level rise, and climate change on each project's performance are uncertain and are addressed through future projections based on existing information. All models used for this study rely on mathematical representations of current and future conditions to quantify and predict the future success and benefits of these mitigation projects. No model can account for all relevant variables in an evolving coastal system. Additionally, there is inherent risk in reducing complex natural systems to mathematic expressions driven by simplified interactions of key variables. As such, how the proposed projects will actually perform and the benefits that will result from their creation are a 'best guess' based on what we presently know about existing ecosystems and the results of already constructed restoration projects.

2. Alternative Formulation

This supplemental EA discusses design changes to the previously approved Ridge Restoration and Marsh Creation at Tiger Pass Project described in EA #542 and evaluates the impacts associated with adding an additional 75.84 acres of impacts (57.14 open water 18.7 marsh). Changes include adjustments to the design of the ridge and marsh platform in the Project Area, the expansion of the marsh platform to include perimeter dikes, borrow pits for the construction of the perimeter dikes, the addition of an equipment and pipeline staging area, and the impacts associated with the equipment needed for the jack and bore pipeline casing installation of a 42 inch pipeline casing under portions of Tide Water Road. Also being proposed is an alternative route to facilitate the transport of the dredged material from the marina via a dredge material discharge pipeline. Utilization of the proposed alternative route would require dredging of a marine vessel slip located at the eastern end of Haliburton Road to accommodate a barge traffic. These changes would increase the acres of impacts from the original 78 acres identified in EA #542, to 155 acres of open water and intermediate marsh. It would also require an additional 50,000 cubic yards of dredge material from the HDDA. Detailed descriptions of the currently approved Ridge Restoration and Marsh Creation at Tiger Pass Project can be found in Section 2.3 of EA #542.

2.1 Planning Goals, Objectives and Constraints

The intent of the proposed action is to the maximize beneficial use of dredged material deposited in the HDDA from O&M of the Federally-authorized Mississippi River, Baton Rouge to the Gulf of Mexico navigation channel in the vicinity of Venice, LA. The materials removed from the HDDA pursuant to the LCA BUDMAT Program at Tiger Pass Project would be deposited in a manner to maximize habitat output above current limitations imposed on the Federal navigation project by the navigation project's Federal Standard. The planning horizon, or period of analysis, for this project is 50 years. Full details can be found in Section 2.1 of EA #542.

2.2 Proposed Action

The previously approved Project consists of restoring a historic ridge at a location adjacent to Spanish Pass and downstream of its intersection with Tiger Pass. (Figure 1) The feature includes construction of an approximately 5,000-foot long (23 acres) ridge (without planting) backed by a 500-foot wide (55 acres) marsh platform, in an area of open water and surrounding marsh. The ridge is intended to serve as a means to reduce wave energy on the leeward side of the marsh.

This supplemental EA discusses design changes to the BUDMAT ridge restoration and marsh creation project described in EA #542 and evaluates the additional impacts associated with those changes.

Proposed Changes to the Project Features: Ridge Restoration and Marsh Creation Platform, Borrow Requirements, Access Routes, and Staging Areas.

1. *Design Changes to Ridge Restoration and Marsh Platform*

Two (2) existing crude pipelines (an active 12-inch crude pipeline and an abandoned 6-inch crude pipeline) owned by Plains All American, traverse portions of the Project Area in the location of the proposed ridge restoration and marsh creation platform. (Figure 2)

To avoid impacts to the pipelines, a no-work corridor has been established between the western and eastern sections. With the exception of allowable placement of dredge fill over the pipelines to provide a land bridge for equipment access, no work will be performed within 50-feet of either pipeline. The no work area includes the outside toes of the earthen perimeter dikes that are to be constructed adjacent to and parallel to these pipelines, but offset by a minimum of 50-feet. The width of this no work corridor between the allowable dike toes, that is to be maintained at these pipeline crossings, will vary from approximately 140-feet on the north end and approximately 160-feet on the south end.

In order to accommodate the pipeline corridor, the ridge and marsh platform would be divided into two sections, the western section and the eastern section. The ridge would begin approximately 1.3 miles west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. All elevations listed are considered to be post-construction and it is expected that the ridge crown would settle to an elevation of approximately +6.0-feet NAVD88 within 1-2 years of completion of construction.

The marsh platform would be constructed to an initial fill height of +3.5-feet NAVD88 and would be surrounded by a perimeter dike. The western side would measure 450-feet on the backside and 40 to 50-feet on the south side of the ridge. All elevations listed are considered to be post-construction and it is expected that the marsh platform would settle/dewater to an elevation of

approximately +2.0-feet NAVD88, an increase of +0.5-feet NAVD88 from previous expectations, within 10 years of completion of construction. Approximately 36.5 acres of marsh would be created within the western section and approximately 19.2 acres of marsh would be created within the eastern section.

The final placement of material being pumped through the dredge material discharge pipeline would otherwise be handled in a manner similar to the handling of dredged materials for the normal O&M dredging of the HDDA when it disposes of materials in the Delta National Wildlife Refuge. (DNWR), the Pass a Loutre Wildlife Management Area (PALWLMA), and the open waters of West Bay.

2. Expansion of Marsh Platform to Include Perimeter Dikes

EA #542 originally addressed impacts to approximately 78 acres (37.15 AAHUs) of open water and intermediate marsh associated with construction of the ridge restoration and marsh creation platform.

Design changes resulting from advanced engineering and design requires the construction of temporary perimeter dikes associated with the marsh creation platform. Earthen perimeter dikes would be needed in order to facilitate construction of the ridge and marsh platforms and maximize retention of the dredged material, as well as to prevent the material from entering adjacent lands, waterways, and pipeline rights-of-way. (Figure 3) Any material necessary for dike, weir, and closure construction would come from within the area designated for the marsh creation platform, unless otherwise specified. Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these perimeter dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors.

The perimeter dikes would be constructed to a crown width of 5-feet, crown elevation of +5-feet NAVD88, and side slopes no steeper than 1V on 4H. The dikes to be constructed along the south side of the ridge would also include a 25-foot wide berm, to be constructed to elevation 0.0-feet NAVD88, and with slopes no steeper than 1V on 4H. The berm would tie into the southern slope of the perimeter dike, extend 25-feet at elevation 0.0-feet NAVD88, and then tie into natural ground (approximately -3.5-feet NAVD88) on a slope no steeper than 1V on 4H. Construction of the perimeter dikes would impact approximately 22.5 additional acres of open water (13.95 acres) mingled with patches of intermediate marsh (8.55 acres), with 13.8 acres within the western section and 8.7 acres within the eastern section.

3. *Borrow Requirements*

Borrow would be required for construction of the perimeter dikes around the marsh creation platform. Material for construction of the perimeter dikes would be obtained from borrow sites either from within or outside of the ridge and marsh creation platform footprint. (Figure 4) The potential borrow sources are identified as follows:

Approximately 28.2 acres could be impacted through interior and exterior borrow for the western cell:

a) Exterior Borrow Pit north of western section = 7.3 acres
b) Exterior Borrow Pit west of western section = 1.4 acres
c) Exterior Borrow Pit south of western section and within adjacent Spanish Pass = 5.8 acres

d) Interior Borrow Pit in western section, which would be backfilled during construction of the Project with dredged material = 13.7 acres

Approximately 15.3 acres could be impacted through interior and exterior borrow for the eastern cell:

a) Exterior Borrow Pit north of eastern section = 2.9 acres
b) Exterior Borrow Pit south of eastern section and within adjacent Spanish Pass = 4.4 acres
c) Interior Borrow Pit of eastern section, which would be backfilled during construction of the project with dredge material = 8.0 acres

The newly proposed borrow pits, and the stability berms for the borrow pits, would impact 6.80 acres of marsh and 36.7 acres of open water for a total of 43.5 acres of additional impacts beyond those identified in EA #542 which identified all borrow material as coming from the HDDA. Of the 43.5 acres of additional impacts, 21.7 acres would be backfilled during construction of the marsh creation platform. The remaining 21.8 acres (10.8 AAHUs) would be allowed to refill naturally over time. The construction of the ridge and marsh platform would require approximately 1,700,000 cubic yards of silty sandy material to be obtained solely from the HDDA. This is an increase of 50,000 cubic yards of material from the 1,650,000 previously estimated.

4. Dredge Material Transport Method

EA #542 included an assessment of transporting dredged material via barge from the HDDA to a designated off-loading site where the material would then be transferred via a dredge material discharge pipeline to the Project Area.

As detailed in EA #542, a cutterhead suction dredge working in the HDDA could be used to load hopper barges utilizing a spider barge and transport the loaded barges to the slip in Tiger Pass outside of the navigation channel at the eastern end of Haliburton Road in Venice, Louisiana, at which point an off-loader would be used to empty the barges, and transport the material via a temporary dredge material discharge pipeline to the Project Area. The arms of a spider barge are designed to optimize loading characteristics and production efficiency by loading the sediment into the hopper barges via multiple arms which allow for concurrent loading of multiple barges. This also allows for the cutterhead dredge to continue operating without having to shut down while waiting for the arrival of offloaded barges.

5. *Dredging of Vessel Slip at eastern end of Haliburton Road*

Once loaded with material from the HDDA, the hopper barges would be transported by tugboat to the designated pump-out location at an existing vessel slip at the eastern end of Haliburton Road located just outside of Tiger Pass and the navigation channel. In order for the off-loader to access the slip and off-load the material, the Contractor would be required to dredge for access to the slip and also inside of the slip. Any excavation deemed necessary would have to comply with the same allowable grades, slopes, etc., as well as disposal of any material dredged for access. The material would be transported from the slip via temporary dredge material discharge pipeline to the Project Area via the primary route. (Figure 5) The extent of the dredging of the slip would be the minimum that the contractor deems necessary. However, dredging shall not exceed -11-feet MLG (-14.5-feet MLLW) with dredging at this depth no closer than 15-feet from the bulkheads. These dimensions are the maximum allowed, and could possibly be greater than what would actually be needed. Any material dredged for both access to and within the slip would be transported to and placed within the designated disposal site, located within the Mississippi

River and opposite of the entrance to Grand Pass at approximate river Mile 10.5 AHP. All earthen material dredged shall be disposed of beyond/ deeper than the -55-feet MLG (-58.5-feet MLLW) contour.

6. *Transportation of Dredge Material from Slip to Project Area*

The dredge material discharge pipeline would begin at the slip at the eastern end of Haliburton Road, travel along the north side of Haliburton Road and be placed within the existing drainage canal paralleling Haliburton Road. (Figures 6 and 7) A temporary ramp would be constructed over the dredge material discharge pipeline in order to provide vehicle ingress and egress at the eastern end of Haliburton Road. The ramp would measure approximately 12-feet in width by approximately 150-feet in length and consist of crushed stone. Upon completion of the contract, the dredge material discharge pipeline would be removed and the ramp graded in order to restore the area to pre-existing conditions.

The dredge material discharge pipeline would then cross under Tide Water Road via a 42-inch casing to be jack and bored under the road in advance and available for use by the dredging contractor. (Figure 6) The dredge material discharge pipeline would then travel approximately 850-feet from the north end of the bored culvert to Spanish Pass Road via a corridor covering approximately 1.4 acres, of which approximately 1.1 acres is intermittent marsh that could be impacted. The dredge material discharge pipeline would then pass over Spanish Pass Road and enter Spanish Pass itself. Once in the open waters of Spanish Pass, the dredge material discharge pipeline would then traverse an approximate distance of 1.25 miles to reach the eastern end of the ridge and an additional 1.0 mile to reach the western edge of the proposed ridge. The dredge material discharge pipeline and all construction equipment would remain within the banks of Spanish Pass itself. It is not expected that any utilities or pipelines would be impacted along the access route, or within the entire ridge area. Delivery of dredge material to the Project Area would be in a manner that would avoid impacting pipeline rights-of-way and utilities passing through the access route. The proposed route would not require the dredge material discharge pipeline to traverse across any levees, federal or otherwise. The construction equipment would access the Project Area primarily through open water bodies in order to minimize damage to existing wetlands.

7. Additional Staging Area and Access Routes

Construction of a permanent staging area would be necessary to facilitate the construction. The staging area would measure approximately 75-feet by 75-feet and would be located at the west end of Spanish Pass Road, and adjacent to Spanish Pass. (Figure 7) The staging area would be comprised of crushed stone aggregate, placed over a geotextile base (if needed) and would remain in place upon completion of construction. Construction of the staging area would permanently impact approximately .13 acres (.19 AAHUs) of intermediate marsh. From the staging area, the dredge material discharge pipeline would travel through an existing boat access corridor to the Project Area, a distance of 1.18 miles. Access to the staging area would take place via the existing Spanish Pass Road, which would require minor rehabilitation to handle the proposed truck traffic. Because the roadway is already in place, there would be no additional impacts to resources.

8. Jack and Bore Installation of Pipeline Casing under Tide Water Road.

The jack and bore, is a method of horizontal boring that involves the placement of a 42 inch pipeline casing to house a dredge material discharge pipeline beneath the surface of the earth,

thereby eliminating above ground impacts. (Figure 7) This method would be used to place the dredge material discharge pipeline beneath Tide Water Road. The equipment for the installation of the 42-inch casing and the dredge material discharge pipeline would impact approximately .27 acres on the north side (Spanish Pass Side) of Tide Water Road and .19 acres on the south side (Grand Pass Side) of Tide Water Road, for an overall impact of 0.46 acres of intermediate marsh impacted for placement of the dredge material discharge pipeline beneath Tide Water Road.

Table 2: Breakdown of Impacts

Activity	Total Impacts	Adverse Impacts	Beneficial Impacts	AAHUs Created
Original Ridge Restoration	23 acres impacted (17 acres open water, 6 acres intermediate marsh)	0 acres	Conversion of 17 acres of open water to marsh and nourishment of 6 acres of existing intermediate marsh	11.94 AAHUs
Original Marsh Creation Platform	55 acres (41.26 acres open water and 13.74 acres intermediate marsh)	0 acres	Conversion of 41.26 acres of open water to marsh and nourishment of 13.74 acres of existing intermediate marsh	25.2 AAHUs
Proposed Changes to Marsh Creation Platform	77 acres (57.14 acres open water and 18.70 acres intermediate marsh)	3.14 acres (.45 AAHUs) of intermediate marsh lost	Conversion of 57.14 acres open water to marsh and nourishment of 16.73 acres of existing intermediate marsh	17.88 AAHUs

* Site visits to perform WVA analysis found no SAVs in the project area.
* Borrow pits are both within and outside of the marsh creation footprint. AAHUs created represent the temporary impacts from the interior borrow minus the impacts from the exterior borrow.

2.3 No-Action Alternative (Future without Project (FWOP))

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency must consider an alternative of "No Action." The No Action alternative evaluates the impacts associated with not implementing the proposed action and represents the Future without Project (FWOP) condition against which alternatives considered in detail are compared. The FWOP provides a baseline essential for impact assessment and alternative analysis. For purposes of evaluating the impacts associated with the modifications to the approved Project Plan that are proposed and evaluated herein, the No Action Alternative has been defined in this document as the previously approved Project Plan, as it is detailed in EA #542.

Without implementation of the proposed changes, other Federal, state, local, and private restoration efforts within or near the proposed Project Area, the Louisiana state coastal area, and the nation's coastal areas could still occur. Some of these other efforts include the following:

- CWPPRA Program – There are currently 153 active CWPPRA projects throughout coastal Louisiana. In September 2016, 108 projects were completed, benefiting over 100,000 acres. 17 projects are currently under active construction with 23 additional projects approved and in the engineering and design phase of development (source: https://lacoast.gov/new/About/FAQs.aspx; accessed October 28, 2016).

Wetland Value Assessment

In order to ensure that the impacts to fish and wildlife resources associated with the approved Project Plan were adequately addressed, a functional assessment model titled the Wetland Value Assessment Model (WVA) was utilized to predict the AAHUs generated by the ridge restoration and marsh creation project. WVA model assumptions for the previously approved Project Plan are detailed in Appendix B of EA #542. The U.S. Fish and Wildlife Coordination Act Report (CAR)

dated October 20, 2015, which was filed in connection with the previously approved Project Plan and can be found in Appendix D of EA #542, also offers information about the WVA process. All alternative WVAs were calculated using the intermediate relative sea level rise (RSLR) scenario and a 50 year period of analysis.

Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species.

The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods, chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit populations below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index (SI) graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and, (3) a mathematical formula that combines the SI for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife habitat. HUs are annualized over the period of analysis to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

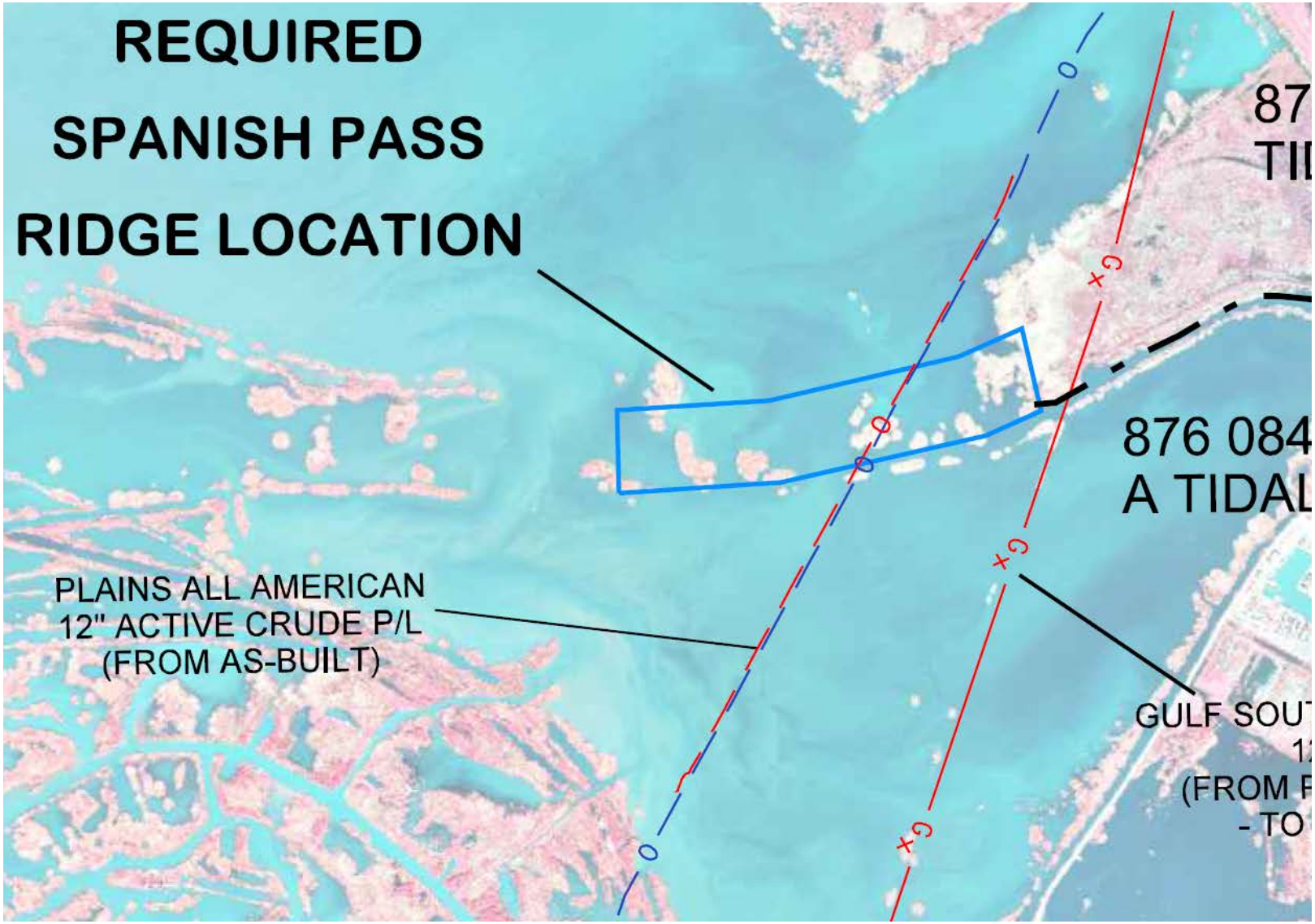

Figure 2: All American Pipeline Locations

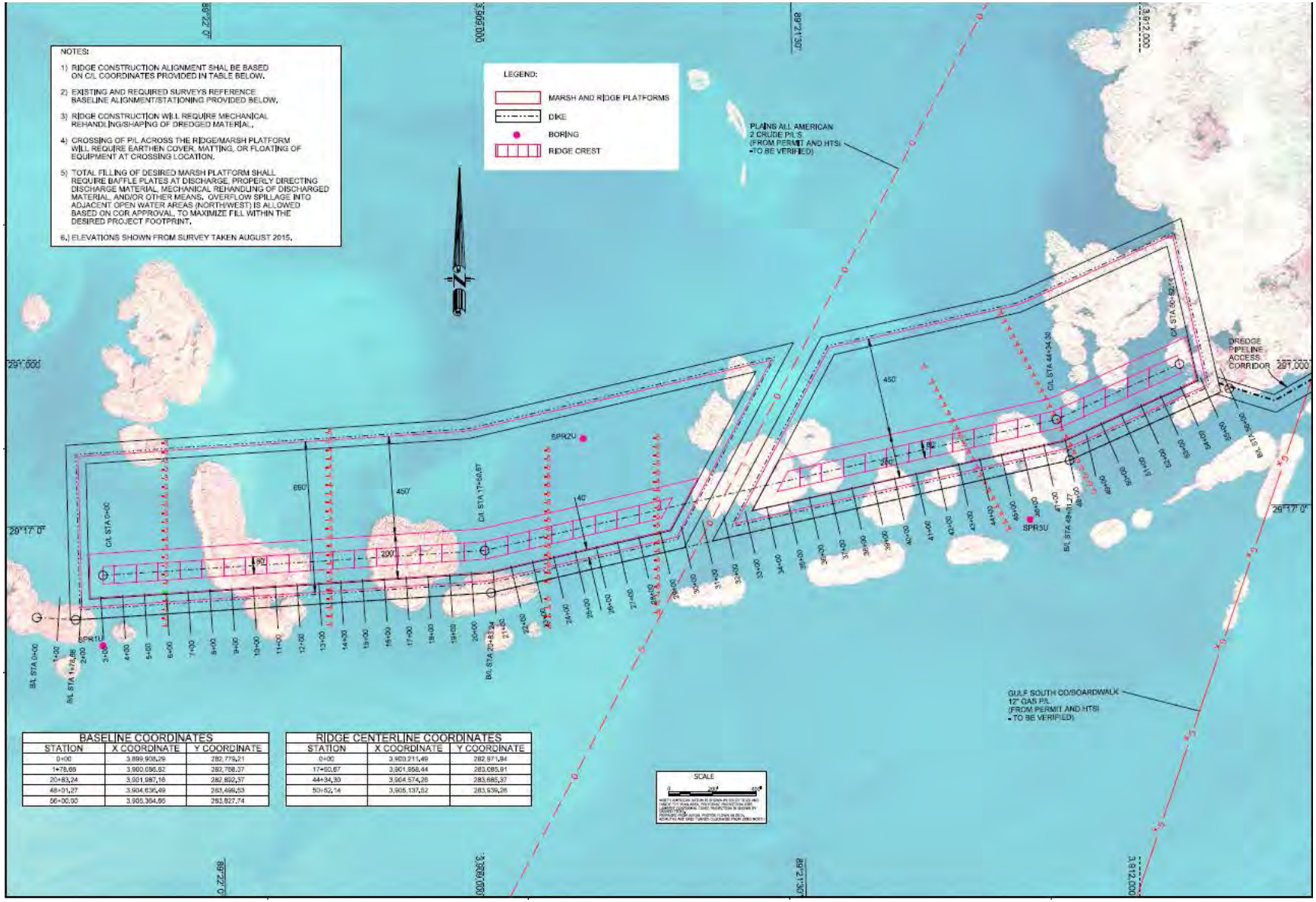

Figure 3: Marsh Creation Platform Expanded Footprint to Include Perimeter Dikes

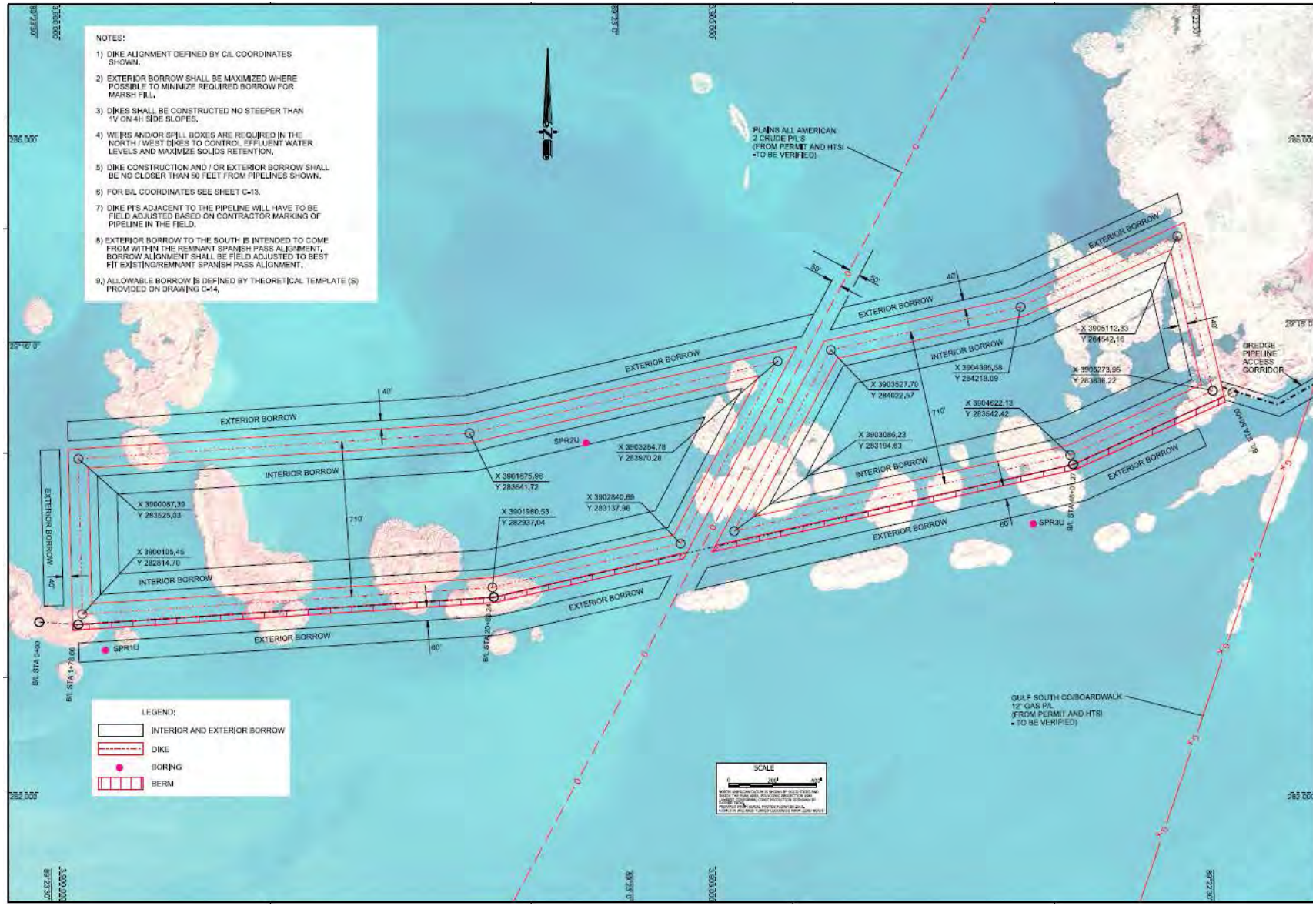

Figure 4: Borrow and Perimeter Dikes

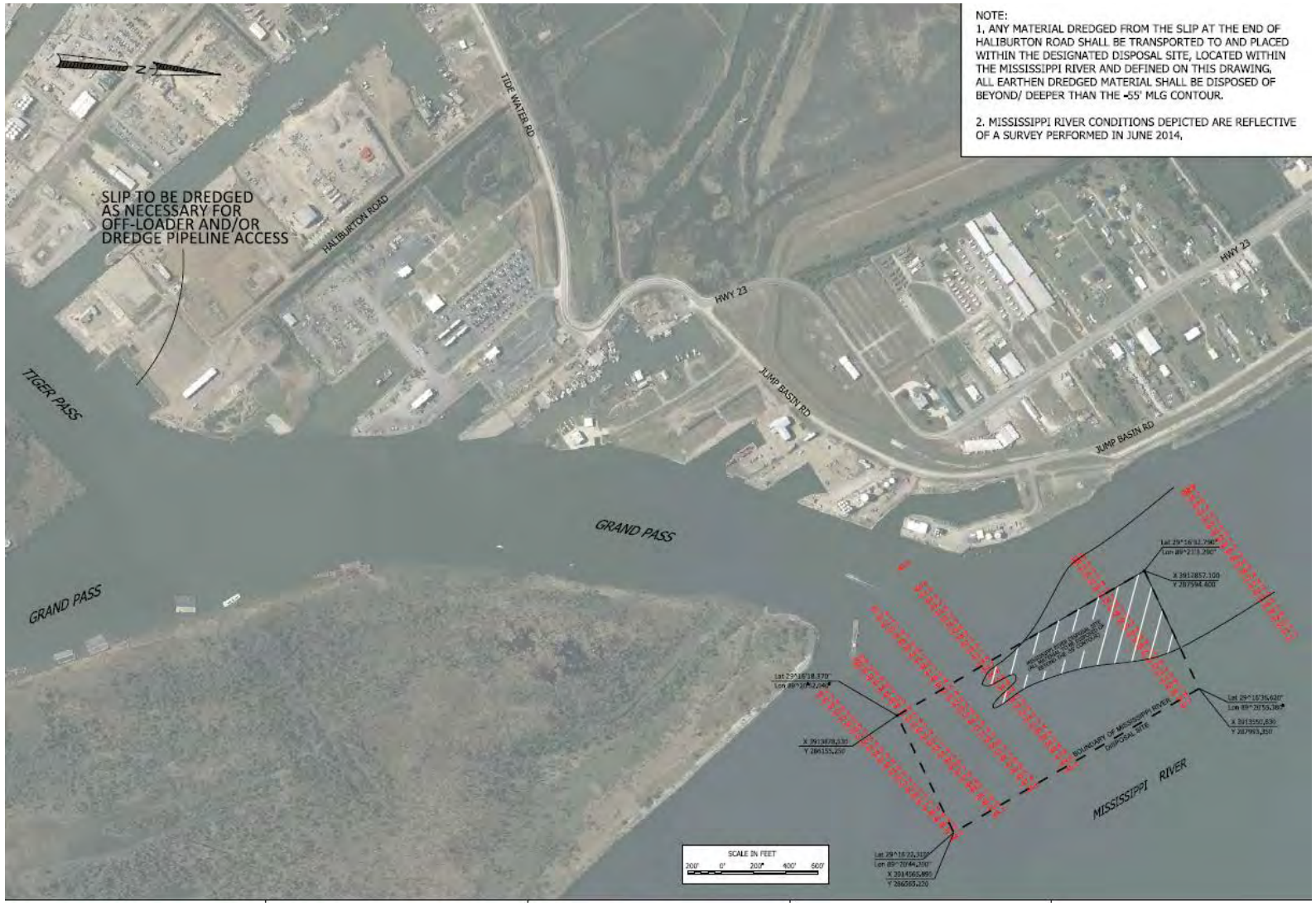

Figure 5: Vessel Slip at eastern end of Haliburton Road

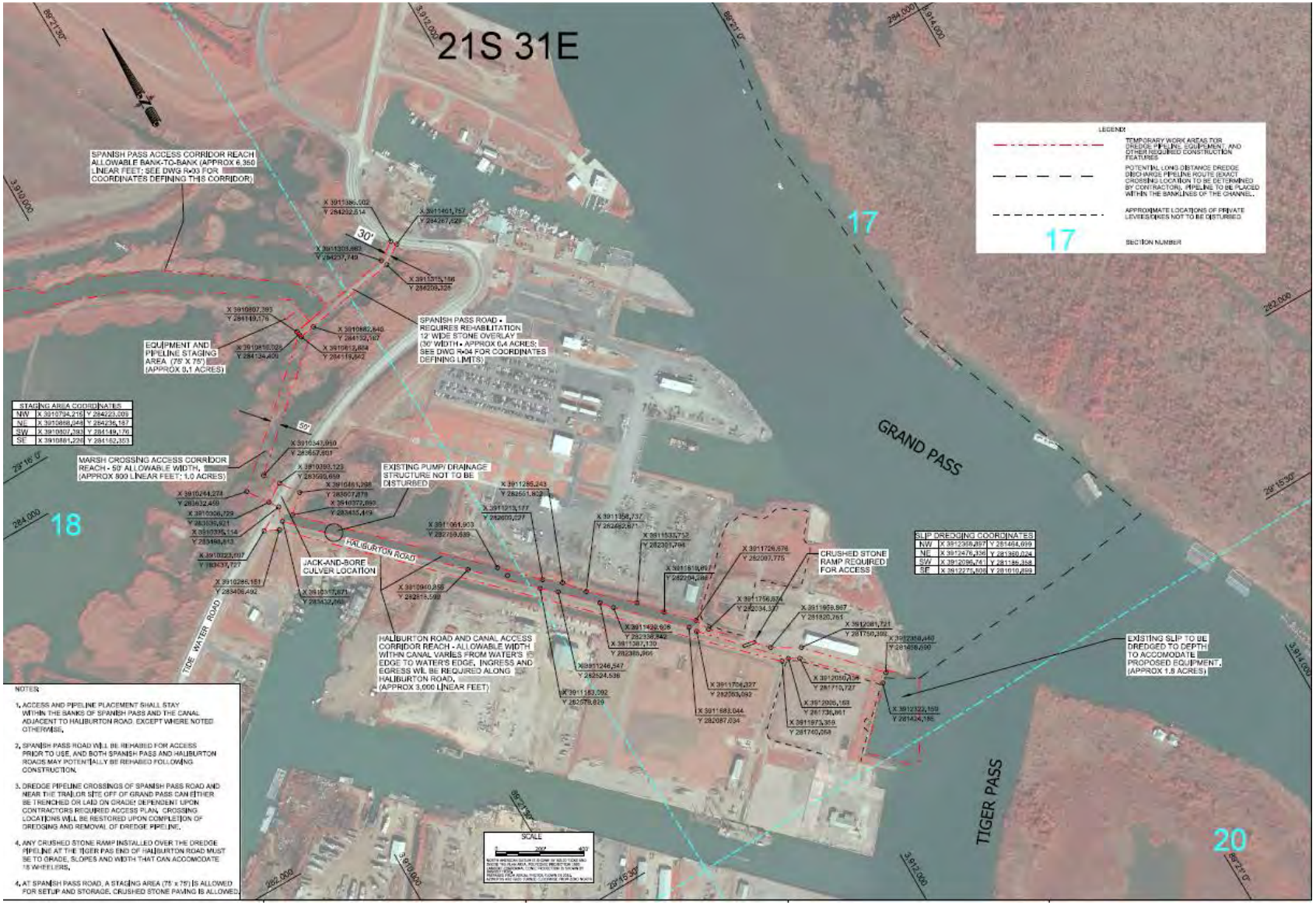

Figure 6: Transportation of Dredge Material from Slip to Project Area

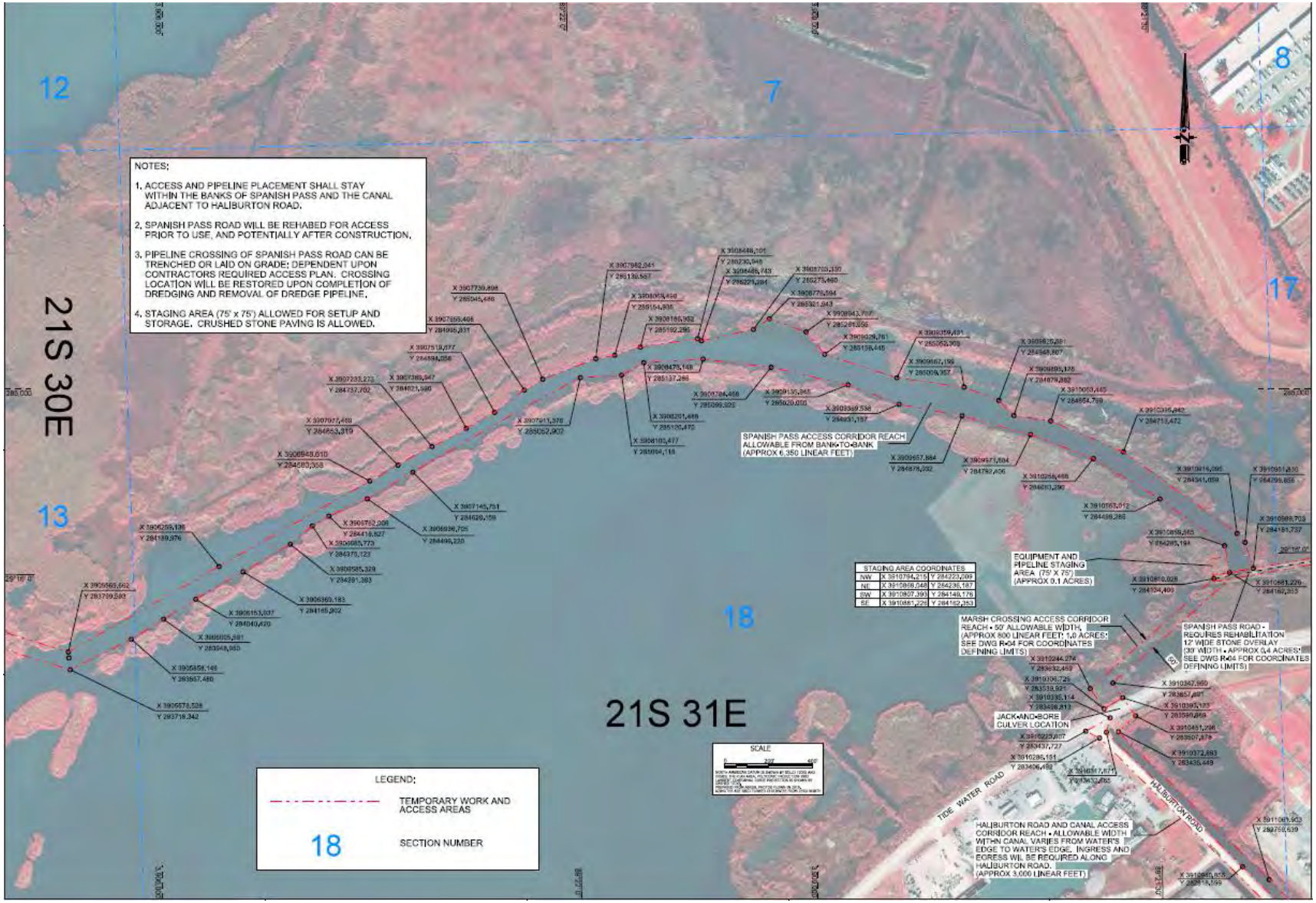

Figure 7: Transportation Continued, Staging Area, Jack and Bore

3 Affected Environment

3.1 Description of the Project Area

The proposed Project Area is located in Plaquemines Parish within the Central Gulf Coastal Plain in southeastern Louisiana. Parish lands occupy part of the active delta of the Mississippi River, in a dynamic area dependent upon the disbursement and settlement of river sediments to maintain land elevations above water. The Mississippi River splits into three main channels within the delta region: Pass a Loutre, South Pass, and Southwest Pass. Land elevations range from sea level along the Gulf coast, to approximately +10-feet above sea level along the natural levee ridges. It is a sparsely populated region characterized by river channels with attendant channel banks, natural bayous, and man-made canals interspersed with intermediate and fresh marshes. Water levels fluctuate within the river, passes, estuarine bays, and marshes according to river flow from upstream, tide, and wind influences. The property adjacent to the proposed disposal areas includes fresh and intermediate marshes, private camps, the Pass a Loutre Water Management Area, the Delta NWR, and the navigation channels of the Mississippi River—Pass a Loutre, South Pass, Southwest Pass, and Southeast Pass.

Water depths range from less than an inch to a foot and a half in the vegetated areas and five to six feet in the open water areas. Freshwater fish that are tolerant of low salinity conditions and estuarine fish and shellfish abound. The marshes and estuarine bays provide excellent spawning and nursery areas for recreational and commercial species. The Mississippi River Delta provides important nesting and brooding habitat for mottled ducks, wading birds, and shore birds. Migratory and resident waterfowl are also abundant in the area. The National Audubon Society designated the Mississippi River Delta an Important Bird Area. The active delta provides habitat for wintering waterfowl, wading birds, marsh birds, and shore birds. The higher elevations of shrub-dominated spoil banks and willow-dominated uplands provide important stopover habitat for numerous Neotropical migratory songbird species which breed in North America and spend the winter in Mexico, the Caribbean, and Central or South America. One hundred and seventy-five avian species were detected during two seasons of transect counts on the Pass a Loutre Wetlands Management Area and the Delta National Wildlife Refuge. (Audubon 2010)

3.1.1 Description of the Watershed

The Mississippi River has the third largest drainage basin in the world, exceeded in size only by the watersheds of the Amazon and Congo Rivers. It drains 41 percent of the 48 contiguous states of the United States. The basin covers more than 1,245,000 square miles, includes all or parts of 31 states and two Canadian provinces, and roughly resembles a funnel which has its spout at the Gulf of Mexico. Waters from as far east as New York and as far west as Montana contribute to flows in the lower river.

The lower alluvial valley of the Mississippi River is a relatively flat plain of about 35,000 square miles bordering on the river which would be overflowed during time of high water if it were not for man-made protective works. This valley begins just below Cape Girardeau, Missouri, is roughly 600 miles in length, varies in width from 25 to 125 miles, and includes parts of seven states—Missouri, Illinois, Tennessee, Kentucky, Arkansas, Mississippi, and Louisiana.

The Mississippi River is the mainstem of the world's most highly developed waterway system, about 12,350 miles in length. The Mississippi River discharges the headwater flows from about 41 percent of the contiguous 48 states. Discharge at Baton Rouge ranges from 1,500,000 cubic feet per second (cfs) once every 16 years, on average, to a low of 75,000 cfs recorded once

during the period 1930 to the present, and average annual discharge is 450,000 cfs. Southwest Pass of the Mississippi River discharges roughly one-third of the river's total flow, with an average discharge of about 145,000 cfs. South Pass of the Mississippi River discharges roughly one-sixth of the river's total flow, with an average discharge of about 78,000 cfs. Pass a Loutre of the Mississippi River discharges almost one-third of the river's total flow or slightly less than the Southwest Pass flow. The average discharge through Pass a Loutre is just under 145,000 cfs. The combined discharge of Southwest Pass, South Pass, and Pass a Loutre is approximately 80 percent of the total river flow into the Gulf of Mexico. The remaining flow is distributed through minor passes upstream of Head of Passes.

Deep-draft navigation is a major component of waterborne traffic on the river. Currently, the river is maintained to a depth of -45 feet for deep-draft access from mile marker -22.0 in the bar channel reach up to river mile 232.4 at Baton Rouge, Louisiana. There is extensive urban and industrial development near the Baton Rouge and New Orleans metropolitan areas. The remaining areas adjacent to the river are developed primarily for agriculture; however, industrial and urban development in these areas does occur. The Mississippi River is a source for drinking water, recreation, and commerce.

3.1.2 Sea-level Rise

ER 1100-2-8162 states potential relative sea level change must be considered in every USACE coastal activity as far inland as the extent of estimated tidal influence. Benefits calculated using the WVA incorporated the "intermediate" sea-level change scenario to determine benefit outcomes over the 50 year period of analysis. The "low" and "high" sea level change rates were not run. Under the "high" sea-level change scenario, any alternative would likely underperform very soon after construction since the wetland portion of the project would be inundated beyond wetland vegetation tolerances as sea-level changes. This would be a result of not enough material being placed initially to compensate for sea-level change over time. However, under the "low" sea-level change scenario alternatives would likely not perform, or the benefits would be minimal, for an extended period post-construction until sea-level change reaches a point that is conducive for wetland function, growth, and sustainability. This would be a result of placing so much material initially, the marsh and ridge creation site would not functionally be a wetland until the deposition site is at an appropriate elevation conducive for function, growth, and sustainability. Because any alternative involves a one-time beneficial use disposal event, using only the "intermediate" sea-level change scenario presents the most reasonable expectation for calculating benefits over the 50 year period of analysis.

3.1.3 Climate and Climate Change

The climate in the Project Area is humid, subtropical with a strong maritime character. Warm, moist southeasterly winds from the Gulf of Mexico prevail throughout most of the year, with occasional cool, dry fronts dominated by northeast high pressure systems. The influx of cold air occurs less frequently in autumn and only rarely in summer. Tropical storms and hurricanes are likely to affect the area 3 out of every 10 years, with severe storm damage approximately once every 2 or 3 decades. The majority of these occur between early June and November. The largest recent hurricanes were Katrina and Rita in 2005 which caused damage in the project area. Hurricanes Gustav and Ike in 2008, and more recently, Isaac in 2012, caused additional damage in the project area. Summer thunderstorms are common, and tornadoes strike occasionally. Average annual temperature in the area is 67°F, with mean monthly temperatures ranging from 82°F in August to 52°F in January. Average annual precipitation is 57.0 inches, varying from a

monthly average of 7.5 inches in July, to an average of 3.5 inches in October. *(http://www.plaqueminesparish.com/Visitors.php#climate)*.

The 2014 USACE Climate and Resiliency Policy Statement states the "USACE shall continue to consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations." The LCA BUDMAT Program is not intended to construct ecosystem restoration projects that last in perpetuity. A healthy and resilient coastal complex is dynamic, not static, and is subject to the ebb and flow of the various effects, adverse or beneficial, that impact conditions at any given point in time. The most significant adverse potential impact on a coastal wetland as a product of climate change is sea-level change (rise). The impact of sea-level change is addressed in section 3.1.2 Sea Level Rise.

3.1.4 Geology

Four main physiographic surfaces exist within Plaquemines Parish: natural levees, back swamps, coastal marshes, and barrier islands. The Mississippi River Delta complex was formed by river deposits between 700 and 7,400 years ago. The Natural Resources Conservation Service (NRCS) classifies soils within the proposed project area as typically peat, mucks, and clays mixed with organic matter, and silts derived from river deposits. The soil composition is subject to change as floodwaters and storm surges deposit new sediments. They are composed predominantly by Balize and Larose soil types. These soils are classified as continuously flooded deep, poorly drained and permeable mineral clays and mucky clays. Marsh and swamp deposits are found in the vicinity of the river from New Orleans to the Heads of Passes at the Gulf of Mexico. Marsh deposits are primarily organic, consisting of 60 percent or more by volume of peat and other organic material with the remainder being a composition of various types of clays. Total organic thickness is normally 10 feet, with variances less than one foot. Inland swamp deposits are composed of approximately 70 percent clay and 30 percent peat and organic materials. The percentage of sand and sandy silts increases with proximity to the open waters of the Gulf of Mexico. (USACE 1974)

3.2 Relevant Resources

This section contains a description of relevant resources that could be impacted by the proposed project. The important resources described are those recognized by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Table 2 provides summary information of the institutional, technical, and public importance of these resources.

A wide selection of resources were initially considered and determined not to be affected by the project—mainly due to the remote and uninhabited nature of the project area and general lack of significant populated areas in the vicinity. Socioeconomic resources, including land use, population, transportation, oil and gas, environmental justice, environmental health and safety, community cohesion, desirable community growth, tax revenues, property values, public facilities and services, business activity and employment, and displacement of people, would not be affected by the proposed project. The objectives of Executive Order 11988 (Floodplain Management) were considered; however, CEMVN has determined that floodplain impacts, if any, from the proposed action would be mainly positive (i.e., improving the adjacent flood plain and associated habitats, and thus, maintaining their natural and beneficial values). Additionally, there is no practicable alternative for project construction outside the 100-year floodplain. No prime or unique farmlands, as defined and protected by the Farmland Protection Policy Act, would be

affected by the proposed project. No portion of the project area has been designated a Louisiana Natural and Scenic River; therefore, a Scenic Rivers permit is not warranted.

The following relevant resources are discussed in this report: navigation, wetlands, scrub-shrub, wildlife, aquatic resources/fisheries, essential fish habitat (EFH), threatened and endangered species, soils and water bottoms, water and sediment quality, air quality, cultural resources, recreational resources, and visual resources (aesthetics).

Table 3: Relevant Resources and Their Institutional, Technical, and Public Importance

Resource	Institutionally Important	Technically Important	Publicly Important
Navigation	Rivers and Harbors Act of 1899 and River and Harbor Flood Control Act of 1970 (PL 91-611).	N/A	Navigation concerns affect area economy and are of significant interest to community.
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968., EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The high value the public places on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes.
Scrub-Shrub	Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; and the Fish and Wildlife Coordination Act of 1958, as amended.	They provide habitat for both open and forest-dwelling wildlife, and the provision or potential for provision of forest products and human and livestock food products.	The high value the public places on their present value or potential for future economic value.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended; Clean Water Act of 1977, as amended; Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968.	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Soils and Water Bottoms	Fish and Wildlife Coordination Act, Marine Protection, Research, and Sanctuaries Act of 1990	State and Federal agencies recognize the value of water bottoms for the production of benthic organisms.	Environmental organizations and the public support the preservation of water quality and fishery resources.
Essential Fish Habitat (EFH)	Magnuson-Stevens Fishery Conservation and Management Act of 1996, Public Law 104-297	Federal and state agencies recognize the value of EFH. The Act states, EFH is "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."	Public places a high value on seafood and the recreational and commercial opportunities EFH provides.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, EPA, LDWF, and LDNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of the local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.

Resource	Institutionally Important	Technically Important	Publicly Important
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic Rivers Act of 1988, and the National and Local Scenic Byway Program.	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area. State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and Louisiana State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, EPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality and the national and state standards established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.

Table 4: Relevant Resources In and Near the Project Area

Relevant Resource	Impacted	Not Impacted
Navigation	X	
Wetlands	X	
Scrub-Shrub	X	
Soils and Water Bottoms	X	
Aquatic	X	
Wildlife	X	
Essential Fish Habitat	X	
Threatened and Endangered Species		X
Water Quality	X	
Air Quality	X	
Cultural[1]		X
Recreational		X
Visual		X
HTRW[2]		X
Noise	X	

[1]Although not impacted, cultural resources are addressed to comply with the National Historic Preservation Act.
[2]Hazardous, Toxic, and Radioactive Waste. Although the area has been determined to have a low probability of containing HTRW, it is assessed in this document to comply with USACE policy.

3.2.1 Navigation

Existing Conditions

Southwest Pass provides deep-draft access to the New Orleans – Baton Rouge port corridor and its associated commerce and industries. The second important access channel from the Gulf, South Pass navigational channel, provides a more easterly entrance to the Mississippi River. Continued maintenance of the current dimensions of the Mississippi River and its passes, as discussed in Sections 1.2 and 1.3, are vital to the continued growth and health of the industries and commerce they serve.

3.2.2 Wetlands

Existing Conditions

Wetlands in the vicinity are tidally influenced and classified as mainly fresh marsh, with areas of intermediate marsh near the gulfward open water areas north of West Bay, East Bay, and

west/northwest of the Delta NWR. Water levels fluctuate from 6 to 12-inches or more in the vegetated areas. The wetlands are strongly influenced by freshwater discharges from the Mississippi River and associated distributary outlets. Salinity rarely increases above 2.0 parts per thousand (ppt), with a year-round average of 0.5-1.0 ppt (Chabreck 1970). Intermediate marsh in the project area is subjected to an irregular tidal regime and oligohaline conditions, with salinities generally ranging from 1.0-8.0 ppt (Chabreck 1970).

Common reed (*Phragmites australis*), also known as Roseau cane, occurs in expansive monotypic clumps (monoculture) in shallow open water areas and has displaced a variety of freshwater vascular plant species that have historically occupied the area. This could have been caused by periodic storms generating extremely high saltwater tides killing off a majority of the sensitive freshwater vegetation (Hauber et. al. 1991). Rattlebox (*Crotalaria* sp.) and black willow (*Salix nigra*) occur along the banks of channels and on the higher crowns of areas previously used for disposal of dredged material.

Cattail (*Typha* sp.), bulltongue arrowhead (*Sagittaria lancifolia)*, maidencane (*Panicum hemitomon*), common threesquare bulrush (*Scirpus americanus*) and various sedges are common throughout the wetlands of East Bay. Other common species in the East Bay area include numerous non-native species, such as common reed, alligator weed (*Alternanthera philoxeroides*), elephant ear (*Colocasia* sp.), giant cutgrass (*Zizaniopsis miliacea*), California bulrush (*Scirpus californicus*), and delta duck potato (*Sagittaria platyphylla*). Submerged aquatic vegetation (SAV) found in the shallow water areas includes various pondweeds (*Potamogeton* spp.), coontail (*Ceratophyllum* sp.), and parrotfeather (*Myriophyllum aquaticum*).

The wetlands in the project vicinity provide nursery habitat for estuarine larval and juvenile fish, crab, and shrimp species. Additionally, numerous estuarine-dependent fish and shellfish, migratory waterfowl, furbearers and other wildlife, and several species of wading, diving, and shore birds may be found in the area.

Wetlands within Plaquemines Parish have undergone substantial loss due to subsidence, sea-level rise, and salt-water intrusion. The current trend of wetlands loss was compounded by hurricanes in 2005. Over a 4 year period from 2004 to 2008, hurricanes Katrina, Rita, Gustav and Ike transformed approximately 328 square miles of marsh to open water. (Barras et al., 2009). More losses resulted from Katrina than from Rita, and were concentrated south and east of New Orleans, with almost half the total loss occurring in Plaquemines Parish (Zinn 2006). Overall marsh loss (i.e., conversion to open water) resulting from Katrina and Rita throughout the entire Mississippi Deltaic Plain of southeastern Louisiana was as follows: fresh marsh—22 square miles; intermediate marsh—49 square miles; brackish marsh—18 square miles; salt marsh—27 square miles (USGS 2006).

The main management technique used in the Pass a Loutre WMA and the Delta NWR to create marsh habitat has been diversion of sediment-laden waters into open bay systems and the creation of crevasses to promote delta growth. Crevasses generally form when levee breaks occur in the natural river levee during high-water events. Once crevasses form, sediment-laden water flows into the bay and splays are created. Splays are land formations that result from sediment accretion near the mouth of the crevasse and contain mud flats, channels, and sediment that would build land in open water areas over time (Boyer et al.). Several natural and man-made crevasses are located near the project area.

Some of these crevasses were constructed as mitigation for activities authorized under the U.S. Environmental Protection Agency (EPA)/USACE Clean Water Act regulatory program or were

funded under the auspices of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). The Louisiana Department of Natural Resources (LDNR) constructed three new crevasses in 1986 at Pass a Loutre, South Pass, and Loomis Pass, and four crevasses in 1990 at South Pass and Pass a Loutre. These crevasses created over 657 acres and 400 acres of marsh from 1986 to 1993, respectively. Thirteen crevasses included in the LDNR Small Sediment Diversions Project cumulatively produced 313 acres of marsh between 1986 and 1993 (Barmore 2003).

The National Marine Fisheries Service (NMFS) and LDNR initially sponsored the CWPPRA project "Delta Wide Crevasses" (MR-09) to maintain existing crevasse-splays in both the Pass a Loutre WMA and the Delta NWR. Construction of the first phase of the project was completed on July 14, 1999 and consisted of excavation of fifteen new crevasses and plugging one existing crevasse. Construction of phase two was completed on March 17, 2005 and consisted of the excavation of two new crevasses and maintenance of four existing crevasses and deposition of dredged material for marsh creation. These crevasses are naturally creating splays and restoring wetlands in the northern portion of the proposed expansion of the disposal area (Barmore 2003). Boyer et al. (1997) determined that newly constructed crevasses in the Delta NWR created an average of 11.6 acres of emergent wetlands per year with subaerial growth occurring 2-3 years after crevasses were cut.

3.2.3 Scrub-Shrub

Existing Conditions

Scrub-shrub habitat occupies a small portion of the area. Scrub-shrub vegetation occurs along natural and man-made ridges along Southwest Pass and South Pass, and in portions of the Delta NWR and Pass a Loutre WMA where remnant maritime shrub communities persist. Wax myrtle (*Myrica cerifera*), black willow, eastern baccharis, rattlebox, and Roseau cane are the dominant plants comprising the scrub-shrub habitat in the area. The soils in this habitat are composed of compacted silt, clay, sand, and organic materials. This area remains dry most of the year except during conditions of extremely high water from periodic high tides and high river stages.

Scrub-shrub habitat is utilized by most species of marsh mammals including nutria (*Myocaster coypus*), raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), swamp rabbit (*Sylviagus aquaticus*), and white-tailed deer (*Odocoileus virginianus*). Scrub-shrub habitat provide essential habitat for wintering waterfowl, nesting mottled ducks, wading birds, marsh birds, and shorebirds. Shrub-dominated ridges and willow-covered areas provide important stopover habitat for many Neotropical migrants. Birds such as egrets (*Ardea alba*; *Egretta thula*), herons (*Ardea herodias*; *Egretta* spp.; *Nycticorax* spp.), rails, gallinules, and mottled ducks (*Anas fulvigula*) use scrub-shrub vegetation for nesting because nests would not be affected by occasional high water.

Scrub-shrub habitat provides essential refuge for marsh animals during high water events. During hurricanes and tropical storms animals seek the highest land masses in the area and are often forced to climb into branches of scrub-shrub vegetation to escape rising waters. Scrub-shrub vegetation may provide a limited source of hard and soft mast for wildlife species utilizing the area.

3.2.4 Aquatic Resources/Fisheries

Existing Conditions

The area is primarily shallow open water and fresh/intermediate marsh near the Project Area in the Lower Mississippi River Delta. The water bottom is composed of firm silty, sandy clay mainly deposited by the river. These submerged lands are typically soft and almost fluid, but some areas are firm where heavier silts and sands have deposited. Water depths measure approximately 1 to 5 feet with submerged aquatic vegetation (SAV) occurring in some portions of the shallow open-water areas, with the most common species including pondweed, coontail, and water millfoil (*Myriophyllum* spp.). These submerged plants provide a source of food for the large numbers of waterfowl frequently during winter. Shellfish species including oysters, shrimp, and crabs are found in the brackish marshes near the project area. Many juveniles of these species use fringe marsh, interspersed shallow ponds, and SAV for grazing.

Fishing is a major recreational and commercial activity. The estuarine nature of the area provides a dynamic aquatic environment where freshwater and saltwater meet, providing a transitional zone between the two aquatic ecosystems. The marshes and waterways provide important spawning and nursery habitat and a food source for a wide variety of fresh and saltwater fish species. Vegetation and marsh loss degrades the utility of the area as a nursery habitat and food source.

The influx of freshwater from the Mississippi River, particularly during floods and other high water flow periods, potentially allows for riverine fisheries species to migrate downriver to the delta region. The U.S. Fish and Wildlife Service (USFWS) published Habitat Suitability Index (HSI) Models in 1982 and 1983, which included salinity tolerances for a variety of freshwater fisheries. Potential species that could occur during high water/low salinity periods include channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), white crappie (*Pomoxis annularis*), sunfish (*Lepomis* spp.), gizzard shad (*Dorosoma cepedianum*), and buffalo (*Ictiobus bubalus*), among others.

During low water periods, storm surges, and seasonally strong tidal influences, the increased saltwater intrusion from the Gulf restricts the abundance and diversity of freshwater fisheries, and provides opportunities for estuarine (brackish) species. Many of these species are economically and recreationally important, including red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), spotted sea trout (*Cynoscion nebulosus*), sand seatrout (*Cynoscion arenarius*), striped mullet (*Mugil cephalus*), Gulf menhaden (*Brevoortia patronus*), Atlantic croaker (*Micropogonias undulatus*), sheepshead (*Archosargus probatocephalus*), southern flounder (*Paralichthys lethostigma*), Spanish mackerel (*Scomberomorus maculates*), southern kingfish (*Menticirrhus americanus*), and spot (*Leiostomus xanthurus*).

Commercially important shellfish found include blue crab (*Callinectes sapidus*), brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*Farfantepenaeus duorarum*), white shrimp (*Litopenaeus setiferus*), Gulf stone crab (*Menippe adina*), and oysters (*Crassostrea virginica*). Other commercially less important species include grass shrimp (*Palaemonetes pugio*), mysid shrimp (*Mysidopsis bahia*), roughneck shrimp (*Trachypenaeus constrictis*), and mud crab (*Eurypanopeus depressus*).

The area also supports populations of phytoplankton and zooplankton (e.g., copepods, rotifers, fish larvae, and molluscan and crustacean larvae). Benthic invertebrate populations are

comprised of both epifaunal and infaunal species (e.g., polychaete and oligochaete worms, crustaceans, bivalves and gastropod mollusks). These organisms constitute vital components of the aquatic food chain and may comprise the diets of numerous finfish and shellfish species.

3.2.5 Wildlife

Existing Conditions

The area contains a variety of birds, mammals, and other wildlife. Both migratory and resident birds occur in or near the project area. Common birds include ibis (*Plegadis* spp.; *Eudocimus albus*), egrets (*Ardea alba*; *Egretta thula*), cormorants (*Phalacrocorax* spp.), terns (*Sterna* spp.), gulls (*Larus* spp.), skimmers (*Rynchops niger*), sandpipers (*Calidris* spp.), pelicans (*Pelecanus* spp.), osprey (*Pandion haliaetus*), herons (*Ardea herodias*; *Egretta* spp.; *Nycticorax* spp.), hawks (*Accipiter* spp.; *Buteo* spp.), kestrels (*Falco sparverius*), vultures (*Coragyps atratus*; *Cathartes aura*), frigatebirds (*Fregata magnificens*), grackles (*Quiscalus* spp.), blackbirds (*Agelais phoeniceus*), and several species of swallows, flycatchers, wrens, warblers, and sparrows. Wintering migratory waterfowl using the surrounding marshes include snow geese (*Chen caerulescens*), gadwalls (*Anas strepera*), pintails (*Anas acuta*), mallards (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), green-winged teal (*Anas crecca*), shovelers (*Anas clypeata*), coot (*Fulica americana*), redheads (*Aythya americana*), lesser scaup (*Aythya affinis*), mergansers (*Mergus* spp.; *Lophodytes cucullatus*), wigeons (*Anas americana*), canvasbacks (*Aythya valisineria*), and some black ducks (*Anas rubripes*). The mottled duck (*Anas fulvigula*), highly sought by sportsmen, is the only species of waterfowl nesting and wintering in the area. Grebes (*Podilymbus podiceps*; *Podiceps* spp.) and loons (*Gavia immer*) are nongame migratory waterfowl wintering in the area, and the common snipe (*Gallinago gallinago*) is the only game species of shorebird wintering in the area. Numerous other shorebirds use the area as a resting and staging area during migration.

Mammals using the marshes and scrub-shrub habitat include numerous furbearers, such as nutria, muskrat, swamp rabbit, mink (*Mustela vison*), river otter (*Lontra canadensis*), raccoons, and white-tailed deer. Scrub-shrub provides habitat for salamanders, toads, frogs, turtles, and several species of poisonous and nonpoisonous snakes. The American alligator (*Alligator mississippiensis*) is abundant in fresh to intermediate marsh and is caught commercially for its hide and meat.

Numerous terrestrial invertebrates are found throughout the project area. The most notable are insects, which often serve as vectors, transmitting disease organisms to higher animals including man. Mosquitoes are the most important of the vectors in the area, although other groups, such as deer flies, horseflies, and biting midges are also considered vectors. The area provides suitable breeding habitat for such species as the salt-marsh mosquitoes (*Aedes sollicitans* and *Culex salinarius*), and other species of mosquitoes, which carry the West Nile virus, which has recently caused illness and death of both animals and humans in Louisiana.

3.2.6 Essential Fish Habitat

Existing Conditions

All of the marine and estuarine waters of the northern Gulf of Mexico have been designated as Essential Fish Habitat (EFH) through regulations promulgated by the National Marine Fisheries Service (NMFS) and the Gulf of Mexico Fishery Management Council as required by the Magnuson-Stevens Fishery Conservation and Management Act. EFH is described as waters and substrates necessary for Federally-managed species to spawn, breed, feed, and grow to maturity.

In the northern Gulf of Mexico, EFH has generally been defined as areas where individual life-stages of specific Federally-managed species are common, abundant or highly abundant. In estuarine areas, EFH is defined as all estuarine waters and substrates (mud, sand, shell, rock and associated biological communities, including the sub-tidal vegetation (seagrasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). The open waters, waterbottom substrates, and inter-tidal marshes of the West Bay Sediment Diversion project area are considered EFH under the estuarine component.

Specific categories of EFH include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), including subtidal vegetation (sea grasses and algae) and adjacent intertidal wetland vegetation (marshes and mangroves). In addition, estuarine aquatic habitats provide nursery and foraging areas that support economically important marine fishery species that may serve as prey for Federally-managed fish species such as mackerels, snappers, groupers, billfishes and sharks.

The estuarine waters in the proposed project area include EFH for several Federally-managed species. (Table 5) These species use the area for foraging and nursery habitat, as well as a migration route to other areas considered to be EFH. Specific categories of EFH in the project area include estuarine emergent wetlands, mud/sand substrates, and estuarine water column. A brief description of the EFH species found in the proposed project area follows:

Red drum (*Sciaenops ocellatus*) is an important recreational gamefish found in coastal waters throughout the Gulf of Mexico. Adults inhabit nearshore waters, particularly areas within the surf zone or in the vicinity of inlets. Spawning occurs in nearshore areas, and eggs and larvae are transported by tides and wind currents into estuaries. Larvae and juveniles occupy estuarine environments until maturation. Red drum are predatory in all stages of life; however, the type of prey consumed varies with life stage. Subadult red drum primarily consume small marine invertebrates including mysids and copepods, while adults feed on large marine invertebrates, including shrimp and crabs, and small fishes.

Table 5: EFH Species in the Project Area

Common Name	Life Stage	EFH
red drum	adult	Gulf of Mexico & estuarine mud bottoms, oyster reef
red drum	juvenile	SAV, estuarine mud bottoms, marsh/water interface
red drum	larvae/post larvae	all estuaries planktonic, SAV, sand/shell/soft bottom, emergent marsh
brown shrimp	adult	Gulf of Mexico <110 m, silt sand, muddy sand
brown shrimp	juvenile	marsh edge, SAV, tidal creeks, inner marsh
brown shrimp	larvae/post larvae	planktonic, sand/shell/soft bottom, SAV, emergent marsh, oyster reef
white shrimp	adult	Gulf of Mexico <33 m, silt, soft mud
white shrimp	juvenile	marsh edge, SAV, marsh ponds, inner marsh, oyster reef
white shrimp	larvae/post larvae	planktonic, soft bottom, emergent marsh

Shrimp species include the brown shrimp (*Farfantepenaeus aztecus*) and the white shrimp (*Litopenaeus setiferus*). Adult penaeids generally occupy offshore areas of higher salinity, where

spawning occurs. After hatching, larvae enter estuaries and remain there throughout the juvenile stage. Estuarine habitat serves as a nursery area offering a suitable substrate, an abundant food supply, and protection from predators. Subadult shrimp consume organic matter, including marsh grasses and microorganisms found in estuarine sediments.

3.2.7 Threatened, Endangered and Protected Species

Existing Conditions

According to a USFWS letter dated September 28, 2016, which provided comments in accordance with the Fish and Wildlife Coordination Act (FWCA), Endangered Species Act (ESA), Bald and Golden Eagle Protection Act (BGEPA), and the Migratory Bird Treaty Act (MBTA), protected species that may occur in the project vicinity include the formerly listed brown pelican *(Pelecanus occidentalis),* and various raptors including the formerly listed bald eagle *(Haliaeetus leucocephalus*) and peregrine falcon *(Falco peregrines).* Threatened and Endangered species within the vicinity include the West Indian manatee *(Trichechus manatus),* piping plover *(Charadrius melodus),* red knot *(Calidris canutus rufa),* pallid sturgeon *(Scaphirhynchus albus),* American alligator *(Alligator mississippiensis)* and sea turtles. No critical habitat for any threatened or endangered species has been designated within the proposed project area.

West Indian Manatee

The endangered West Indian manatee *(Trichechus manatus)* is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Manatees may also infrequently be observed in the Mississippi River and coastal areas of southwestern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

Piping Plover

The piping plover *(Charadrius melodus),* federally listed as a threatened species, is a small (7 inches long), pale, sand-colored shorebird that winters in coastal Louisiana and may be present for 8 to 10 months annually. Piping plovers arrive from their northern breeding grounds as early as late July and remain until late March or April. They feed on polychaete marine worms, various crustaceans, insects and their larvae, and bivalve mollusks that they peck from the top of or just beneath the sand. Piping plovers forage on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation. They roost in unvegetated or sparsely vegetated areas, which may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. They also forage and roost in wrack (i.e., seaweed or other marine vegetation) deposited on beaches. In most areas, wintering piping plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

On July 10, 2001, the Service designated critical habitat for wintering piping plovers (Federal Register Volume 66, No. 132); a map of the seven critical habitat units in Louisiana can be found at http://criticalhabitat.fws.gov/crithab. Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers

Red Knot

The red knot *(Calidris canutus rufa),* federally listed as a threatened species, and is a medium-sized shorebird about 9 to 11 inches (23 to 28 centimeters) in length with a proportionately small head, small eyes, short neck, and short legs. The black bill tapers steadily from a relatively thick base to a relatively fine tip; bill length is not much longer than head length. Legs are typically dark gray to black, but sometimes greenish in juveniles or older birds in non-breeding plumage. Nonbreeding plumage is dusky gray above and whitish below. The red knot breeds in the central Canadian arctic but is found in Louisiana during spring and fall migrations and the winter months (generally September through May).

During migration and on their wintering grounds, red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that red knots forage on beaches, oyster reefs, and exposed bay bottoms, and they roost on high sand flats, reefs, and other sites protected from high tides. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Coquina clams *(Donax variabilis),* a frequent and often important food resource for red knots, are common along many gulf beaches. Major threats to this species along the Gulf of Mexico include the loss and degradation of habitat due to erosion, shoreline stabilization, and development; disturbance by humans and pets; and predation.

Pallid Sturgeon

The pallid sturgeon *(Scaphirhynchus a/bus)* is an endangered, bottom-oriented, fish that inhabits large river systems from Montana to Louisiana. Within this range, pallid sturgeon tend to select main channel habitats in the Mississippi River and main channel areas with islands or sand bars in the upper Missouri River. In Louisiana it occurs in the Atchafalaya and Mississippi Rivers, and below Lock and Dam Number 3 on the Red River (with known concentrations in the vicinity of the Old River Control Structure Complex). The pallid sturgeon is adapted to large, freeflowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Many life history details and subsequent habitat requirements of this fish are not known. However, the pallid sturgeon is believed to utilize Louisiana riverine habitat during reproductive stages of its life cycle. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

Gulf Sturgeon

The Gulf sturgeon is an anadromous fish inhabiting coastal rivers from Louisiana to Florida during the warmer months and overwintering in estuaries, bays, and the Gulf of Mexico (NMFS 2011). Historically, Gulf sturgeon occurred from the Mississippi River east to Tampa Bay. Its present range extends from Lake Pontchartrain and the Pearl River system in Louisiana and Mississippi

east to the Suwannee River in Florida; however, sporadic occurrences have been recorded as far west as the Rio Grande between Texas and Mexico, and as far east and south as Florida Bay. The only documented catches of Gulf sturgeon in the Mississippi River have reportedly taken place near its mouth; however, these are considered incidental occurrences since no resident (i.e., reproducing) population for the Mississippi River is believed to exist. The USFWS and NMFS published a final rule in the Federal Register (Volume 68, No. 53) designating critical habitat for the Gulf sturgeon in Louisiana, Mississippi, Alabama, and Florida. Portions of the Pearl and Bogue Chitto Rivers, Lake Pontchartrain east of the Lake Pontchartrain Causeway, all of Little Lake, The Rigolets, Lake St. Catherine, and Lake Borgne within Louisiana were included in that designation. The proposed project area is outside those portions of Louisiana designated as critical habitat.

Colonial Nesting Waterbirds

The proposed project would be located in an area where colonial nesting waterbirds may be present. Colonies may be present that are not currently listed in the database maintained by the Louisiana Department of Wildlife and Fisheries. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, USFWS recommends that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season.

The brown pelican (*Pelecanus occidentalis*), a year-round resident of coastal Louisiana that may occur in the project area, was removed from the Federal List of Endangered and Threatened Wildlife (i.e., “delisted”) by USFWS on November 17, 2009. Despite its delisting, brown pelicans, and other colonial nesting wading birds and seabirds, remain protected under the MBTA. Portions of the proposed project area may contain habitats commonly inhabited by colonial nesting wading birds and seabirds.

Of the Federally listed and protected species within the project vicinity only the protected species are known to inhabit the immediate project area. Ibis, herons, egrets, hawks, owls, anhinga and bald eagles have been observed in the area. No known colonial nesting water/wading bird rookeries exist within the project area. If any such nests are discovered during construction the appropriate no work zones would be observed.

Sea Turtles

High levels of sediment in the water column and low prey availability probably preclude any high use of sea turtles in the lower Mississippi River Delta. However, all Contractor personnel associated with the project shall be instructed of the potential presence of sea turtles and the need to avoid contact with these animals. The National Marine Fisheries Service (NMFS) is responsible for aquatic marine endangered and threatened sea turtles. As a result of consultation under Section 7 of the Endangered Species Act of 1973, as amended, the USACE has agreed to report any sea turtle activity (sightings, collisions with, injuries or killings) to the NMFS.
Loggerhead sea turtles (*Caretta caretta*) nest within the coastal United States from Louisiana to Virginia, with major nesting concentrations occurring on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (NMFS/USFWS 2009). In Louisiana, loggerhead sea turtles are known to nest on the Chandeleur Island (LDWF 2011). Nesting and hatching for loggerheads in the Gulf of Mexico occur from May through November.

Green sea turtles (*Chelonia mydas*) are more tropical in their distribution, and are rarely seen in Louisiana coastal waters (LDWF 2011). Nesting in the Southeastern U.S. occurs roughly from

June through September (NMFS/USFWS 1991). Nesting within the project area is highly unlikely, as green sea turtles prefer to nest on high-energy beaches with deep sand and little organic content. Furthermore, the Minerals Management Service (1997) indicated that reports of green sea turtle nesting in the northern Gulf are "isolated and infrequent."

The most seriously endangered of the sea turtles, Kemp's Ridley turtles (*Lepidochelys kempii*) occur mainly in bays and coastal waters of the Atlantic Ocean and Gulf of Mexico (NMFS/USFWS 1992a). Nesting occurs on the northeastern coast of Mexico and occasionally on Texas Gulf Coast beaches from April to July. No Kemp's Ridley sea turtle nesting habitat occurs near the project site, and nesting has not been known to occur in the area. Along the Louisiana coast, turtles are generally found in shallow nearshore and inshore areas, and especially in salt marsh habitats, from May through October.

The hawksbill (*Eretmochelys imbricate*) is a small sea turtle, generally spending most of its life in tropical waters such as the warmer portions of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea (NMFS/USFWS 1993). Hawksbills frequent rocky areas, coral reefs, shallow coastal areas, lagoons, narrow creeks, and passes. Nesting may occur on almost any undisturbed deep-sand beach in the tropics—in North America, the Caribbean coast of Mexico is a major nesting area. In the continental United States, nesting sites are restricted to Florida where nesting is sporadic at best (NMFS/USFWS 1993). Due to the lack of suitable foraging and nesting habitats, there is a low probability of this species occurring within the project area.

The leatherback sea turtle (*Dermochelys coriacea*) is the largest, deepest diving, and most migratory and wide ranging of all the sea turtles (NMFS/USFWS 1992). Leatherbacks are mainly pelagic, inhabiting the open ocean and seldom entering coastal waters except for nesting purposes. Nesting in the United States is mainly confined to the Florida coast, and no nesting has been reported from Louisiana (Gunter 1981).

NMFS is responsible for aquatic marine endangered and threatened sea turtles. High levels of sediment in the water column and low prey availability probably preclude any high use by sea turtles in the lower Mississippi River Delta. Furthermore, hydraulic cutterhead pipeline dredging operations have not been identified as a source of sea turtle mortality.

3.2.8 Water and Sediment Quality

Existing Conditions

As part of its surface water quality monitoring program, the Louisiana Department of Environmental Quality (LDEQ) routinely monitors 25 parameters on a monthly or bimonthly basis using a fixed station, long-term network (Monitored Assessments) (LDEQ 1996). Based upon those data and the use of less-continuous information (Evaluated Assessments), such as fish tissue contaminants data, complaint investigations, and spill reports, the LDEQ has assessed water quality fitness for the following uses: primary contact recreation (swimming), secondary contact recreation (boating, fishing), fish and wildlife propagation, drinking water supply and shellfish propagation (LDEQ 1996). Based upon existing data and more subjective information, water quality is determined to either fully, partially, or, not support those uses. A designation of "threatened" is used for waters that fully support their designated uses but that may not fully support certain uses in the future because of anticipated sources or adverse trends in pollution.

According to the LDEQ "2010 Louisiana Water Quality Inventory: Integrated Report," the Mississippi River – Head of Passes to Mouth of Passes, including all passes in the birdfoot delta

(segment no. LA070401_00), “fully supports” designated uses for primary contact recreation, secondary contact recreation, and fish and wildlife propagation based on Evaluated Assessment data (LDEQ 2012). The segment does not support the designated use for oyster propagation (LDEQ 2012). Impairment of the oyster propagation use is due to pathogens (fecal coliform bacteria). Suspected sources of impairment include municipal point source discharges and sources outside state jurisdiction or borders (LDEQ 2012).

On July 23, 2008, a tanker collided with a barge in the Mississippi River near downtown New Orleans, Louisiana. Severe damage to the barge resulted in the release of about 380,000 gallons of No. 6 fuel oil approximately 100 miles upriver from the dredging reaches in the Southwest and South Pass navigation channels from which dredged material would be removed to the project area for permanent placement. Almost two years later, on April 21, 2010, an explosion occurred onboard the mobile drilling platform *Deepwater Horizon* in the Gulf of Mexico. Destruction of the rig and damage at the wellhead resulted in the release of about 206 million gallons of crude oil over an 85-day period about 40 miles southeast of navigation dredging areas at the river’s mouth. Due to the magnitude of both oil spills, their proximity to the river delta, and potential for river or ocean currents to transport the oil to dredging sites from which dredged material destined for the project area could originate, CEMVN conducted a series of evaluations to determine if oil was accumulating in the river’s navigation channels – and if dredged material from the river could cause adverse environmental impacts at proposed dredged material placement sites.

Evaluations were conducted on dredged material collected from hopper dredges working in Southwest Pass in July and August of 2008; on dredged material collected after the 2008 spill from two placement sites used by hopper dredges; and on shoal material collected from South Pass in August of 2010 and from Southwest Pass in October of 2010, following containment of the *Deepwater Horizon* leak. All evaluations followed a tiered approach. Chemical analyses were first conducted on shoal material and dredged material slurry to determine if oil-related contaminants were present. Detected contaminants were compared to background levels observed prior to the spills in sediment and water from the Mississippi River and adjacent marsh areas. In cases where background levels were exceeded, the ecological significance of contaminants was determined by comparison of observed concentrations to screening values developed by the National Oceanic and Atmospheric Administration (Screening Quick Reference Table for Inorganics & Organics in Sediment) and the EPA (Water Quality Screening Values). Comparison to screening values is useful in determining whether adverse ecological impacts are likely to occur and whether any additional biological testing is needed. Biological tests involve the exposure of sensitive aquatic animals to shoal material to evaluate toxicity from direct contact and to determine if contaminants accumulate in the tissues of test animals. The October 2010 evaluation of Southwest Pass was performed to evaluate the EPA-designated Ocean Dredge Material Disposal Site, (ODMDS) just west of the Southwest Pass bar channel, and biological testing was performed as a requirement of the permit (and not to ascertain the presence of a particular contaminant). Sediment and water from a reference area in East Bay were used to provide control data for shoal material test results; therefore, results from these tests are applicable to this water and sediment quality assessment.

A CEMVN report dated January 8, 2009 entitled “Southwest Pass Dredged Material Evaluation – 2008,” provides a summary of all evaluations associated with the 2008 barge incident on the Mississippi River, and makes recommendations on the management of dredged material from the channel south of Venice, Louisiana. As to the presence of hydrocarbon contaminants in the dredged material removed by hopper dredges operating after the 2008 spill, the report concluded that:

Analytical results and visual inspection of hopper dredges working in (Southwest Pass) suggest that trace amounts of oil were present in sediment in all dredging reaches approximately from mile 11.0 (Below Head of Passes) to mile 5.0 (Above Head of Passes). However, analytes indicative of oil contamination in the dredged material were either below detection limits (for polycyclic aromatic hydrocarbons or "PAHs", generally less than 3.5 – 10 µg/kg for dredged material solid fraction; and <0.1 µg/kg for dredged material liquid fraction) or at concentrations that are not expected to result in adverse ecological impacts… Based on the analytical results of samples taken in the hopper dredge bins, dredged material from (Southwest Pass) is suitable for placement in open water without special management actions.

Regarding the presence of hydrocarbon contaminants in the dredged material deposited by hopper dredges in the Head of Passes HDDA after the 2008 spill, and intended for transfer to permanent beneficial use sites in the Mississippi River Delta, the same report concluded that:

The discharge of dredged material at the (Head of Passes Hopper Dredge Disposal Area) and (Mile 5.5 Below Head of Passes Alternate Disposal Area) does not appear to have resulted in the accumulation of contaminants indicative of #6 Fuel Oil. All detected analytes (for PAHs, >20 µg/kg) were below concentrations associated with adverse impacts to benthic communities… Therefore, special management actions are not warranted for continued use of either disposal area… Mining of the (Head of Passes Hopper Dredge Disposal Area) is not predicted to adversely impact receiving waters within the (Delta National Wildlife Refuge)… All detected analytes in sediment (for PAHs, >20 µg/kg) and elutriate (for PAHs, >1.5 µg/kg) were below concentrations associated with adverse environmental impacts, and therefore additional biological effects-based testing was not warranted. Based on the results of sediment testing and analyses, sediments removed from the (Head of Passes Hopper Dredge Disposal Area) are suitable for discharge into open waters of the (Delta National Wildlife Refuge) without special management actions.

A CEMVN report dated October 28, 2010 entitled "Dredged Material Evaluation of Six Federal Navigation Channels Following the Deepwater Horizon Incident" provides a summary of shoal material evaluations of Federal navigation channels in coastal areas potentially impacted by the *Deepwater Horizon* incident, including Southwest Pass and South Pass of the Mississippi River. The report observed for South Pass that:

PAHs were generally at or below analytical reporting limits (less than 4 µg/kg) for the two inland-most stations, and somewhat more prevalent at the two stations nearest to the jetties but with the sum of detected PAHs not exceeding 121 µg/kg. PAH results were compared to freshwater sediment quality benchmarks reflective of intermediate marsh adjacent to the channel's dredged material disposal areas. All detected PAHs were below applicable (Threshold Effects Level) and (Probable Effects Level) benchmarks.

The report concludes for all channels investigated that:

… navigation channels traversing areas along the Louisiana coast that were impacted by the (Deepwater Horizon) incident do not show any evidence of oil contamination. Analytes indicative of oil contamination were present in shoal material only in trace amounts, and at concentrations that are not expected to adversely impact benthic organisms. Therefore, additional biological effects-based testing is not warranted and special management of dredged material is not required during channel maintenance.

A report prepared by PBS&J (2010) entitled "Mississippi River-Southwest Pass Contaminant Assessment" provides a detailed account of collection and analysis of shoal material taken from Southwest Pass following containment of the *Deepwater Horizon* spill. The report was prepared in support of the EPA-designated ODMDS just west of the Southwest Pass bar channel. Sediment and water from a reference area in East Bay were used as control samples to compare against test results from samples of Southwest Pass shoal material. The following findings from the PBS&J report are relevant to this EA's water and sediment quality assessment:

(a) Dredging "elutriates" were prepared from shoal material and site water collected in Southwest Pass and mixed in a 1:4 ratio representative of dredge material slurry. Two oil-related contaminants (Acenaphthene and Phenanthrene) were observed in one of six channel elutriates, but at concentrations less than 1 µg/l (or about 9 and 175 times lower than their respective water quality screening values). All other oil-related contaminants were below detection limits (0.3 to 1.3 µg/l for PAHs) in the elutriates;

(b) Amphipods and mysid shrimp were exposed to channel shoal material and sediment from East Bay during a 10-day toxicity experiment. Survival in all channel treatments ranged between 92 percent and 96 percent, and was comparable to or exceeded survival in animals exposed to East Bay sediment (90 percent to 95 percent); and

(c) Benthic worms and clams were exposed to channel shoal material and sediment from East Bay during a 28-day bioaccumulation experiment. Oil-related contaminants did not accumulate in the tissue of any of the test animals.

The results of these evaluations indicate that fuel oil from the 2008 barge incident and crude oil from the 2010 *Deepwater Horizon* incident have left only trace quantities of hydrocarbons, if any, in the dredged material removed from the Southwest Pass and South Pass reaches of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana Federal navigation project. Oil-related contaminants were either absent from sample shoal material removed from these reaches for testing or below concentrations associated with adverse environmental impacts. Moreover, direct exposure of sensitive aquatic animals to shoal material from Southwest Pass did not result in significant mortality or the bioaccumulation of oil-related contaminants.

Since the Deepwater Horizon, there have been 30 incidents reported in the Louisiana Gulf of Mexico. These range from a "mystery sheen", to a max 100bbls of oil released and contained.

3.2.9 Air Quality

Existing Conditions

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called "criteria" pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (03) are combined by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air. The Clean Air Act General Conformity Rule (58 FR 63214, November 30, 1993, Final Rule, Determining Conformity of General Federal Actions to

State or Federal Implementation Plans) dictates that a conformity review be performed when a Federal action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS. A conformity assessment would require quantifying the direct and indirect emissions of criteria pollutants caused by the Federal action to determine whether the proposed action conforms to Clean Air Act requirements and any State Implementation Plan (SIP). The primary and secondary standards are presented in Table 5.

The general conformity rule was designed to ensure that Federal actions do not impede local efforts to control air pollution. It is called a conformity rule because Federal agencies are required to demonstrate that their actions "conform with" (i.e., do not undermine) the approved State Implementation Plan (SIP) for their geographic area. The purpose of conformity is to (1) ensure Federal activities do not interfere with the air quality budgets in the SIPs; (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the NAAQS.

Plaquemines Parish is currently in attainment of all National Ambient Air Quality Standards, and operating under attainment status, therefore, a general conformity determination is not necessary. This classification is the result of area-wide air quality modeling studies.

Table 6: Primary and Secondary NAAQS for the Seven Contaminants Established by EPA

National Ambient Air Quality Standards [3][4]				
	Primary Standard		Secondary Standard	
Criteria Pollutant	Concentration Limit	Averaging Time	Concentration Limit	Averaging Time
Carbon monoxide	9 ppmv (10 mg/m^3)	8-hour (1)	None	
	35 ppmv (40 mg/m^3)	1-hour (1)		
Sulfur dioxide	0.03 ppmv (80 µg/m^3)	Annual (arithmetic mean)	0.5 ppmv (1300 µg/m^3)	3-hour (1)
	0.14 ppmv (365 µg/m^3	24-hour (1)		
Nitrogen dioxide	0.053 ppmv (100 µg/m^3)	Annual (arithmetic mean)	Same as primary	
Ozone	0.075 ppmv (150 µg/m^3)	8-hour (2)	Same as primary	
	0.12 ppmv (235 µg/m^3)	1-hour (3)	Same as primary	
Lead	0.15 µg/m^3	Rolling 3-month average	Same as primary	

	1.5 μg/m^3	Quarterly average	Same as primary
Particulate Matter (PM_{10})	150 μg/m^3	24-hour (4)	Same as primary
Particulate Matter ($PM_{2.5}$)	15 μg/m^3	Annual (5) (arithmetic mean)	Same as primary
	35 μg/m^3	24-hour (6)	Same as primary

(1) Not to be exceeded more than once per year.
(2) The 3-year average of the fourth-highest daily maximum 8-hour average at each monitor within the area over each year must not exceed 0.075 ppmv.
(3a) The expected number of days per calendar year with maximum hourly averages above 0.12 ppm must be equal to or less than 1.
(3b) As of June 15, 2007, the U.S. EPA revoked the 1-hour ozone standard in all areas except for certain parts of 10 states.
(4) Not to be exceeded more than once per year on average over 3 years.
(5) The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15 μg/m^3.
(6) The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within the area must not exceed 35.5 μg/m^3.

3.2.10 Cultural Resources

Existing Conditions

The National Historic Preservation Act of 1966 (Public Law 89 80 655), as amended; NEPA of 1969 (Public Law 91-90), as amended; and other applicable laws and regulations require Federal agencies to take into account the effects of their undertaking on the environment and any significant cultural resources within the project area of the proposed undertaking, as well as its area of potential effect (APE). Typically, these studies require archival searches and field surveys to identify any cultural resources. When significant sites are recorded, efforts are made to minimize adverse effects and preserve the site(s) in place. If any significant sites cannot be avoided and would be adversely impacted, an appropriate mitigation plan would be implemented to recover data that would be otherwise lost due to the undertaking.

This area is a part of the Balize Delta formation, and at between approximately 1000 – 500 years old is relatively recent in geologic terms. The HDDA area of the Mississippi River has been previously surveyed for cultural resources (Greene et al. 1984; 22-918), and has seen disturbance by disposal and retrieval processes for many years.

3.2.11 Recreational Resources

Existing Conditions

Recreational features and opportunities varied throughout southeastern Louisiana where habitat and culture have played a significant role in the past diversity of activities. From the games and competitions of Native Americans, to the influence of diverse immigrant cultures, traditional recreation in Louisiana has been a product of its people. Nearly 10,000 years ago, people began living off the ample resources of Louisiana (Rees 2010). The means by which Louisiana's early residents lived, hunting and fishing for food, utilizing high ground for camps, and building vessels for transportation, shaped what is now recognized as traditional recreation in southern Louisiana (Rees 2010). Primary recreational activities in the Project Area have been consumptive in nature,

including fishing and hunting. Saltwater recreational activities have revolved primarily around saltwater fishing and to a lesser degree recreational shrimping and crabbing.

The Project Area is located along the Spanish Pass Ridge, located just west of Venice, Louisiana. Much of the Project Area consists of mainly shallow open water with some eroded marsh. Boating and fishing (mainly saltwater) occur within the proposed Project Area. The value the public places on recreational resources in the Project Area, such as boating, fishing, and hunting, can be directly measured by the large number of fishing and hunting licenses sold in the region, and the large number of recreational boat registrations. (Table 7)

Table 7: Boater Registrations, Fishing/Hunting License Issued in the Region

Parish or County	Fishing License				Hunting License		Boater Registrations
	Resident - Freshwater	Resident - Saltwater	Non-Resident - Freshwater	Non-Resident - Saltwater	Resident	Non-Resident	
Jefferson	40,145	38,650	1,151	1,237	14,244	60	18,627
Lafourche	19,656	18,605	290	298	8,742	25	11,878
Orleans	17,145	16,014	637	638	5,899	49	4,171
Plaquemines	4,605	4,488	228	231	2,304	31	4,649
St. Charles	8,230	7,796	83	82	3,725	11	4,343
East Baton Rouge	35,334	27,562	640	593	19,648	77	16,145
Iberville	4,967	3,453	78	52	3,445	8	3,320
Ascension	17,830	14,939	239	215	9,142	30	8,530
St. James	3,852	3,405	36	29	2,221	5	2,135
St. John the Baptist	5,291	4,926	92	92	2,443	4	2,269
Total	157,055	139,838	3,474	3,467	71,813	300	76,067

Source: LDWF 2015

Hurricane damage and subsidence have formed large open water areas along where the ridge historically was located within the eroded marsh complex. Currently, restorations efforts are underway in the vicinity of the project area, mainly east of the project site. Dredged materials from the normal Operation and Maintenance dredging of the Hopper Dredge Disposal Area (HDDA) are placed in the Delta National Wildlife Refuge, (DNWR), the Pass a Loutre Wildlife Management Area (PALWMA), and the open waters of West Bay. Approximately 64,000 acres of existing disposal site area is located within the Pass a Loutre WMA, about 8,500 acres of existing disposal site area is located within the DNWR and approximately 143,000 acres of marsh have been used in Southwest Pass as disposal receiving areas.

The PALWMA, owned by the Louisiana Department of Wildlife and Fisheries is located in southern Plaquemines Parish, Louisiana, at the mouth of the Mississippi River approximately 10 miles south of Venice and is accessible only by boat. Approximately 115,000 acres in size, this WMA is characterized by river channels, channel banks, bayous, man-made canals, and intermediate and freshwater marshes. Hurricane damage and subsidence have formed large ponds within the marsh complex.

The DNWR established in 1935 and located on the east side of the Mississippi River in Plaquemines Parish 10 miles south of Venice, Louisiana, is contiguous with the Pass-a-Loutre WMA. The DNWR serves as a breeding ground for migratory birds and other wildlife, and as a migratory waterfowl refuge. The refuge lands are accessible only by boat. Despite this limitation, the area has a long record of public use. The majority of this public use has been in the form of consumptive uses such as hunting and fishing (fresh and saltwater). Other public use includes wildlife observation, bird watching, boating, canoeing and kayaking, and photography. Camping is not allowed on the refuge.

Table 8: Recreational Features in the Vicinity of the Project Area

Recreational Area	Location	Land Management Agency	Size (acres)	Key Recreational Features
Delta NWR	Plaquemines Parish, LA	USFWS	49,000	• Boat access only • Hunting and fishing
Pass-a-Loutre WMA	Plaquemines Parish, LA	LDWF	115,000	• Boat access only • Hunting and fishing

Similar recreational activities take place at the proposed Project Area as takes place in the management areas and refuges, mainly fishing and hunting. The nearest public boat launches are in Venice, LA.

3.2.12 Visual Resources (Aesthetics)

Existing Conditions

The Project Area is located on the southern tip of the State of Louisiana as a small piece of the massive Mississippi River Delta Complex. The area is devoid of any type of development save some industrial complexes, ship harbors and marinas located in the vicinity of Venice. The Venice area's economy primarily depends on mineral extraction industries. Visually, the Project's surrounding area exhibits extensive land modifications for use by the oil and gas industry including harbors and other maritime related infrastructure. Additionally, the marsh southwest of Venice exhibits a dense network of canals for drilling rig access and pipelines.

The primary view-shed to the Project Area is from Highway 23, which provides regional vehicular access. Other thoroughfares in the area include those in and around Venice, but they also offer no view sheds into the immediate Project Area, and are limited in size to local streets only. The area remains relatively natural and scenic and is a haven for recreational opportunities such as fishing and nature observation, especially in the numerous canals and other natural waterways that traverse through the marshes in the area. View sheds to the Project Area are offered only from Spanish Pass and its surrounding waterways.

4 ENVIRONMENTAL CONSEQUENCES

4.1 Navigation

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to navigation would be the same as those presented in EA #542. Hydraulic cutterhead dredges and disposal pipelines may cause minor and temporary interference of navigation by blocking sections of the channel, but are not expected to interfere

significantly with shipping traffic. Portions of the proposed disposal areas may become inaccessible to some watercraft as wetland vegetation eventually colonizes the area; however, the shallow nature of the area currently limits most vessel access.

Future Conditions with the Proposed Action

There would be direct impacts to navigation associated with the transportation of dredge material to the Project Area similar to those previously identified in EA #542. Instead of using the location on the Mississippi River identified in EA #542, which is outside of the navigation channel, the material would be removed from the hopper barges by an unloader placed at a private marina at the end of Haliburton Road. From there it would be transported via dredge material discharge pipeline to the fill placement area. Once the slurry line reaches shore from the unloader, it would travel along and under Jump Basin Road to open water. The dredge material discharge pipeline would continue through existing open water to its terminus at the Project Area.

4.2 Wetlands

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to wetlands, both beneficial and adverse would be the same as those presented in EA #542. Direct placement of dredged material within open water which includes intermittent patches of existing intermediate marsh for the Project would impact approximately 17.08 acres of existing marsh in the full footprint and 1.09 acres of marsh in the access right of way. With implementation of the approved action, there would be an overall positive impact to wetlands in the Project Area. Approximately 55 acres of marsh (25.2 AAHUs) would be created in existing shallow open water.

Future Conditions with the Proposed Action

There would be an additional 75.84 acres of impact (52.88 AAHUs) to open water and intermediate marsh associated with the proposed changes to the BUDMAT Ridge Restoration and Marsh Creation project than what were previously addressed in EA #542. While CEMVN anticipates using existing corridors to access the proposed disposal site, direct placement of dredged material for the proposed Project would impact approximately 18.7 additional acres of existing marsh and 57.14 additional acres of open water in the expanded footprint. Open water intermingled with patches of intermediate marsh would be directly impacted as a result of the construction of perimeter dikes for the marsh platform (22.5 acres), the excavation of borrow pits to provide material for the dikes (43.5 acres), the borrow area stability berms (7.85 acres), staging area (.13 acres) and the jack and bore at Tide Water Road (.46 acres).

With implementation of the proposed changes to the previously approved action, there would be an overall positive impact as an additional 73.85 acres of wetlands (17.88 AAHUs) is created in the Project Area for a total of 155 acres of marsh created. The proposed action would offer some wave impact reduction for the marsh and SAV habitats to the north. Newly created marsh would provide additional foraging, breeding, nesting, and nursery areas, as well as refugia for a multitude of estuarine-dependent and commercially important fish and shellfish, migratory waterfowl, wildlife, and several species of wading, diving, and shore birds, and help to offset the substantial wetlands loss currently taking place in this portion of the Mississippi Deltaic Plain. Thus, positive direct and indirect impacts to wetlands and wetland-related resources would be expected with implementation of the proposed action. Overall, the proposed expansion would result in positive direct and indirect impacts from the conversion of shallow, open water to marsh area.

Any borrow obtained within the ridge and marsh platform footprint would be backfilled during the placement of dredged material. Material obtained from borrow locations outside of the ridge and marsh platform locations would not be backfilled and would instead be allowed to refill naturally over time.

The action would result in a larger amount of fill material being discharged into waters of the U.S., therefore, under authority delegated from the Secretary of the Army and in accordance with Section 404 of the Clean Water Act of 1977, a 404(b)(1) evaluation has been prepared for the newly proposed Project expansions. (Appendix C)

4.3 Scrub-Shrub

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to scrub-shrub would be the same as those presented in EA #542. Approximately 23 acres would be impacted by the ridge restoration, along with 58 acres for the marsh creation platform. Some positive indirect impacts to fisheries are also expected. Creation of new marsh and SAV habitat would provide highly productive fisheries habitat, increase detrital food material, and likely contribute to overall increased fisheries productivity.

Future Conditions with the Proposed Action

It is anticipated that the 55 acres (25.2 AAHUs) of created marsh platform and the 23 acres (9.79 AAHUs) of restored ridge would naturally colonize with flood and salt-tolerant scrub-shrub vegetation along the higher elevations. The scrub shrub vegetation would provide both nesting habitat for mottled ducks and stopover habitat for neotropical migratory songbirds, and would provide new habitat for other birds, mammals, and wildlife that use this habitat type for nesting, foraging, and refugia.

The restored ridge is anticipated to help to reduce erosion of existing wetlands habitat that are susceptible to subsidence, sea level rise, and tropical storm surge.

4.4 Aquatic Resources/Fisheries

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to aquatic resources/fisheries would be the same as those presented in EA #542. Some minimal direct and indirect effects to aquatic/fisheries resources in the form of altered open water bottom habitat. Approximately 23 acres would be impacted by the ridge restoration, along with 58 acres for the marsh platform. Some positive indirect impacts to fisheries are also expected. Creation of new marsh and SAV habitat would provide highly productive fisheries habitat, increase detrital food material, and likely contribute to overall increased fisheries productivity.

Future Conditions with the Proposed Action

Direct and indirect impacts to aquatic/fisheries resources would be greater than those previously addressed in EA #542, which addressed 78 acres of impact to this resource. Construction of perimeter dikes for the marsh platform (22.5 acres), the excavation of borrow pits to provide material for the dikes (43.5 acres), the borrow area stability berms (7.85 acres), staging area (.13

acres) and the jack and bore at Tide Water Road (.46 acres) would cause 77 additional acres of direct and indirect impacts to aquatic/fisheries resources for a total of 155 acres of impact.

Some positive indirect impacts to fisheries are also expected. Creation of new marsh and SAV habitat would provide highly productive fisheries habitat, increase detrital food material, and likely contribute to overall increased fisheries productivity through the creation of approximately 54 AAHUs of habitat.

Brown shrimp, white shrimp, and crabs may be directly impacted through the filling of shallow open water areas with dredged materials; however, these species would indirectly benefit from the abundance of introduced detritus, and subsequent food resources, from these materials. Sessile or slow moving benthic organisms may be smothered in areas where dredged material is deposited for marsh and ridge restoration. Sediment particles that become suspended due to disposal activities may impact filter-feeding benthic invertebrates by fouling feeding apparatus if the concentration of such particles is excessively high. Clams and oysters, in particular, may experience a reduction in pumping rates with increased turbidity (Loosanoff 1961).

Since the Project Area is a naturally turbid environment and the majority of resident finfish and shellfish species are generally adapted to, and very tolerant of, high suspended sediment concentrations, the effects of turbidity and suspended solids on fisheries would likely be negligible, even with the increased footprint.

4.5 Essential Fish Habitat

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to EFH would be the same as those presented in EA #542. Approximately 81 acres of shallow open water bottom and associated EFH habitat (e.g., mud/sand substrates, SAV) would be impacted by the placement of dredged material in the areas of marsh creation and ridge restoration.

Future Conditions with the Proposed Action

With implementation of the proposed action, initially some EFH for brown shrimp, white shrimp, and red drum would be directly impacted during the beneficial use-placement of dredged material for wetlands development in the shallow open waters of the proposed disposal areas. Approximately 77 additional acres of shallow open water bottom and associated EFH habitat (e.g., mud/sand substrates, SAV) would be impacted by the placement of dredged material and associated construction activities identified in the proposed areas for the ridge restoration and creation of marsh. However, as the site would be converted to a generally more productive category of EFH, they may eventually become colonized by emergent vegetation. Thus, the proposed action would provide mainly positive indirect impacts to EFH, and any direct or temporary adverse impacts would be sufficiently offset by the net benefits from the creation of marsh, new shallow open water habitat, and associated EFH.

Additional, short term EFH impacts would include a temporary and localized increase in estuarine water column turbidity during the placement of dredged material in shallow open water areas; however, the Project Area is a naturally turbid environment and increased turbidity is not expected to significantly affect EFH needs within the Project Area.

4.6 Wildlife

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to wildlife would be the same as those presented in EA #542. Construction activities in the area could displace local wildlife, migratory waterfowl and other avian species, however these impacts are expected to be temporary and wildlife is likely to return upon completion of construction.

Future Conditions with the Proposed Action

Minimal and temporary adverse direct and indirect impacts to wildlife would be anticipated. While construction activities are expected to mainly occur over open water, there is the potential for noise or wave action generated by construction activities to displace terrestrial wildlife in the area; however this would be a temporary disturbance, with wildlife likely to return following the completion of disposal activities. Migratory waterfowl and other avian species would be temporarily displaced from the Project Area. It is anticipated that wildlife populations would move to existing adjacent habitat areas during construction activities. The placement of dredge material for beneficial use would reduce some shallow open water habitat by converting it to marsh and ridge habitat, thereby reducing available foraging habitat for some avian species but creating nesting and resting habitat for other species. However, the reduction in the amount of shallow open water is negligible compared to that remaining in the Project Area. Portions of the proposed Project Area may contain habitats commonly inhabited by colonial nesting wading birds and seabirds.

It is anticipated that wildlife in and near the Project Area would ultimately benefit from the proposed activities as submerged and emergent vegetation colonizing these areas would provide valuable and diverse habitat for foraging, refugia, nesting, and loafing of terrestrial wildlife, migratory waterfowl, and other avian species.

4.7 Threatened and Endangered Species

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to T&E would be the same as those presented in EA #542. The presence of T&E in the Project Area is unlikely and therefore the previously approved action is “not likely to adversely affect” T&E or their critical habitat.

Future Conditions with the Proposed Action

Although threatened or endangered species may occur within the general Project vicinity, their presence within the Project Area is highly unlikely. The proposed Project Area does not contain critical habitat for Federally-listed species, and the open water areas surrounding the Project Area would allow them to easily avoid the project activities. Therefore, the proposed action would not result in adverse direct or indirect impacts to (i.e., “not likely to adversely affect”) Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS. Additionally, CEMVN has concluded that no critical habitat for any threatened, endangered, or candidate species under the purview of NMFS has been designated within the project area, and that there would be no adverse impacts (i.e., “no effect”) to any of the NMFS Federally-listed species that could potentially occur within the Project Area.

Pallid and Gulf sturgeon are unlikely to occur in the Project Area and it is extremely unlikely that manatees would be found in the Project Area or in the surrounding shallow open waters; however, if manatees are observed within 100 yards of the "active work zone" during proposed construction/dredging activities, (e.g., no operation of moving equipment within 50 feet of a manatee; all vessels should operate at no wake/idle speeds within 100 yards of work area; siltation barriers, if used, should be re-secured and monitored; report manatee sightings or collisions), the appropriate special operating conditions, as provided by the USFWS, Lafayette, Louisiana Field Office, would be implemented and would be included in any plans and specifications developed prior to dredging and disposal activities.

Although pallid sturgeons are unlikely to occur in the Project Area, the USFWS recently provided the following recommendations in the draft CAR dated October 18, 2016. These are not requirements, but their implementation may further reduce the unlikely chance of encountering pallid sturgeons or other fish species while conducting dredging activities.

1. To the extent possible, schedule dredging activities in the Project Area during low flow periods, when salt water occurs on the channel bottom further upriver than during normal or high river flows.
2. The cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increased.
3. During dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.
4. If hopper dredges are utilized, explore the feasibility of using a rigid sea turtle deflector, which is designed to protect sea turtles by preventing them from entering the draghead, and evaluate the effectiveness of that device for pallid sturgeon and other fish species.

The proposed Project Area is outside those portions of Louisiana designated as critical habitat for Gulf sturgeon. However, if practicable the USFWS, encourages the adherence to the above recommendations to reduce the unlikely chance of encountering Gulf sturgeon while conducting dredging activities.

Piping plovers and rufa red knots could occur along the shoreline and in the intertidal and shallow waters near the Project Area during winter migration, but are not permanent residents of the area. Construction activities may cause piping plover and red knots in the vicinity to be temporarily displaced to nearby areas containing foraging and loafing habitat. During placement of dredged material into the proposed disposal areas, piping plovers and red knots may be temporarily displaced to other areas for foraging and loafing; however, this is not considered to be detrimental due to an abundance of similar habitat in the vicinity of the Project Area.

To minimize disturbance to colonial nesting wading birds and seabirds occurring in the area, special operating conditions on construction activity provided by the USFWS, Lafayette, Louisiana Field Office would be included in any CEMVN plans and specifications developed prior to dredging and disposal activities associated with the proposed action.. These restrictions address colonial nesting wading birds and seabirds (i.e., reporting presence of birds and/or nests; no-work distance restrictions; bird nesting prevention and avoidance measures; marking discovered nests). In addition, dredging and disposal activities would be restricted to non-nesting periods for colonial nesting wading birds and seabirds when practicable.

1. For colonies containing nesting brown pelicans, all activity occurring within 2,000 feet of a rookery should be restricted to the non-nesting period (i .e., September 15 through March 31). Nesting periods vary considerably among Louisiana's brown pelican colonies, however, so it is possible that this activity window could be altered based upon the dynamics of the individual colony. Brown pelicans are known to nest on barrier islands and other coastal islands in St. Bernard, Plaquemines, Jefferson, Lafourche, and Terrebonne Parishes, and on Rabbit Island in lower Calcasieu Lake, in Cameron Parish.

2. For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present).

3. For colonies containing nesting gulls, terns, and/or black skimmers, all activity occurring within 650 feet of a rookery should be restricted to the non-nesting period (i.e., September 16 through April 1, exact dates may vary within this window depending on species present).

During in-water work in areas that potentially support manatees, all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). USFWS recommends the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.

- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least *8*" X 11" reading language similar to the following: "CAUTION BOATERS: MANA TEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR

FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8" X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

- Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

In addition, USFWS recommends that on-site contract personnel be trained to identify colonial nesting birds and their nests, and avoid affecting them during the breeding season (i.e., the time period outside the activity window).

4.8 Water and Sediment Quality

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to water and sediment quality would be the same as those presented in EA #542.

Future Conditions with the Proposed Action

Throughout the course of construction, there would be some disturbances to ambient water quality; however, direct and indirect impacts would be short-lived and highly localized. Beneficial use-placement of dredge material in the open water disposal site may cause temporary increases in turbidity and suspended solids concentrations, and a reduction in light penetration in the immediate vicinity; however, since the Project Area is a naturally turbid environment and resident biota are generally adapted to, and very tolerant of, high suspended sediment concentrations, the effects would be negligible. A reduction in light penetration may indirectly affect phytoplankton (i.e., primary) productivity in the area as the amount of photosynthesis carried out by phytoplankton is reduced. Localized temporary pH changes, as well as a reduction in dissolved oxygen levels, may also occur during construction efforts. Water quality is expected to return to pre-construction conditions soon after the completion of disposal activities associated with construction.

Based on the results of shoal material analyses following the 2008 fuel oil spill at New Orleans and the 2010 *Deepwater Horizon* incident, CEMVN determined there is no reason to believe that the Southwest Pass and South Pass reaches of the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana navigation channel were adversely impacted by the spills. The beneficial placement of shoal material from South Pass and Southwest Pass in open water sites would not pose an ecological risk from hydrocarbon contamination because any hydrocarbons in the dredged material have been measured at a concentration “at or below analytical reporting limits” and may pre-date the 2008 and 2010 spills. In short, no significant environmental risk of hydrocarbon pollution is believed to exist with regard to use of the dredged material identified for placement within the Project Area. Consequently, no special management would be required during dredging or disposal activities. In the wake of the *Deepwater Horizon* oil spill, CEMVN continues to closely monitor aerial reconnaissance surveys, shoreline assessment reports,

drogue tracks, and other oil plume tracking and contaminant information available from the National Ocean Service, Office of Response and Restoration, ResponseLINK website (https://responselink.orr.noaa.gov/).

The open water placement of dredged material for beneficial use, which is not expected to have any adverse effect on water quality of the receiving site, would be evaluated as part of the Section 404(b)(1) Evaluation. To comply with Section 401 of the Clean Water Act, an application for Water Quality Certification was filed with the LDEQ on September 9, 2016. In a letter dated October 13, 2016, LDEQ concluded the discharge of dredged material would not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ issued US Army Corps of Engineers, New Orleans District - Spanish Pass Ridge Restoration Project Water Quality Certification, WQC 151210-02. A copy of the updated Water Quality Certificate may be found in Appendix D of this document.

4.9 Air Quality

Future Conditions with No-Action

Under the no action alternative, the approved Project in EA #542 would be constructed as previously discussed and impacts to air quality would be the same as those presented in EA #542.

Future Conditions with the Proposed Action

Plaquemines Parish is currently in attainment of all National Ambient Air Quality Standards and direct and indirect impacts to ambient air quality as a result of the proposed action are expected to be temporary, and primarily due to the emissions of construction equipment. Due to the short duration of the Project, any increases or impacts to ambient air quality are expected to be short-term and minor and are not expected to cause or contribute to a violation of Federal or State ambient air quality standards. Once all construction activities associated with construction cease, air quality within the vicinity is expected to return to pre-construction conditions. Plaquemines Parish would remain in attainment of all NAAQS.

4.10 Cultural Resources

Future Conditions with No Action

With the no action alternative, the selected plan coordinated in EA #542 would occur. To comply with Section 106 of the National Historic Preservation Act (NHPA), these actions were coordinated and determined to have no effect to historic properties. Consultation with the Louisiana State Historic Preservation Officer (SHPO) was initiated on May 8, 2015. Concurrence from the SHPO was received on May 20, 2015.

Future Conditions with the Proposed Action

The proposed action would add 75.84 acres (52.88 AAHUs) to the footprint for construction of ridge restoration and marsh creation platform. Of this amount, approximately 13.95 acres of open water and 8.55 acres of existing intermediate marsh would be impacted for borrow for perimeter dike construction, 36.7 acres of open water and 6.8 acres of marsh would be impacted for borrow, and 6.49 acres of open water and 3.35 acres of intermediate marsh would be impacted for the stability berm, dredge transportation, the staging area and the jack and bore at Tide Water Road. Preparation to transport dredge material from the HDDA across existing land and into the delivery area, would be undertaken according to best methods that may now include placement of a

dredge material discharge pipeline, placement of a staging area, and use of jack and bore to place a 42 inch pipeline casing under Tide Water Road. These additions fall within the same natural and cultural environment previously coordinated for no historic properties. There are no recorded cultural resources within the Project Area, therefore it is expected that the proposed action will not affect historic properties.

4.11 Recreational Resources

Future Conditions with No-Action

Should the previously approved plan be implemented, the conditions within the recreational environment would improve because the current EA #542 would be constructed. Ridge restoration would occur as well as construction of the marsh platform in the Project Area, impacting 45 acres of open water and 33 acres of intermediate marsh and creating 35 AAHUs of habitat. Perimeter dikes for the marsh platform would not be built or would be constructed from the dredged material coming from the HDDA. Direct impacts to recreational resources would be temporary and include the displacement of fish species and fisherman during construction and placement of dredge material. The Project Area would be unavailable for use for boating and fishing; however, an increase in habitat value is expected as the disposal area would accept the dredge material in its highly turbid form and in time, become continuous, not-turbid, brackish marsh.

During and immediately after construction there would be a decrease in the quality of habitat, and wildlife and fishery species associated with recreational opportunities would be displaced; however, the area would reestablish emergent wetland vegetation. Therefore, these adverse impacts would be temporary and localized. Adverse direct impacts would be offset by the creation of intermediate marsh that would contribute to restoring the base of organisms used for recreational activities such as fishing, bird watching and hunting. Following construction, the Project Area would again be available for recreation activities. The creation of marsh would provide an increase in fish and wildlife habitat including nesting habitat for waterfowl and nursery habitat for fish. Consumptive recreation use would likely increase as a result of an increase in quality and quantity of fish and wildlife habitat. Bird watching opportunities are also expected to increase as a result of improved habitat for neo-tropical migratory songbirds. Creating wetlands and reducing land loss rates for the Project Area may protect nearby recreational infrastructure, such as boat launches in Venice, LA.

Restoration of 5,000 feet of Spanish Pass ridge would provide stabilization and potentially additional habitat for deer, small game, and birds, which would be beneficial for hunting and bird watching. Restored ridges would also enhance protection available to adjacent swamps and marshes during coastal storms, which would also potentially benefit recreational resources.

Dredge material discharge pipelines placed for transport of material into the Project footprint will have minimal effect on recreational resources. Boating should not be affected by the temporary placement of dredge material discharge pipelines to transport dredge material to the Project Area.

The cumulative impacts of other ongoing and planned measures such as beneficial use of dredge material in the DNWR and PAWMA and other ecosystem projects have temporary impacts on recreational fishing and hunting in the area. These and other environmental restoration projects underway, such as the mitigation requirements for the effects of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) construction, are expected to be beneficial and increase recreation opportunities as the risk of destruction of recreation resources by storm surge is reduced and habitat areas supporting fish and wildlife resources are enhanced.

Future Conditions with the Proposed Action

Much of the recreation impacts associated with the proposed Project are related to the placement of dredge material and would be similar to the impacts discussed under the No Action Alternative. One substantial difference between the two alternatives, in terms of recreational impacts, is that the proposed action includes the construction of earthen dikes to facilitate construction of the ridge and marsh platforms and maximize retention of the dredged material, as well as to prevent the material from entering adjacent lands, waterways, and pipeline rights-of-way. An additional 43.5 acres of open water that is intermingled with existing intermediate marsh would be impacted for the acquisition of borrow for dike construction. Borrow needed for dike construction and obtained within the ridge and marsh platform footprint would be backfilled during the placement of dredged material. Material obtained from borrow locations outside of the ridge and marsh platform locations for dike construction would not be backfilled and would instead be allowed to refill naturally over time. Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these perimeter dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors. Temporary impacts to recreational resources will occur during the excavation of borrow for dike construction and for a period thereafter until the Project Area settles over time.

Much of the receiving area that would be converted to land/marsh consists of mainly shallow open water with some eroded marsh. Less water would be available for boating and fishing; however, an increase in habitat value is expected as the disposal area would accept the dredge material in its highly turbid form and in time, become continuous, not-turbid, brackish marsh. The creation of marsh would provide an increase in fish and wildlife habitat including nesting habitat for water fowl and nursery habitat for fish. Consumptive recreation use would likely increase as a result of an increase in quality and quantity of fish and wildlife habitat. Bird watching opportunities are also expected to increase as a result of improved habitat for neo-tropical migratory songbirds.

Overall, the cumulative impacts of the proposed action in addition to other reasonably foreseeable and ongoing federal and state civil works projects are expected to be positive, with long-term benefits tor recreational opportunities anticipated in the Project Area. A vast majority of the HSDRRS around the New Orleans area is completed and much of the impacts on recreation, however minimal, were temporary and conditions have returned to normal around most of the project levee sites. Disposal projects, in general, tend to have positive long term impacts on recreational opportunities as they, over time, provide nesting habitat for water fowl and nursery habitat for fish. Other civil work projects, such as the Southeast Louisiana Flood Control Project, which is on-going, has had temporary impacts on recreation, mostly cycling, as several main roads are unavailable during construction.

4.12 Visual Resources (Aesthetics)

Future Conditions with No-Action

Under the no action alternative, the visual resources of the Project corridor would be directly impacted by construction and equipment transportation activities related to implementing the action approved in EA #542. However, this impact would be temporary and would most likely affect visual resources from boating and other water traffic only. The Project Area would evolve based on federal, state or local operation and maintenance practices.

Future Conditions with the Proposed Action

Under the proposed action alternative, impacts to visual resources would be similar to the no action alternative. Visual impacts would be temporary and noted from boating and other water traffic only as the Project Area including the construction right of way is remote and visually inaccessible from Hwy 23.

4.13 Cumulative Impacts Analysis

The Council on Environmental Quality (CEQ) Regulations define cumulative impacts (CI) as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. CI can result from individually minor but collectively significant actions taking place over a period of time."

Coastal Louisiana, including the Project Area, has been greatly impacted by natural subsidence, levees, hurricanes and oil and gas infrastructure. Recent events, such as hurricanes and oil spills, contribute to the loss of habitat but are largely indiscernible from other impacts. Direct and indirect impacts of past, present and reasonably foreseeable future events were considered in the analysis of the proposed Project consequences. These impacts include historical and predicted future land loss rates for the area and other restoration projects in the vicinity. The proposed action would have reversible temporary adverse impacts to some environmental resources, but overall cumulative moderate benefits to the environmental resources.

It is anticipated that through the efforts taken to avoid wetlands impacts and the beneficial use of dredged material that functionally compensates unavoidable remaining impacts, the proposed Plan would not result in overall adverse direct, secondary, or cumulative impacts to the aquatic environment and human environment in or near the Project Area. Overall, the cumulative impacts of the proposed action are expected to be positive, with long-term benefits to navigation, wetlands, EFH, fisheries and wildlife resources, and recreational opportunities anticipated in the Project Area. Construction of the ridge restoration and marsh creation project, with the proposed changes, would create an estimated 23 acres of forested ridge and 74 acres of intermediate marsh over the 50 year period of analysis for a net total 52.90 AAHUs, an increase of 19 acres of intermediate marsh and 17.90 AAHUs over the previously approved plan alone. When added to the previously constructed beneficial use (West Bay) and CWPRRA projects in the area, it is estimated that in 20 years the area could benefit from the creation of approximately 3,873 acres of marsh and an approximate 790 acres of SAV habitat.

Project impacts would be in addition to, and often synergistic with, the impacts and benefits from marsh acres restored, nourished and protected by other Federal, state, local, and private restoration efforts within or near the Project Area, the Louisiana state coastal area, and the nation's coastal areas.

Though CWPPRA projects are nominated and implemented one at a time and must have individual merit, the cumulative value of the wetland restoration and protection projects in the area can exceed the summed values of the individual projects. Similar wetland restoration projects in the area would operate synergistically with the proposed alternative to enhance the structural and functional integrity of the ecosystem, improve primary productivity rates, and thereby improve the overall environmental resources. The nearest projects for restoration listed by the state database involve shoreline protection, marsh management, and hydrological restoration: Grand Liard Marsh and Ridge Restoration (13.80 miles away, status completed), Riverine sand

Mining/Scofield Island Restoration (20.40 miles away, status completed), Barrier Island/Headland Restoration (25.16 miles away, status completed), West Bay Marsh Creation (11.83 miles away, status completed).

Environmental benefits from these project types address the suite of environmental threats along this area of coast. In recognition that the environmental needs are varied in type and differ by location, the state of Louisiana developed a 2012 Coastal Master Plan for Southwest Louisiana as a way to prioritize restoration projects. The proposed plan is consistent with this coastwide planning.

Physical cumulative impacts are related to mining dredge materials. The effect of borrowing from offshore sources has been evaluated and determined to have no adverse impact. Cumulative impacts would result from the removal of benthic organisms. There is no difference in the cumulative and direct/indirect impacts for this Project. Offshore borrow sites disruptions from the proposed and other past, current and future activities are separated by time and space, thus allowing the recolonization of benthic organisms. Separation of time and space also reduce any potential cumulative impact with other actions for wave climate. Therefore, no adverse cumulative impacts are expected.

5 Mitigation

An assessment of the potential environmental impacts to important resources found that the approved project and the proposed changes would have only minimal and insignificant impacts to resources in the Project Area. These impacts would be mainly related to the loss of shallow open water bottom habitat and associated fisheries resources (approximately 102.14 acres of open water and 51.7 acres of intermediate marsh) for the ridge construction, marsh platform creation, access right of way, jack and bore location and staging area due to construction activities as part of the proposed action. However, this would be offset by the 87.88 AAHUs of habitat created through the construction process. The presence of comparable habitat within the Project vicinity minimizes the loss of shallow open water bottom habitats due to the proposed changes. Furthermore, any losses of fisheries resources related to the removal of shallow open water bottom by placement of dredged material are out-weighed by the considerable fisheries benefits anticipated from the beneficial use of material dredged from the Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project navigation channel, which would create approximately 74 acres productive marsh, marsh-related EFH (e.g., marsh edge, inner marsh, tidal creeks, marsh/water interface, etc.), and other aquatic habitat in the surrounding waters. With the creation of marsh and other productive habitat types in the proposed disposal areas, the long-term and cumulative impacts of the placement of dredged material are generally beneficial. Beneficial utilization of the dredged material for marsh creation would result in overall positive environmental benefits including a net increase of valuable breeding, nesting, foraging, and cover habitat utilized by a wide variety of fish and wildlife species. Therefore, no wetlands mitigation is required.

Coordination and Public Involvement

A Public Notice for EA #542.A was published in the Baton Rouge and New Orleans Advocate for 30 days beginning December 5, 2016 and ending January 3, 2017.

Preparation of this SEA and FONSI was coordinated with appropriate Congressional, Federal, Tribal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, received copies of the draft SEA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
U.S. Coast Guard Sector New Orleans
U.S. Coast Guard Marine Safety Unit Baton Rouge
Maritime Navigation Safety Association
The Associated Branch (Bar) Pilots
Crescent River Port Pilots Association
New Orleans Baton Rouge Steamship Pilot Association
Associated Federal Pilots
Big River Coalition
Lower Mississippi River Committee (LOMRC)
Coastal Protection and Restoration Authority Board of Louisiana
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer
Plaquemines Parish Government
Alabama-Coushatta Tribe of Texas
Caddo Nation of Oklahoma
Chitimacha Tribe of Louisiana
Choctaw Nation of Oklahoma
Coushatta Tribe of Louisiana
Mississippi Band of Choctaw Indians
Jena Band of Choctaw Indians
Seminole Tribe of Florida
Seminole Nation of Oklahoma
Tunica-Biloxi Tribe of Louisiana

6 Compliance with Environmental Laws and Regulations

There are many Federal and state laws pertaining to the enhancement, management and protection of the environment. Federal projects must comply with environmental laws, regulations, policies, rules and guidance. Compliance with laws will be accomplished upon 30-day public and agency review of this SEA #542.A and associated Finding of No Significant Impact.

Clean Air Act of 1972

The Clean Air Act ("CAA") sets goals and standards for the quality and purity of air. It requires the Environmental Protection Agency to set National Ambient Air Quality Standards ("NAAQS") for pollutants considered harmful to public health and the environment. The Project Area is in Plaquemines Parish, which is currently in attainment of NAAQS. The Louisiana Department of Environmental Quality is not required by the CAA and Louisiana Administrative Code, Title 33 to grant a general conformity determination.

Clean Water Act of 1972 – Section 401 and Section 404

The Clean Water Act ("CWA") sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification from the Louisiana Department of

Environmental Quality (LDEQ) that a proposed project does not violate established effluent limitations and water quality standards. State Water Quality Certification (WQC 151210-02) was issued on October 13, 2016 to for the proposed modifications to the Tiger Pass Ridge Restoration and Marsh Creation project.

As required by Section 404(b)(1) of the Clean Water Act (CWA), an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this Project has been completed. Section 404(b)(1) public notice was mailed out for public review comment period beginning December 5, 2016 and ending January 3, 2017. No comments were received during this time period and the Section 404(b)(1) was signed on January 6, 2017.

Coastal Zone Management Act of 1972

The Coastal Zone Management Act ("CZMA") requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination was prepared for the proposed Project and was coordinated with the Louisiana Department of Natural Resources (LADNR) in a letter dated September 9, 2016. LADNR concurred by letter dated October 13, 2016 with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; Consistency (C20150185, mod 2). (Appendix D)

Endangered Species Act of 1973

The Endangered Species Act ("ESA") is designed to protect and recover threatened and endangered ("T&E") species of fish, wildlife and plants. The USFWS identified in their coordination letter, five T&E species, the Pallid sturgeon, West Indian manatee, piping plover, red knot, and American alligator that are known to occur or believed to occur within the vicinity of the Project area. No plants were identified as being threatened or endangered in the Project Area. CEMVN initiated coordination with the USFWS on September 19, 2016. In their letter dated September 28, 2016, the USFWS stated that "the project, as proposed, is not likely to adversely affect" Federally-listed threatened or endangered species, or their critical habitat, under the jurisdiction of USFWS. This fulfills the requirements under Section 7(a)(2) of the Endangered Species Act. (Appendix D)

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act ("FWCA") provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It requires Federal agencies that construct, license or permit water resource development projects to first consult with the USFWS, NMFS and state resource agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Section 2(b) requires the USFWS to produce a Coordination Act Report ("FWCAR") that details existing fish and wildlife resources in a project area, potential impacts due to a proposed project and recommendations for a project. The USFWS reviewed the proposed changes to the previously approved ridge restoration and marsh creation project described in EA 542 and provided a draft FWCAR with project specific recommendations on October 18, 2016, and Final CAR dated January 5, 2017.

The Final CAR can be found in Appendix D and CEMVN's responses to the USFWS recommendations are as follows:

1. Avoid adverse impacts to water bird colonies through careful design project features and timing of construction. We recommend that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season. For areas containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a nesting colony should be restricted to the non-nesting period. For nesting brown pelicans activity should be avoided within 2,000 feet of the colony. Activity is restricted within 650 feet of black skimmers, gulls, and terns.

   Response 1 - Concur. Bird abatement procedures would be implemented to prevent wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants from nesting during their nesting period. In the event that implementation of the bird abatement plan is not successful and nesting does occur, all activity occurring within 1,000 feet of a nesting colony would be restricted to the non-nesting period. For nesting brown pelicans activity should be avoided within 2,000 feet of the colony. Activity would be restricted within 650 feet of nesting black skimmers, gulls, and terns.

2. The impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if the project complies with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Magnuson-Stevens Act; P.L. 104-297, as amended) and its implementing regulations.

   Response 2 - Concur. The NMFS is a part of the PDT. The NMFS received a copy of this EA during the public comment period and in a response letter dated January 4, 2017, the agency stated “the NMFS concurs with the determination that project implementation would result in a net positive benefit to EFH supportive of federally managed fishery species.” This concludes coordination with the NMFS.

3. Access corridors across existing wetlands should be avoided if possible. Impacted wetlands should be restored to a substrate elevation similar to the surrounding marsh. Flotation access channels in open water should be backfilled upon project completion. Post-construction surveys (e.g., centerline surveys) should be taken to ensure access channels have been adequately backfilled. That information should be provided to the natural resource agencies for review.

   Response 3 - Concur. Access corridors across existing wetlands will be avoided if possible. If existing wetlands are impacted they would be restored to pre-project elevation and expected to re-vegetate naturally. If needed, at CEMVN’s discretion, post-construction surveys would be taken and provided to the natural resource agencies for review. Floatation channels are not expected.

4. To ensure that dredged material is placed to each particular habitat's specified elevations, we recommend that the USACE use the current datum, NAVD88 (GEOID 12A), which is consistent with the datum that is referenced for the elevations of existing marsh and water level in the project area.

   Response 4: Concur. GEOID is a model of global mean sea level that is used to measure precise surface elevations. In the case of the Spanish Pass ridge surveys, the GEOID used for vertical control was the latest available - GEOID 12A, and this was used in developing the elevations that are referenced to NAVD88 (2009.55 Epoch) datum.

5. If containment dikes are constructed, they should be breached or degraded to the settled elevations of the disposal area. If soil conditions allow for dikes to be designed in a manner allowing naturally degradation and settlement, the Service recommends the USACE commitment to mechanically degrade the containment dikes in the case that anticipated settlement and degradation does not occur naturally ensuring tidal exchange is restored. Such breaches should be undertaken after consolidation of the dredged sediments and vegetative colonization of the exposed soil surface, or a maximum of 2 years after construction.

   Response 5: Concur, in part. As provided in Section 2.2 of SEA #542.A states "Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these perimeter dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors."

6. The Service recognizes the value of submerged aquatic vegetation (SAV) habitat to fish and wildlife, including Federal trust resource species. If SAV is encountered, the Corps should avoid these areas if possible and utilize unvegetated open water areas for marsh creation.

   Response 7 - CEMVN also recognizes the value of SAV habitat. The area proposed for marsh creation currently contains no SAV. In addition, the proposed action is projected to create approximately 430 net acres of SAV over the project life. Therefore, if any SAV is impacted by construction, it would be minimal and would be offset by the indirect benefits of the project.

7. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, Water Control Plans, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA and LDNR. The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

   Response 8 - Concur. CEMVN will continue to coordinate with the resource agencies.

8. Any proposed change in project features or plans should be coordinated in advance with the Service, NMFS, LDWF, and LDNR

   Response 9 - Concur. CEMVN will continue to coordinate with the resource agencies.

9. The LCA BUDMAT program specifies that monitoring and adaptive management plans are required for beneficial use habitat creation project. The Corps should coordinate with the Service during development of those plans.

   Response 10 – Please see section 1.3 of the Adaptive Management and Monitoring Plan. The Corps has coordinated with USFWS on various aspects of the project throughout development. Due to the unique nature of this BUDMAT project, an adaptive management plan was determined to be unnecessary. However, a monitoring plan was developed to determine ecological success of this project and has been communicated to USFWS via the draft report.

10. ESA consultation should be reinitiated should the proposed project features change significantly or are not implemented within one year of the last ESA consultation with this

office to ensure that the proposed project does not adversely affect any federally listed threatened or endangered species or their habitat.

Response 11 – Concur.

Hazardous, Toxic, and Radioactive Waste

The discharge of dredged material into waters of the United States is regulated under the Clean Water Act (CWA). In the absence of a known Hazardous, Toxic, and Radioactive Waste (HTRW) concern, the proposed action would not qualify for an HTRW investigation.

Engineer Regulation (ER) 1165-2-132 provides that in the Planning, Engineering and Design (PED) Phase that, for proposed project in which the potential for HTRW problems has not been considered, an HTRW initial assessment, as appropriate for a reconnaissance study, should be conducted as a first priority. If the initial assessment indicates the potential for HTRW, testing, as warranted and analysis similar to a feasibility study should be conducted prior to proceeding with the project design. The NFS will be responsible for planning and accomplishing any HTRW response measures, and will not receive credit for the costs incurred.

An ASTM E 1527-05 Phase 1 Environmental Site Assessment (ESA), HTRW 16-01 dated January 19, 2016, was completed for the Project Area and a copy is being maintained on file at CEMVN. The probability of encountering HTRW for the proposed action is low based on the initial site assessment. If a recognized environmental condition is identified in relation to the Project Area, the U.S. Army Corps of Engineers, New Orleans District would take the necessary measures to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low. A Phase 1 HTRW was conducted on the Project Area in conjunction with EA #542 and was updated on October 6, 2016 to include the proposed changes and will be maintained on file at CEMVN.

Magnuson-Stevens Fisheries Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended, Public Law 104-208, addresses the authorized responsibilities for the protection of Essential Fish Habitat (EFH) by NMFS in association with regional fishery management councils. The NMFS has a "findings" with the CEMVN on the fulfillment of coordination requirements under provisions of the Magnuson-Stevens Fishery Conservation and Management Act. In those findings, the CEMVN and NMFS have agreed to complete EFH coordination requirements for federal civil works projects through the review and comment on National Environmental Policy Act documents prepared for those projects. EA #542 was provided to the NMFS for review and comment on January 19, 2016. Comments and EFH conservation recommendations were received from the NMFS in their letter dated February 9, 2016. The CEMVN provided a detailed response on March 10, 2016 that included a description of measures to avoid, mitigate or offset the adverse impacts to EFH of the proposed action. (Appendix D) Coordination of the changes proposed in this SEA will take place during the public comment period.

In their response letter dated January 4, 2017, NMFS stated that they had "reviewed the draft SEA and finds the resources potentially affected have been adequately described and impacts to those resources adequately evaluated. As such, we have no recommended revisions to the draft SEA. Given the overall positive benefit of project implementation to habitat supportive of marine fishery resources, NMFS fully supports project implementation. Additionally, the NMFS concurs with the determination provided on page 46 of the draft SEA that project implementation would result in a net positive benefit to EFH supportive of federally managed fishery species."

Migratory Bird Treaty Act

The bald eagle was removed from the List of Endangered and Threatened Species in August 2007 but continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act of 1918, as amended (MBTA). During nesting season, construction must take place outside of USFWS/LDWF buffer zones. A Corps Biologist and USFWS Biologist survey for nesting birds. This will be done prior to the start of construction.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The procedures in 36 CFR Part 800 define how Federal agencies meet these statutory responsibilities. The Section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, including the State Historic Preservation Officer ("SHPO") or Tribal Historic Preservation Officer ("THPO") and any Tribe that attaches religious or cultural significance to historic properties that may be affected by an undertaking. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. Consultation pursuant to Section 106 has been completed and a finding of no historic properties affected, was coordinated for the original Project goals as presented in EA #542, with a letter dated May 8, 2015 to the SHPO, and a response dated May 20, 2015. (Appendix D) In a letter dated December 19, 2016, SHPO concurred that the actions of this Supplemental EA are determined as having no additional potential to cause effect to any potential cultural resources.

Tribal Consultation

NEPA, Section 106 of the National Historic Preservation Act, EO 13175 ("Consultation and Coordination with Indian Tribal Governments"), the American Indian Religious Freedom Act, and related statutes and policies have a consultation component. In accordance with CEMVN's responsibilities under NEPA, Section 106, and EO 13175, CEMVN will offer the following federally-recognized Indian Tribes the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands: Alabama-Coushatta Tribe of Texas, Caddo Nation of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Mississippi Band of Choctaw Indians, Seminole Nation of Oklahoma, Seminole Tribe of Florida, and Tunica-Biloxi Tribe of Louisiana. On December 2, 2016, letters were mailed to the tribal leaders requesting input regarding the proposed action. There were no responses received prior to January 3, 2017, which marked the end of the comment and review period.

7 Conclusion

The proposed action would utilize material dredged from routine maintenance dredging of a federal navigation HDDA to be beneficially utilized and deposited in the Project Area for marsh creation and ridge restoration. Beneficial use-placement of dredged material in the Project Area would result in the creation of approximately 74 acres (43.12 AAHUs) of intermediate marsh habitat and approximately 23 acres (9.79 AAHUs) of forested ridge habitat over the 50 year period of analysis.

This office has assessed the environmental impacts of the proposed action and has determined

that the proposed action would have no significant adverse impact on the human and natural environment.

8 Prepared By

SEA #542.A and the associated FONSI were prepared by Patricia S. Leroux, Biologist, U.S. Army Corps of Engineers, New Orleans District; Regional Planning and Environment Division South, MVN-PDN-CEP; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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9 References

EA #542 entitled “Louisiana Coastal Areal Beneficial Use of Dredged Material Program at Tiger Pass Project, Plaquemines Parish, Louisiana” with a signed FONSI dated March 9, 2016.

EA #535 entitled “West Bay Marsh Creation Tier 1, Louisiana Coastal Area Beneficial Use of Dredge Material Program, Plaquemines Parish, Louisiana” with a signed FONSI dated March 23, 2015.

EA #517 entitled “Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana Designation of Additional Disposal Areas for Head of Passes, Southwest Pass, and South Pass, Plaquemines Parish, Louisiana” with a signed FONSI dated November 22, 2013.

Programmatic EIS entitled “Louisiana Coastal Area Beneficial Use of Dredged Material Program” with a signed ROD dated August 13, 2010.

Programmatic EIS entitled “Louisiana Coastal Area, Louisiana, Ecosystem Restoration Program, November 2004” with a signed ROD dated November 18, 2005.

APPENDIX A

Louisiana Coastal Area Beneficial Use of Dredge Material Programmatic EIS, 2010

The Louisiana Coastal Area Beneficial Use of Dredge Material Programmatic EIS can be found on the NOLA Environmental website at http://www.nolaenevironmental.gov/

APPENDIX B

Wetland Value Assessment Project Information Sheet

October 4, 2016

Prepared for:

US Army Corps of Engineers (NOD)

Prepared by

U.S. Fish and Wildlife Service

Project Name: Tiger Pass LCA BUDMAT Habitat Creation

Project Type(s): Marsh Creation, Maritime Ridge Creation, Coastal Bird Island Habitat Creation.

Project Addendum: Additional retention dikes, borrow pits, and stability berm for ridge and marsh creation as well as wetland impacts from jack and bore operations, dredge transport, and equipment staging. Project WVA's are broken down into following categories based on hydrologic and ecological similarities:

Area A: dredge transportation (1.4 ac), jack and boring (0.46 ac), and staging areas (1.3 ac) for a total of 3.16 acres.

Area B: retention dikes (22.5 ac), borrow pits (43.5 ac), and stability berm (7.85 ac) for a total of 73.85 acres.

Impact of Project Addendum: Gain of 19 acres of intermediate marsh and 17.90 AAHU's over the 50 year project life.

Project Area: Plaquemines Parish, Louisiana.

Project Goal: This BUDMAT program project is intended to create habitat for fish and wildlife with dredged material from the Mississippi River. A variety of habitat types will be considered for construction, including: supratidal maritime ridge, fresh/intermediate marsh, supratidal island suitable for nesting, foraging, and loafing of water birds, such as black skimmers, terns, piping plover, etc.

Habitat Assessment Method

The WVA operates under the assumption that optimal conditions for general fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated or expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values, and 3) a mathematical formula that combines Suitability Index for each variable into a single value for wetland habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The procedure for evaluating project benefits on fish and wildlife habitats, the WVA model, uses a series of variables that are intended to capture the most important conditions and functional values of a particular habitat. Values for these variables are derived for existing conditions and are estimated for conditions projected into the future if no restoration efforts are applied (i.e., future-without-project), and for conditions projected into the future if the proposed restoration project is implemented (i.e., future-with-project), providing an index of quality or habitat suitability of the habitat for the given time period. The HIS is combined with the acres of habitat to get a number that is referred to as "habitat units". Expected project benefits are estimated as the difference in habitat units between the future-with-project (FWP) and future-without project (FWOP). To allow comparison of WVA benefits to costs for overall project evaluation, total benefits are averaged over a 50-year period, with the result reported as Average Annual Habitat Units (AAHUs).

The WVA model for marsh habitat attempts to assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. While the model does not specifically assess other wetland functions and values such as storm-surge protection, floodwater storage, water quality improvement, nutrient import/export, and aesthetics, it can be generally assumed that these functions and values are positively correlated with fish and wildlife habitat quality.

Existing – The project area is the open water and surrounding fresh marsh of the Lower Mississippi River Delta. The vegetation is classified as fresh marsh (O'Neil 1949, Chabreck and Linscombe 1997, Sasser et al. 2007) and receives continuous riverine input. Emergent plant species include: smooth cordgrass, Walter's millet, *Schoenoplectus pungens*, *Nelumbo lutea*. Submerged aquatic vegetation, such *as Myriophyllum spicatum*, *Heteranthera dubia*, *Ceratophyllum demersum*, *Najas guadalupensis*, and *Potamogeton nodosus* are also common in the lower elevation intertidal and shallow subtidal portions of the project area. The two major soil types in the project area are commonly found together and are classified as Balize and Larose soils (BA). Both soil types are level and very poorly drained. They are flooded by Mississippi River water most of the time and support freshwater marshes.

Land Loss

USGS calculated a historical loss rate for the disposal polygons using a hyper-temporal analysis for the period 1985 to 2009. That analysis utilized TM satellite scenes. The Fish and Wildlife Service calculated land loss rate using the same USGS Land/Water data, but with a different regression (land acres : time). The loss rate during that period was -1.18% per year. That rate was used to calculate land/water values over the life of the project.

Sea Level Rise Effects

Land loss rates estimated by the Service were adjusted by the projected effects of the medium relative sea level rise (RSLR) scenario for these analyses. We used an estimated subsidence rate of 25 mm/yr in the Mississippi River Delta (CPRA 2012). The eustatic sea level rise was assumed to be 1.7 mm/yr.

Fresh/Intermediate Marsh

Variable V_1 – Percent of wetland area covered by emergent vegetation

FWOP–

Area A	**Area B**

		acres	%
TY0	Marsh	2.50	79.10
TY1	Marsh	2.45	77.60
TY3	Marsh	2.35	74.50
TY5	Marsh	2.25	71.30
TY6	Marsh	2.20	69.70
TY25	Marsh	1.21	38.20
TY50	Marsh	0.00	0.00

		acres	%
TY0	Marsh	15.00	20.30
TY1	Marsh	14.71	19.90
TY3	Marsh	14.12	19.10
TY5	Marsh	13.52	18.30
TY6	Marsh	13.22	17.90
TY25	Marsh	7.25	9.80
TY50	Marsh	0.00	0.00

FWP – Created marsh platform has limited marsh function until material settlement, flooding and channel development. The assumption document suggests 0%, 15%, 50%, and 100% for TY years 1, 3, 5, and 6 respectively for unplanted marsh. Because this area is in close proximity to the freshwater and nutrients of the Mississippi River Delta, we adjusted the assumptions to10%, 25%, 100%, and 100% for TY years 1, 3, 5, and 6 respectively to reflect a more rapid vegetative response. For Area A, future with project values were only determined for TY0 as emergent marsh vegetation is expected to be reduced to 0 % upon project construction.

Area A			
		acres	%
TY0	Marsh	2.50	79.10
TY1	Marsh	0.00	0.00
TY3	Marsh	0.00	0.00
TY5	Marsh	0.00	0.00
TY6	Marsh	0.00	0.00
TY25	Marsh	0.00	0.00
TY50	Marsh	0.00	0.00

Area B			
		acres	%
TY0	Marsh	15.00	20.30
TY1	Marsh	20.52	27.80
TY3	Marsh	28.30	38.30
TY5	Marsh	68.87	93.30
TY6	Marsh	67.87	91.90
TY25	Marsh	47.35	64.10
TY50	Marsh	18.96	25.70

Variable V_2 – Percent of open water covered by submerged aquatic vegetation (SAV)

Existing Conditions –The initial WVA conducted in April of 2015 reported no SAV occurrence in the vicinity of the project. On September 15, 2016, another site visit was conducted by Corps and USFWS service personnel and found no SAV occurring in project area.

FWOP–

Both Areas	
	% SAV
TY0-TY50	0

FWP– When the marsh land platform is constructed, all existing SAV will be buried. Until the created marsh platform settles to marsh elevation it is assumed that very little open water exists to support SAV growth. Standard civil works assumptions were applied for all target years.

Area A	**Area B**

	% SAV
TY0	0
TY1	0
TY3	0
TY5	0
TY6	0
TY25	0
TY50	0

	% SAV
TY0	0
TY1	0
TY3	0
TY5	0
TY6	15
TY25	15
TY50	7.5

Variable V_3 – Marsh edge and interspersion

Existing Conditions – Interspersion classes varied between areas and were determined utilizing aerial imagery and ArcMap GIS 10.3.1 software.

FWOP–

Area A		
	Class	%
TY0	2	100
TY1	2	100
TY3	2	100
TY5	2	100
TY6	2	100
TY25	2	50
	3	50
TY50	3	100

Area B		
	Class	%
TY0-TY50	5	100

FWP– For areas created by dredged material placement, the standard civil works marsh creation assumptions were used until TY6. For target years after TY6, projections were guided by the amount of marsh acres predicted by the land loss spreadsheet model.

Area A			
	Class	%	Notes
TY0	2	100	Baseline
TY1	5	100	
TY3	5	100	
TY5	5	100	
TY6	5	100	
TY25	5	100	
TY50	5	100	

Area B			
	Class	%	Notes
TY0	5	100	Baseline
TY1	5	100	standard assumptions
TY3	3	100	standard assumptions
TY5	1	50	standard assumptions
	3	50	standard assumptions
TY6	1	100	standard assumptions
TY25	3	100	approx. 64 % marsh
TY50	4	100	approx. 26 % marsh

Variable V_4 – Percent of open water area <=1.5 feet deep in relation to marsh surface

Existing Conditions – Water depths were measured for the initial WVA with a survey rod in the project area in April of 2015. The average water depth for the area was calculated using the nearby CRMS2608 and CRMS 0163 gage data. Using the gage data, the collected data was corrected for the effect of the tides and wind on the day the measurements were recorded. Water depth sample locations with associated values were plotted on a map of the project area using ArcMap GIS software. Polygon estimates of the extent of shallow water based on these point values were digitized and their acreage calculated.

FWOP– TY0 is based on collected data, and standard assumptions used for later target years.

Area A	
	Water ≤ 1.5ft (%)
TY0	10
TY1	10
TY3	10
TY5	10
TY6	10
TY25	10
TY50	3

Area B	
	Water ≤ 1.5ft (%)
TY0	1
TY1	1
TY3	1
TY5	1
TY6	1
TY25	1
TY50	0

FWP– For the areas created by placement of dredged material, the project land platform would be built to a subaerial elevation with dredged material. Marsh that is lost is assumed to become shallow open water (<= 1.5 feet deep). According to the standard Civil Works assumptions applied for marsh creation, 1/6 of the SOW would become non-shallow at TY50. Area A was predicted to lose half of its SOW upon construction in which standard civil works assumptions were applied thereafter.

Area A	
	Water ≤ 1.5ft (%)
TY0	10
TY1	5
TY3	5
TY5	5
TY6	5
TY25	5
TY50	2

Area B	
	Water ≤ 1.5ft (%)
TY0	1
TY1	1
TY3	4
TY5	7
TY6	8
TY25	36
TY50	62

Variable V_5 – Salinity

Existing conditions– The Tiger Pass BUDMAT project area is located near the Gulf of Mexico, but receives continuous freshwater input from the Mississippi River. An estimate for area salinity was calculated from data recorded at CRMS0163 which is in the vicinity of the project area. The mean annual growing season salinity recorded at CRMS0163 was 1.55 ppt.

FWOP and FWP– Existing conditions are expected to persist.

Both Areas	
	Salinity (ppt)
TY0-TY50	1.55

Variable V_6 – Aquatic organism access

Existing conditions – Area B is not currently impounded or hydrologically controlled by any structures. However, some of Area A is surrounded by supratidal elevation landforms and aquatic organism access is limited to a few relatively narrow channels. Variable calculations for Area A were based on the percent of acreage with unobstructed access.

FWOP – Existing conditions are expected to persist.

Area A	
TY0	0.83
TY1	0.83
TY3	0.83
TY5	0.83
TY6	0.83
TY25	0.83
TY50	0.83

Area B	
TY0-TY50	1.00

FWP – Area A variable calculation is based on increased access to areas via jack and bore however, the area is expected to lose emergent marsh due to loss of staging area and remaining supratidal landforms partially surrounding some of the area. Area B is considered to have no access at TY1 due to the elevation of the marsh platform and containment dikes. Based on standard civil works assumptions, the marsh creation area receives an access value of 1.0 at TY5 due to settling of the marsh platform, formation of tidal channels, and gapping of the containment dikes.

Area A	
TY0	0.92
TY1	0.92
TY3	0.92
TY5	0.92

Area B	
TY0	1.00
TY1	0.00
TY3	0.00
TY5	1.00

TY6	0.92
TY25	0.92
TY50	0.92

TY6	1.00
TY25	1.00
TY50	1.00

PROJECT BENEFITS

AREA A–BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs	-0.78
B. Open Water Habitat Net AAHUs	0.22
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	**-0.45**

AREA B–BENEFITS IN AAHUs DUE TO PROJECT

A. Emergent Marsh Habitat Net AAHUs	29.04
B. Open Water Habitat Net AAHUs	-4.13
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1	**18.34**

LITERATURE CITED

Coastal Protection and Restoration Authority of Louisiana [CPRA]. 2012. Louisiana's Comprehensive Master Plan for a Sustainable Coast: Appendix C. Coastal Protection and Restoration Authority of Louisiana. Baton Rouge, LA.

APPENDIX C

404(b)(1)

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers, (OCE). As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no adverse significant impacts.

PROJECT TITLE. Louisiana Coastal Area Beneficial Use of Dredged Material Program At Tiger Pass Project Plaquemines Parish, Louisiana.

PROJECT DESCRIPTION.

Original Project (EA #542): The project site is located north of Spanish Pass and west of Venice, Louisiana. The original project included an earthen ridge approximately 5,000 ft long and 200 ft wide, constructed to an elevation of +6.5 ft NAVD88. The ridge was to be backed to the north by a 500 ft wide intermediate marsh platform along its entire length. The marsh platform was to be constructed to a height of +3.5 ft NAVD88, and was expected to settle to an elevation of +1.5 ft NAVD88 within 1-3 years. Construction of the ridge and marsh platform would have required 1.65 million cubic yards of dredged material, which would have been borrowed from the Mississippi River Head of Passes Hopper Dredge Disposal Area (HDDA). A 50 ft wide access right-of-way was to be used for dredge pipeline and earth-moving equipment access. Construction of the ridge and marsh platform and use of an access right-of-way would have directly impacted a total of approximately 77 acres of a combination of open water and intermediate marsh.

To transport dredged material excavated from the HDDA, a cutterhead dredge would have loaded hopper barges utilizing a spider barge. Once loaded, the hopper barges would have been transported by tugboat to a pump-out location in the Mississippi River, outside of the navigation channel. The material would have been removed from the hopper barges by an unloader, and then travel via pipeline along and under Jump Basin Road and through open water to the project site, where it would have been discharged at the site unconfined.

Revised Project (SEA #542.A):

Design Changes to Ridge Restoration and Marsh Platform
Two (2) existing crude pipelines (an active 12-inch crude pipeline and an abandoned 6-inch crude pipeline) owned by Plains All American, traverse portions of the Project Area in the location of the proposed ridge restoration and marsh creation platform. (Figure 2)

To avoid impacts to the pipelines, a no-work corridor has been established between the western and eastern sections. With the exception of allowable placement of dredge fill over the pipelines to provide a land bridge for equipment access, no work will be performed within 50-feet of either pipeline. The no work area includes the outside toes of the earthen perimeter dikes that are to be constructed adjacent to and parallel to these pipelines, but offset by a minimum of 50-feet. The width of this no work corridor between the allowable dike toes, that is to be maintained at these pipeline crossings, will vary from approximately 140-feet on the north end and approximately 160-feet on the south end.

In order to accommodate the pipeline corridor, the ridge and marsh platform would be divided into two sections, the western section and the eastern section. The ridge would begin approximately 1.3 miles west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. All elevations listed are considered to be post-construction and it is expected that the ridge crown would settle to an elevation of approximately +6.0-feet NAVD88 within 1-2 years of completion of construction.

The marsh platform would be constructed to an initial fill height of +3.5-feet NAVD88 and would be surrounded by a perimeter dike. The western side would measure 450-feet on the backside and 40 to 50-feet on the south side of the ridge. All elevations listed are considered to be post-construction and it is expected that the marsh platform would settle/dewater to an elevation of approximately +2.0-feet NAVD88, an increase of +0.5-feet NAVD88 from previous

expectations, within 10 years of completion of construction. Approximately 36.5 acres of marsh would be created within the western section and approximately 19.2 acres of marsh would be created within the eastern section.

The final placement of material being pumped through the dredge material discharge pipeline would otherwise be handled in a manner similar to the handling of dredged materials for the normal O&M dredging of the HDDA when it disposes of materials in the Delta National Wildlife Refuge. (DNWR), the Pass a Loutre Wildlife Management Area (PALWLMA), and the open waters of West Bay.

Expansion of Marsh Platform to Include Perimeter Dikes
EA #542 originally addressed impacts to approximately 78 acres (37.15 AAHUs) of open water and intermediate marsh associated with construction of the ridge restoration and marsh creation platform.

Design changes resulting from advanced engineering and design requires the construction of temporary perimeter dikes associated with the marsh creation platform. Earthen perimeter dikes would be needed in order to facilitate construction of the ridge and marsh platforms and maximize retention of the dredged material, as well as to prevent the material from entering adjacent lands, waterways, and pipeline rights-of-way. Any material necessary for dike, weir, and closure construction would come from within the area designated for the marsh creation platform, unless otherwise specified. Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these perimeter dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors.

The perimeter dikes would be constructed to a crown width of 5-feet, crown elevation of +5-feet NAVD88, and side slopes no steeper than 1V on 4H. The dikes to be constructed along the south side of the ridge would also include a 25-foot wide berm, to be constructed to elevation 0.0-feet NAVD88, and with slopes no steeper than 1V on 4H. The berm would tie into the southern slope of the perimeter dike, extend 25-feet at elevation 0.0-feet NAVD88, and then tie into natural ground (approximately -3.5-feet NAVD88) on a slope no steeper than 1V on 4H. Construction of the perimeter dikes would impact approximately 22.5 additional acres of open water (13.95 acres) mingled with patches of intermediate marsh (8.55 acres), with 13.8 acres within the western section and 8.7 acres within the eastern section.

Borrow Requirements
Borrow would be required for construction of the perimeter dikes around the marsh creation platform. Material for construction of the perimeter dikes would be obtained from borrow sites either from within or outside of the ridge and marsh creation platform footprint. (Figure 4) The potential borrow sources are identified as follows:

Approximately 28.2 acres could be impacted through interior and exterior borrow for the western cell:

a) Exterior Borrow Pit north of western section = 7.3 acres
b) Exterior Borrow Pit west of western section = 1.4 acres
c) Exterior Borrow Pit south of western section and within adjacent Spanish Pass = 5.8 acres
d) Interior Borrow Pit in western section, which would be backfilled during construction of the Project with dredged material = 13.7 acres

Approximately 15.3 acres could be impacted through interior and exterior borrow for the eastern cell:

a) Exterior Borrow Pit north of eastern section = 2.9 acres
b) Exterior Borrow Pit south of eastern section and within adjacent Spanish Pass = 4.4 acres
c) Interior Borrow Pit of eastern section, which would be backfilled during construction of the project with dredge material = 8.0 acres

The newly proposed borrow pits, and the stability berms for the borrow pits, would impact 6.80 acres of marsh and 36.7 acres of open water for a total of 43.5 acres of additional impacts beyond those identified in EA #542 which identified all borrow material as coming from the HDDA. Of the 43.5 acres of additional impacts, 21.7 acres would be backfilled during construction of the marsh creation platform. The remaining 21.8 acres (10.8 AAHUs) would be allowed to refill naturally over time. The construction of the ridge and marsh platform would require approximately 1,700,000 cubic yards of silty sandy material to be obtained solely from the HDDA. This is an increase of 50,000 cubic yards of material from the 1,650,000 previously estimated.

Dredge Material Transport Method EA #542 included an assessment of transporting dredged material via barge from the HDDA to a designated off-loading site where the material would then be transferred via a dredge material discharge pipeline to the Project Area.

As detailed in EA #542, a cutterhead suction dredge working in the HDDA could be used to load hopper barges utilizing a spider barge and transport the loaded barges to the slip in Tiger Pass outside of the navigation channel at the eastern end of Haliburton Road in Venice, Louisiana, at which point an off-loader would be used to empty the barges, and transport the material via a temporary dredge material discharge pipeline to the Project Area. The arms of a spider barge are designed to optimize loading characteristics and production efficiency by loading the sediment into the hopper barges via multiple arms which allow for concurrent loading of multiple barges. This also allows for the cutterhead dredge to continue operating without having to shut down while waiting for the arrival of offloaded barges.

Dredging of Vessel Slip at eastern end of Haliburton Road
Once loaded with material from the HDDA, the hopper barges would be transported by tugboat to the designated pump-out location at an existing vessel slip at the eastern end of Haliburton Road located just outside of Tiger Pass and the navigation channel. In order for the off-loader to access the slip and off-load the material, the Contractor would be required to dredge for access to the slip and also inside of the slip. Any excavation deemed necessary would have to comply with the same allowable grades, slopes, etc., as well as disposal of any material dredged for access. The material would be transported from the slip via temporary dredge material discharge pipeline to the Project Area via the primary route. The extent of the dredging of the slip would be the minimum that the contractor deems necessary. However, dredging shall not exceed -11-feet MLG (-14.5-feet MLLW) with dredging at this depth no closer than 15-feet from the bulkheads. These dimensions are the maximum allowed, and could possibly be greater than what would actually be needed. Any material dredged for both access to and within the slip would be transported to and placed within the designated disposal site, located within the Mississippi River and opposite of the entrance to Grand Pass at approximate river Mile 10.5 AHP. All earthen material dredged shall be disposed of beyond/ deeper than the -55-feet MLG (-58.5-feet MLLW) contour.

Transportation of Dredge Material from Slip to Project Area
The dredge material discharge pipeline would begin at the slip at the eastern end of Haliburton Road, travel along the north side of Haliburton Road and be placed within the existing drainage canal paralleling Haliburton Road. A temporary ramp would be constructed over the dredge material discharge pipeline in order to provide vehicle ingress and egress at the eastern end of Haliburton Road. The ramp would measure approximately 12-feet in width by approximately 150-feet in length and consist of crushed stone. Upon completion of the contract, the dredge material discharge pipeline would be removed and the ramp graded in order to restore the area to pre-existing conditions.

The dredge material discharge pipeline would then cross under Tide Water Road via a 42-inch casing to be jack and bored under the road in advance and available for use by the dredging contractor. The dredge material discharge pipeline would then travel approximately 850-feet from the north end of the bored culvert to Spanish Pass Road via a corridor covering approximately 1.4 acres, of which approximately 1.1 acres is intermittent marsh that could be impacted. The dredge material discharge pipeline would then pass over Spanish Pass Road and enter Spanish Pass itself. Once in the open waters of Spanish Pass, the dredge material discharge pipeline would then traverse an approximate distance of 1.25 miles to reach the eastern end of the ridge and an additional 1.0 mile to reach the western edge of the proposed ridge. The dredge material discharge pipeline and all construction equipment would remain within the banks of Spanish Pass itself. It is not expected that any utilities or pipelines would be impacted along the access route, or within the entire ridge area. Delivery of dredge material to the Project Area would be in a manner that would avoid impacting pipeline rights-of-way and utilities passing through the access route. The proposed route would not require the dredge material discharge pipeline to traverse across any levees, federal or otherwise. The construction equipment would access the Project Area primarily through open water bodies in order to minimize damage to existing wetlands.

Additional Staging Area and Access Routes
Construction of a permanent staging area would be necessary to facilitate the construction. The staging area would measure approximately 75-feet by 75-feet and would be located at the west end of Spanish Pass Road, and adjacent to Spanish Pass. The staging area would be comprised of crushed stone aggregate, placed over a geotextile base (if

needed) and would remain in place upon completion of construction. Construction of the staging area would permanently impact approximately .13 acres (.19 AAHUs) of intermediate marsh. From the staging area, the dredge material discharge pipeline would travel through an existing boat access corridor to the Project Area, a distance of 1.18 miles. Access to the staging area would take place via the existing Spanish Pass Road, which would require minor rehabilitation to handle the proposed truck traffic. Because the roadway is already in place, there would be no additional impacts to resources.

Jack and Bore Installation of Pipeline Casing under Tide Water Road.
The jack and bore, is a method of horizontal boring that involves the placement of a 42 inch pipeline casing to house a dredge material discharge pipeline beneath the surface of the earth, thereby eliminating above ground impacts. This method would be used to place the dredge material discharge pipeline beneath Tide Water Road. The equipment for the installation of the 42-inch casing and the dredge material discharge pipeline would impact approximately .27 acres on the north side (Spanish Pass Side) of Tide Water Road and .19 acres on the south side (Grand Pass Side) of Tide Water Road, for an overall impact of 0.46 acres of intermediate marsh impacted for placement of the dredge material discharge pipeline beneath Tide Water Road.

In total, an additional 77 acres of open water and intermediate marsh would be directly impacted by the revised project, for a total of 154 acres impacted by the revised project.

Figure 1. Revised project site plan view

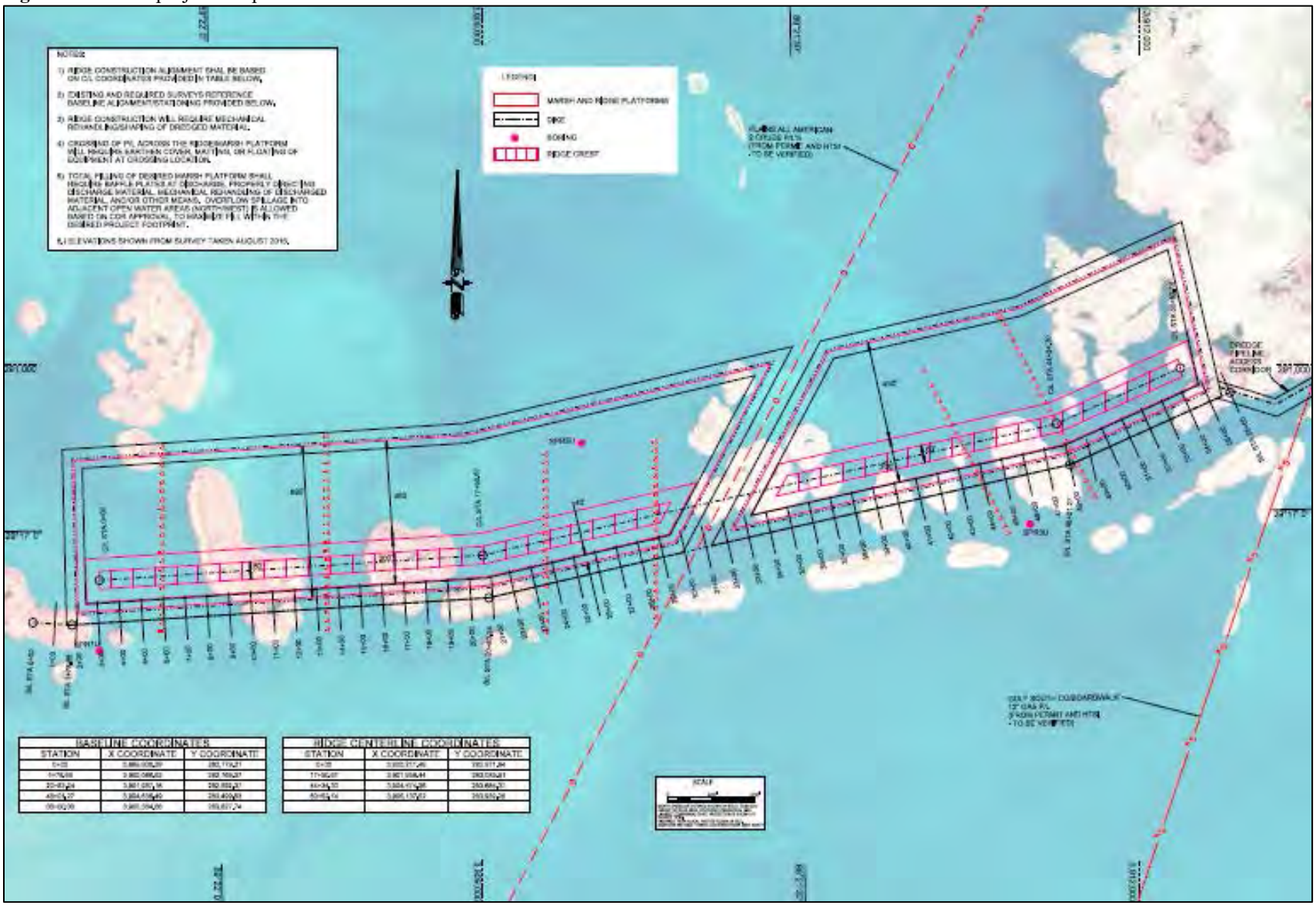
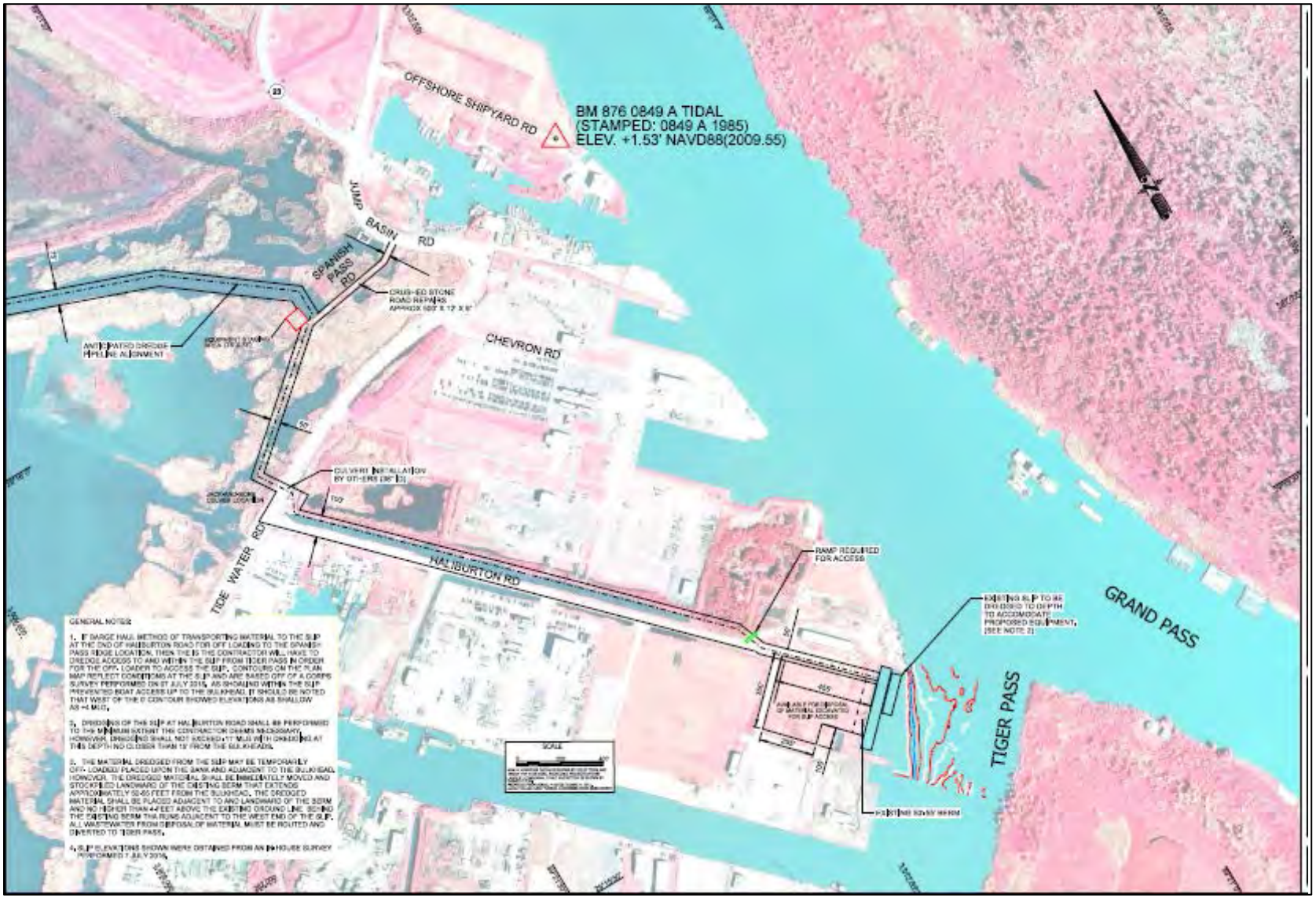


Figure 2. Revised off-loading area, pipeline route, and staging area plan view



1. Review of Compliance (230.10 (a)

A review of this project indicates that:

	Preliminary1		Final2	
a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);	YES	NO*	YES	NO
b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);	YES	NO*	YES	NO
c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2);	YES	NO*	YES	NO
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).	YES	NO*	YES	NO

2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Significant	Significant*
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
(1) Substrate impacts.			X
(2) Suspended particulates/turbidity impacts.		X	
(3) Water column impacts.		X	
(4) Alteration of current patterns and water circulation.			X
(5) Alteration of normal water fluctuations/ hydroperiod.		X	
(6) Alteration of salinity gradients.		X	
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
(1) Effect on threatened/endangered species and their habitat.		X	
(2) Effect on the aquatic food web.		X	

	N/A	Not Significant	Significant*
(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).		X	
c. Special Aquatic Sites (Subpart E).			
(1) Sanctuaries and refuges.	X		
(2) Wetlands.		X	
(3) Mud flats.		X	
(4) Vegetated shallows.		X	
(5) Coral reefs.	X		
(6) Riffle and pool complexes.	X		
d. Human Use Characteristics (Subpart F).			
(1) Effects on municipal and private water supplies.	X		
(2) Recreational and commercial fisheries impacts.		X	
(3) Effects on water-related recreation.		X	
(4) Esthetic impacts.		X	
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.	X		

Remarks. Where a check is placed under the significant category, the preparer has attached explanation. (Enclosure 2)

3. Evaluation of Dredged or Fill Material (Subpart G).[3]

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

(1) Physical characteristics	X
(2) Hydrography in relation to known or anticipated sources of contaminants	X
(3) Results from previous testing of the material or similar material in the vicinity of the project	X
(4) Known, significant sources of persistent pesticides from land runoff or percolation	X
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	X
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources	X
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	X
(8) Other sources (specify)	

Appropriate references: See memorandum (Enclosure 2)

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES NO*

4. Disposal Site Delineation (§230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

	N/A	Not Significant	Significant*
(1) Depth of water at disposal site			X
(2) Current velocity, direction, and variability at disposal site			X
(3) Degree of turbulence			X
(4) Water column stratification			X
(5) Discharge vessel speed and direction			X
(6) Rate of discharge			
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)			X
(8) Number of discharges per unit of time			
(9) Other factors affecting rates and patterns of mixing (specify)			

Appropriate references:

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES NO*

5. Actions to Minimize Adverse Effects (Subpart H).
All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES NO*

6. Factual Determination (§230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above). YES NO*

b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5). YES NO*

c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5) YES NO*

d. Contaminant availability (review sections 2a, 3, and 4). YES NO*

e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5). YES NO*

f. Disposal site (review sections 2, 4, and 5). YES NO*

g. Cumulative impact on the aquatic ecosystem. YES NO*

h. Secondary impacts on the aquatic ecosystem. YES NO*

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

[1]Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

[2]Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.
[3]If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility.

a. This evaluation was prepared by:

Name: Patricia Leroux
Position: Biologist
Organization: U.S. Army Corps of Engineers, New Orleans District
Date: September 2, 2016

b. This evaluation was prepared by:

Name: Sandra Stiles
Position: Biologist
Organization: U.S. Army Corps of Engineers, New Orleans District
Date:

c. Water Quality evaluation was prepared by:

Name: Eric Glisch
Position: Environmental Engineer
Organization: U.S. Army Corps of Engineers, New Orleans District
Date: 11/21/2016

d. Water Quality evaluation was reviewed by:

Name: Malene Henville
Position: Supervisory Hydraulic Engineer
Organization: U.S. Army Corps of Engineers, New Orleans District
Date: 11/21/2016

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines ..... __X__

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions ..... _____

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

(1) There is a less damaging practicable alternative ..... _____
(2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... _____
(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... _____

Date: ____January 6, 2017_____

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Chief, Environmental Planning and Compliance Branch

US Army Corps of Engineers,
New Orleans District

To: File

From: Eric Glisch, CEMVN-ED-H

CC:

Date: 21 November 2016

Re: LCA BUDMAT – Spanish Pass, Ridge Restoration Project

A short form 404 (b)(1) evaluation of the Federal actions for the subject project was performed by ED-HW for water quality impacts. Existing data were used to make factual determinations for the subject actions. The following summarizes the review process and comments noted:

I. Subpart B – Review of Compliance

a. *230.10 (b) (1)*: After consideration of disposal site dilution and dispersion, there are no expected violations of State water quality from the proposed Federal actions.

II. Subpart C – Physical and Chemical Characteristics of the Aquatic Ecosystem

a. *230.20 - Substrate Impacts*: The proposed project would generate changes in the physical, chemical, and biological characteristics of substrate at the project site. Placement of dredged material from the Mississippi River Head of Passes Hopper Dredge Disposal Area (HDDA) would alter project site substrate elevations, converting open water and marsh to marsh and ridge. Organisms adapted to aquatic habitat would be replaced by organisms adapted to aquatic or terrestrial habitat that recolonize the project site owing to alterations in substrate elevations.

   Sediment from the HDDA has been described as sandy silt, while the project site contains a combination of Balize and Larose soils and dredged and frequently flooded aquents (USDA 2016). Balize and Larose soils are characterized as level and poorly drained mineral soils (USDA 2000). Surface layers of these soil types are dark gray and dark grayish brown, very fluid muck, mucky clay and silt loam, while underlying layers are dark gray and gray slightly to very fluid clay, silt, and silty clay loam. Dredged and frequently flooded aquents are characterized as level, poorly drained soils forming in hydraulically deposited fill material dredged from nearby marshes during the construction and maintenance of waterways. Aquents are slightly saline or saline throughout, and are typically stratified throughout with

mucky, clayey, loamy, and sandy layers, and are firm in the upper strata and slightly to very fluid in the lower strata. The aquents at the project site may be from the placement of dredged material excavated for the construction of nearby oil exploration canals. Therefore, it appears there are some physical differences between project site soils and dredged material proposed for ridge and marsh platform construction.

Placement of dredged material and material excavated at the project site for dike construction is expected to smother sessile benthic organisms at the project site. Following construction of the project and establishment of vegetation at the project site, these organisms would be replaced by organisms adapted to aquatic or terrestrial habitat that recolonize the project site.

Please see content addressing 230.61 (a) for HDDA vicinity sediment evaluation results. Based on findings of these sediment evaluations, chemical and biological substrate impacts of the proposed project are expected to be minor.

Overall, substrate impacts of the proposed project are expected to be byproduct of what is considered to be beneficial habitat modification. Due to high local subsidence rates, global sea-level rise, wind-induced wave energy, and tropical activity that occasions the area, the proposed project is expected to eventually disappear, as the proposed project would be subject to these forces of nature and eventually erode and submerge.

b. *230.21 – Suspended Particulates/Turbidity Impacts*: The proposed project includes the mechanical excavation of waterbottom material at the project site for the construction of earthen retention dikes, and use of the retention dikes for the confinement of hydraulically dredged material pumped into the project features for their construction. Therefore, the project is expected to generate localized increases in turbidity in the vicinity of the project site during construction activities, as well as following rainfall events until dredged material has consolidated and vegetation has established at the site.

The project site is close to the Mississippi River, which contains turbid waters with seasonally high suspended sediment concentrations. In addition, due to the soil types and large fetches in the project site vicinity, it is likely that vicinity waters can become very turbid in windy conditions. Localized increases in turbidity at the project site are therefore expected to be minor relative to background concentrations in the vicinity.

c. *230.22 – Water Column Impacts*: The proposed project includes the mechanical excavation of waterbottom material at the project site for the construction of earthen retention dikes, and use of the retention dikes for the confinement of hydraulically dredged material pumped into the project site. Therefore, the proposed project is expected to generate localized water column impacts in the vicinity of the project site during construction activities, as well as following rainfall events until dredged

material has consolidated and vegetation has established at the site.

Please see content addressing 230.61 (a) for HDDA vicinity sediment evaluation results. Based on findings of these sediment evaluations, water column impacts of the proposed project are expected to be temporary and minor.

d. *230.23 – Alteration of Current Patterns and Water Circulation*: The proposed project would locally alter current patterns and water circulation, by creating a hydraulic barrier in an area consisting largely of open water. There are no expected negative consequences due to the alteration of current patterns and water circulation in the project area. The project will locally reduce the fetch of open waterbodies over its lifetime.

e. *230.24 – Alteration of Normal Water Fluctuations/Hydroperiod*: The proposed project would have a negligible impact on the hydrology of surrounding surface waters, which are large open water expanses connected to the Gulf of Mexico.

f. *230.25 – Alteration of Salinity Gradients:* Project area salinity gradients are largely determined by the interaction between Mississippi River and Gulf of Mexico waters (e.g., see Swenson and Turner 1998). Due to the small footprint of the proposed project in relation to the area influenced by this interaction, as well as its location (e.g., it is not obstructing any large channels through which flow large volumes of Mississippi River and/or Gulf of Mexico waters), the project is not anticipated to alter salinity gradients.

III. Subpart F – Human Use Characteristics

a. *230.50 – Effects on Municipal and Private Water Supplies*: The nearest municipal or private water supply is located in the Mississippi River, approximately 40 miles upstream from the project site. Due to the small scale of the proposed project and its distance from the nearest drinking water intake, the project is not expected to impact any municipal or private water supplies.

IV. Subpart G – Evaluation of Dredged or Fill Material

a. *230.61 (a) – Considerations in Evaluating the Biological Availability of Possible Contaminants in Dredged or Fill Material:* The most recent sediment evaluation that includes sediment samples collected within and in the immediate vicinity of the HDDA was completed in 2009 (PBS&J 2009). For the evaluation, several water and sediment samples were collected from the HDDA in November and December of 2008. Water, elutriate, and sediment chemistry analyses were performed on these samples. Parameters included in analyses were the metals lead, mercury, nickel, and vanadium; polychlorinated biphenyls (PCBs; congeners and total arochlors); seventeen different polycyclic aromatic hydrocarbon (PAH) compounds; and oil mixtures (diesel and gasoline range organics, and oil and grease). In addition, sediment samples were tested for grain size distribution.

Lead, nickel, and vanadium were detected in water samples, as well as elutriates derived from sediment and water samples. In all cases, detected concentrations were below both acute and chronic U.S. Environmental Protection Agency (EPA) and Louisiana Department of Environmental Quality (LDEQ) freshwater water quality criteria for aquatic life (USEPA 2016, LDEQ 2016).

Lead, nickel, vanadium, fluoranthene, pyrene, and oil and grease were detected in sediment samples. Comparison of sediment chemistry results to National Oceanic and Atmospheric Administration (NOAA) sediment screening benchmarks revealed three of six samples collected within and in the immediate vicinity of the HDDA contained nickel concentrations above freshwater sediment screening benchmarks indicative of low probability of effects on benthic organisms (NOAA 2008).

Most sediment samples collected in the vicinity of the HDDA contained a sand content of 40-80%, silt content of 3-30%, and clay content of 7-26%, although two of the eight samples collected contained very low sand content (2-3%), silt content of 36-40%, and clay content of 58-62%.

Following the BP Gulf of Mexico oil spill in 2010, a sediment evaluation was conducted that included several navigation channels in the vicinity of the HDDA, to ascertain the possible effects of the BP Gulf of Mexico oil spill on the sediment quality of channel waterbottoms, which are dredged for waterway navigation purposes (USACE-MVN 2010). Sediment samples were collected in August 2010 for analysis of several compounds associated with oil contamination, including sixteen PAHs, and diesel, gasoline, and oil range organics. Comparison between sediment chemistry results and applicable sediment screening benchmarks revealed no exceedences of freshwater Threshold Effects Level (TEL) or Probable Effects Level (PEL) benchmarks for South Pass and Tiger Pass sediment samples, and the exceedence of the freshwater/saltwater TEL for dibenz(a,h)anthracene for one sediment sample collected from Batiste Collette, located on the opposite side of the Mississippi River from Venice.

A sediment evaluation was also completed for lower Southwest Pass, in 2011 (PBS&J 2011). Water, sediment, and biota samples were collected in October 2010 for analysis of water, elutriate, and sediment chemistry, 10-day benthic toxicity (test organisms *L. plumulosis* and *A. bahia*), 4-day water column toxicity (test organisms: *A. bahia* and *M. beryllina*), and 28-day bioaccumulation (test organisms: *N. virens* and *M. nasuta*). Chemical analysis included fifteen metals; twenty one pesticides/PAHs; fifty six semivolatile organic compounds; and conventional parameters including ammonia, cyanide, total organic carbon, total petroleum hydrocarbons, and percent solids. In addition, sediment samples were tested for grain size distribution.

Several water samples contained concentrations of copper that exceeded EPA and LDEQ marine acute and chronic criteria. Curiously, elutriates did not exceed criteria for copper, and copper was only detected in one of seven samples. Two of

seven elutriate samples had total ammonia concentrations that exceeded EPA marine acute aquatic life criteria for unionized ammonia; upon further review, if was found that estimated unionized ammonia concentrations for these samples were just below conservative EPA acute freshwater and marine aquatic life criteria (USEPA 1989, 2013).

Sediment chemistry results revealed several samples contained concentrations of nickel, acenaphthene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorine, phenanthrene, and pyrene that exceeded NOAA freshwater and saltwater sediment screening benchmarks indicative of low probability of effects on benthic organisms. In addition, one of the ten sediment samples had concentrations of arsenic that exceeded freshwater sediment screening benchmarks indicative of low probability of effects on benthic organisms.

Results of benthic toxicity, water column toxicity, and bioaccumulation testing suggest that disposal of dredged material was not expected to have significant adverse effects on aquatic organisms. It should be noted that water column toxicity test results suggested that a dilution factor of 100 would be required for dredged material effluent to not have adverse effects on water column organisms. In addition, for one *N. virens* bioaccumulation testing replicate, tissue concentrations of nickel from organisms exposed to Southwest Pass channel sediments were significantly higher than concentrations from organisms exposed to reference control sediments, suggesting some bioaccumulation of nickel for organisms exposed to channel sediments. Considering the findings of sediment chemistry results from PBS&J (2009, 2011), it may be possible that sediment from navigation channels in the vicinity of the Mississippi River Head of Passes (HOP) contain elevated levels of nickel.

Most sediment samples collected in lower Southwest Pass contained a sand content of 40-77%, silt content of 14-37%, and clay content of 7-22%, although three of the ten samples collected contained very low sand content (6-15%), silt content of 49-64%, and clay content of 30-45%.

An additional sediment evaluation for Southwest Pass is currently in preparation, and the results of the evaluation will be incorporated into this section if the completion date for the evaluation occurs before the final version of the Spanish Pass ridge restoration project 404(b)(1) evaluation is complete.

Review of U.S. Coast Guard National Response Center spill reports filed from 2006 to October 2016 reveals that there were approximately forty small (50 gallons or less) spills in the Mississippi River HOP region since 2006, and one spill of approximately 200 gallons that occurred in Tiger Pass (USCG 2016). Most of the small spills were approximately 10 gallons or less. The larger spill the occurred in Tiger Pass happened in January of 2006.

Appropriate references: See references

b. An evaluation of the appropriate information in VI(a) above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria: Yes

V. Disposal Site Delineation

a. *230.11 (f) – Considerations in Evaluating the Disposal Site:* The proposed project includes confinement dikes. It is located in the lowermost Barataria Estuary, where there is frequent exchange of Mississippi River water and saltwater from the Gulf of Mexico. It is surrounded by large expanses of open water.

b. An evaluation of the appropriate factors in V(a) above indicates that the disposal site and/or size of mixing zone are acceptable: Yes.

VI. Subpart H - Actions to Minimize Adverse Effects

All appropriate and practicable steps have been taken, through application of the recommendations of *230.70 – 230.77* to ensure minimal adverse effects of the proposed discharge: If practical or already a design element of the proposed project, maximizing the hydraulic distance between the dredged material inflow point and effluent weir for each confined project feature would help ensure the dissipation of unionized ammonia to levels well below EPA aquatic life criteria.

VII. Factual Determinations

A review of appropriate information as identified in items I - VI above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge:

a. Physical substrate at the disposal site (review sections II, IV, V, and VI above): Yes

b. Water circulation, fluctuation and salinity (review sections II, IV, V, and VI): Yes

c. Suspended particulates (review sections II, IV, V, and VI): Yes

d. Contaminant availability (review sections II, IV, and V): Yes

VIII. References

a. Louisiana Department of Environmental Quality (LDEQ). 2016. *LAC Title 33, Part IX*. http://www.deq.louisiana.gov/portal/DIVISIONS/LegalAffairs/RulesandRegulations/Title33.aspx. Last accessed October 27, 2016.

b. National Oceanic and Atmospheric Administration (NOAA). *SQuiRT Cards*. http://response.restoration.noaa.gov/environmental-restoration/environmental-assessment-tools/squirt-cards.html. Last accessed October 27, 2016.

c. Post, Buckley, Schuh & Jernigan, Inc. (PBS&J). 2009. *Contaminant Assessment, Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, Southwest Pass*. Prepared for the U.S. Army Corps of Engineers, Galveston District, and the U.S. Army Corps of Engineers, New Orleans District. Contract W912HY-05-D-001, Delivery Order 0065.

d. Post, Buckley, Schuh & Jernigan, Inc. (PBS&J). 2011. *Mississippi River-Southwest Pass, Louisiana, Contaminant Assessment*. Prepared for the U.S. Army Corps of Engineers, New Orleans District. Contract W912P8-09-D-0005, Delivery Order 0012.

e. Swenson, E.M. and R.E. Turner. 1998. *Past, Present and Probable Future Salinity Variations in the Barataria Estuarine System*. Baton Rouge, LA: Louisiana State University, Coastal Ecology Institute, Center for Coastal, Energy, and Environmental Resources.

f. U.S. Army Corps of Engineers, New Orleans District (USACE-MVN). 2010. *Dredged Material Evaluation of Six Federal Navigation Channels following the Deepwater Horizon Incident*.

g. U.S. Coast Guard (USCG). 2016. National Response Center. http://nrc.uscg.mil/. Last accessed October 27, 2016.

h. U.S. Department of Agriculture (USDA). 2016. *Web Soil Survey*. http://websoilsurvey.nrcs.usda.gov/app/. Last accessed October 27, 2016.

i. U.S. Department of Agriculture (USDA). 2000. *Soil Survey of Plaquemines Parish, Louisiana*. http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/louisiana/plaqueminesLA2000/plaquemines.pdf. Last accessed October 27, 2016.

j. U.S. Environmental Protection Agency (USEPA). 1989. *Ambient Water Quality Criteria for Ammonia (Saltwater) – 1989*. https://www.epa.gov/sites/production/files/2015-08/documents/ambient_water_quality_criteria_for_ammonia_saltwater_-_1989_0.pdf. Last accessed November 21, 2016.

k. U.S. Environmental Protection Agency (USEPA). 2013. *Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater* https://www.epa.gov/sites/production/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf. Last accessed November 17, 2016.

l. U.S. Environmental Protection Agency (USEPA). 2016. *National Recommended Water Quality Criteria – Aquatic Life Criteria Table*. https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table. Last accessed October 27, 2016.

APPENDIX D

Environmental Coordination

JOHN BEL EDWARDS
GOVERNOR

CHUCK CARR BROWN, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES
October 13, 2016

Ms. Joan M. Exnicios
US Army Corps of Engineers, New Orleans District
CEMVN-PDN-CEP
7400 Leake Avenue
New Orleans, Louisiana 701118-3651

AI No.: 84834
Activity No.: CER20160001

RE: Tiger Pass Marsh/Ridge Restoration Tier 2 Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program BUDMAT
Water Quality Certification WQC 151210-02
Plaquemines Parish

Dear Ms. Exnicios:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the proposed modification to the previously approved water quality certification to provide dredged material from the maintenance of federally maintained navigation channels for the Spanish Pass Ridge Restoration Project, Plaquemines Parish.

The modification provides a change in the dredge transportation and includes retention dikes for the marsh creation platform. LDEQ concludes the discharge of dredged material will not violate water quality standards as provided for in LAC 33:IX.Chapter 11. Therefore, LDEQ hereby issues US Army Corps of Engineers, New Orleans District - Spanish Pass Ridge Restoration Project Water Quality Certification, WQC 151210-02.

Should you have any questions concerning any part of this certification, please contact Elizabeth Hill (225) 219-3225 or by email at elizabeth.hill@la.gov. Please reference Agency Interest (AI) number 84834 and Water Quality Certification 151210-02 on all future correspondence to this Department to ensure all correspondence regarding this project is properly filed into the Department's Electronic Document Management System.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

c: IO-W

Post Office Box 4313 • Baton Rouge, Louisiana 70821-4313 • Phone 225-219-3181 • Fax 225-219-3309
www.deq.louisiana.gov

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

October 13, 2016

Patricia Leroux
Corps of Engineers-New Orleans District
7400 Leake Avenue
New Orleans, Louisiana 70118
Via email: patricia.leroux@usace.army.mil

RE: **C20150185 mod 02,** Coastal Zone Consistency
New Orleans District, Corps of Engineers
Direct Federal Action
Spanish Pass Ridge Restoration (LCA BUDMAT)
Plaquemines Parish, Louisiana

Dear Ms. Leroux:

The above referenced project modification has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. While the state supports the efforts to beneficially use dredged material, it seems that there could be other more economically viable options available for the Corps of Engineers (COE) to successfully construct this project. This project proposes to utilize material collected in the hopper dredge disposal area located near Southwest Pass, approximately 10 miles downstream; however, this entire area is regularly dredged by the COE. As the COE continues to see constraints on its operational budget for maintaining the Mississippi River, the state encourages the COE to continue to research and evaluate options to utilize these beneficial use monies as effectively as possible to restore land along our coast. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination, please contact Sara Krupa of the Consistency Section at (225) 342-8917 or sara.krupa@la.gov.

Sincerely yours,

/S/ Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

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To: Brad Rieck, USFWS
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506
Fax: (337) 291-3139

From: Patricia Leroux
FAX: (504) 862-2088
Date: November 2, 2015

W2M, PP, RIC, PS, ST

09/28/16

Subject: T&E Species concurrence for the Tiger Pass Marsh/Ridge Restoration Tier 2 Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT)

Dear Mr. Rieck:

Attention: John Savell:

The U.S. Army Corps of Engineers (USACE), New Orleans District (MVN), is preparing to perform the work described in Environmental Assessment (EA) #542, "Tiger Pass Marsh/Ridge Restoration Tier 2 Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT)." The EA is currently being supplemented in Supplemental Environmental Assessment #542.a (SEA #542.a) to address additional actions proposed under the Louisiana Coastal Area Beneficial Use of Dredged Material program, which has an approved Programmatic Environmental Impact Statement (EIS) entitled *Louisiana Coastal Area Beneficial Use of Dredge Material Programmatic EIS* and Record of Decision dated 13 August 2010.

Both documents propose construction of a ridge restoration project at Spanish Pass which was originally proposed as part of the State's 2012 Coastal Master Plan and Plaquemines Parish Ridge Restoration Program. The proposed action would involve restoration of a historic ridge that has subsided and eroded over time. The feature would include construction of an approximately 5,000-foot (ft) long ridge backed by a 500-ft wide marsh platform that would serve as a means to reduce wave energy on the leeward side of the marsh.

Project Description (EA #542)

Spanish Pass Ridge Restoration Alternative (5,000 linear feet)

The Spanish Pass Ridge Restoration project calls for the restoration of a portion of the historic ridge that ran along the banks of Spanish Pass. Since Spanish Pass was cut off from the Mississippi River by levees, the historic ridge has subsided and eroded through time. (Figure 1)

The created feature would include a ridge approximately 5,000-ft long (approximately 23 acres, or 9.79 AAHUs) constructed to an elevation of +6.5-ft NAVD88 with a 200-ft wide base. The ridge would begin west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. The earthen ridge would be backed by a 500-ft wide intermediate marsh platform (approximately 58 acres or 25.21 AAHUs) along the entire length of the ridge on its north side. The marsh platform would be constructed to a height of +3.5-ft NAVD88. All

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

January 04, 2017

Colonel Michael N. Clancy
District Commander
U.S. Army Corps of Engineers
7400 Leake Avenue
New Orleans, Louisiana 70118

Dear Colonel Clancy:

The U.S. Army Corps of Engineers (USACE), New Orleans District has written Supplemental Environmental Assessment (SEA) #542 titled "Tiger Pass Marsh/Ridge Restoration Tier 2, Louisiana Coastal Area (LCA), Beneficial Use of Dredged Material Program (BUDMAT) Project, Plaquemines Parish, Louisiana" (EA #542). That SEA evaluates the potential impacts of the designated disposal site for the placement and beneficial use of dredged material removed during maintenance dredging of various federal navigation channels in the Mississippi River Delta (MRD), and the hopper dredge disposal area (HDDA) located in the Federally-maintained Mississippi River. This final report contains an analysis of the impacts on fish and wildlife resources that would result from the implementation of the initial proposed project with subsequent design changes and provides recommendations to minimize adverse project impacts while maximizing beneficial project impacts on those resources. This final report has been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); this report constitutes the report of the Secretary of the Interior as required by Section 2(b) of that act. Copies of this report have been provided to the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries (LDWF).

Wetland deterioration in the MRD has been caused by anthropogenic factors, such as leveeing, canal dredging, gas and oil exploration, as well as natural processes such as eustatic sea level rise, subsidence, saltwater intrusion, and erosion. The LCA BUDMAT program was created to help fund the beneficial use of dredged material from federally-maintained waterways in coastal Louisiana. The program is only utilized for ecosystem restoration projects that are beyond the scope of disposal activities covered under the USACE Operations and Maintenance (O&M) dredging program's Federal Standard. The program is authorized at $100 million, and funds have been appropriated for the Tiger Pass project in partnership with the Plaquemines Parish Government.

The objectives for the Tiger Pass Marsh/Ridge Creation Tier 2, LCA, BUDMAT Project are to create coastal forested ridge and emergent marsh habitat adjacent to Spanish Pass in coordination with the USACE O&M dredging program. Dredged material removed during routine maintenance of the HDDA, located near Head of Passes (HOP), in the lower MRD would be pumped through

pipelines to the project area and placed at identified locations outside of the Federal Standard. The area identified for the Tiger Pass project is located north of Venice, LA approximately 1.7 miles west of the of the Mississippi River's west bank.

STUDY AREA

The Tiger Pass Marsh/Ridge Creation Tier 2, LCA, BUDMAT Project area is located in the northern part of the West Bay subdelta of the MRD, in extreme southeast Plaquemines Parish, Louisiana. The project area is the open water and surrounding marsh of Spanish Pass, a remnant distributary. The vegetation in the study area is classified as fresh and intermediate marsh (O'Neil 1949, Chabreck and Linscombe 1997, Sasser et al. 2008). Parts of the area receive riverine input, and support many species of emergent and submerged vegetation. Emergent plant species include: smooth cordgrass, Walter's millet, giant cutgrass, wild rice, elephant ear, freshwater three square, and water lotus. Submerged aquatic vegetation (SAV), such as Eurasian watermilfoil, water stargrass, coontail, southern naiad, and longleaf pondweed, is also common in the lower elevation intertidal and shallow subtidal portions of the project area. Black willow and eastern baccharis occur along the higher-elevation areas. The two major soil types in the project area are commonly found together and are classified as Balize and Larose soils. Both soil types are level and very poorly drained. They are flooded by Mississippi River water most of the time and support freshwater marshes. Subsidence in the area is high, and substantial sediment has not been deposited in the area since the original land formation of the West Bay subdelta. During periods of low river flow and/or strong south winds, gulf water intrudes and temporarily increases the salinity of the area.

FISH AND WILDLIFE RESOURCES

The fresh and intermediate marshes in the project area provide habitat for federal trust species including wading birds, waterfowl, and neotropical migrants. Freshwater and estuarine fish and crustacean species are abundant. Marsh in the project area provides important habitat for the growth and production of estuarine-dependent species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, spot, red drum, black drum, sand seatrout, spotted seatrout, southern flounder, striped mullet, and other finfishes. Commercial shrimp harvests have been positively correlated with the area of tidal emergent wetlands (Turner 1977 and 1982). Future commercial harvests of shrimp and other fishes and shellfishes would likely be adversely impacted by losses in marsh habitat (Turner 1982). Other wildlife includes alligators, swamp rabbit, nutria, muskrat, mink, river otter, raccoon, white-tailed deer, and coyote.

FUTURE FISH AND WILDLIFE RESOURCES

The MRD is generally experiencing high rates of land loss due to subsidence, erosion, etc., with localized areas of stability and marsh progradation. The loss of marsh acreage would result in less foraging, protection, nesting, etc., resources for fish and wildlife. Localized areas would maintain existing marsh or have an increase due to sedimentation and will continue to support fish and wildlife, but the MRD in general would experience decreased abundances of fish and wildlife.

Threatened and Endangered Species and Migratory Birds

Federally-listed threatened and endangered species that could be encountered in the project area are the endangered West Indian manatee (*Trichechus manatus*), the endangered pallid sturgeon

(*Scaphirhynchus albus*), the threatened piping plover (*Charadrius melodus*), and the threatened red knot (*Calidris canutus rufa*), and sea turtles (the USACE will consult with the NMFS regarding sea turtles. The USACE should consult with the Service and include any Service-recommended protective measures in their work plan.

The endangered West Indian manatee (*Trichechus manatus*) is known to regularly occur in Lakes Pontchartrain and Maurepas and their associated coastal waters and streams. It also can be found less regularly in other Louisiana coastal areas, most likely while the average water temperature is warm. Based on data maintained by the Louisiana Natural Heritage Program (LNHP), over 80 percent of reported manatee sightings (1999-2011) in Louisiana have occurred from the months of June through December. Manatee occurrences in Louisiana appear to be increasing and they have been regularly reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers, and in canals within the adjacent coastal marshes of southeastern Louisiana. Manatees may also infrequently be observed in the Mississippi River and coastal areas of southwestern Louisiana. Cold weather and outbreaks of red tide may adversely affect these animals. However, human activity is the primary cause for declines in species number due to collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution.

During in water work in areas that potentially support manatees all personnel associated with the project should be instructed about the potential presence of manatees, manatee speed zones, and the need to avoid collisions with and injury to manatees. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. Additionally, personnel should be instructed not to attempt to feed or otherwise interact with the animal, although passively taking pictures or video would be acceptable.

- All on-site personnel are responsible for observing water-related activities for the presence of manatee(s). We recommend the following to minimize potential impacts to manatees in areas of their potential presence:

- All work, equipment, and vessel operation should cease if a manatee is spotted within a 50-foot radius (buffer zone) of the active work area. Once the manatee has left the buffer zone on its own accord (manatees must not be herded or harassed into leaving), or after 30 minutes have passed without additional sightings of manatee(s) in the buffer zone, in-water work can resume under careful observation for manatee(s).

- If a manatee(s) is sighted in or near the project area, all vessels associated with the project should operate at "no wake/idle" speeds within the construction area and at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom. Vessels should follow routes of deep water whenever possible.

- If used, siltation or turbidity barriers should be properly secured, made of material in which manatees cannot become entangled, and be monitored to avoid manatee entrapment or impeding their movement.

- Temporary signs concerning manatees should be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities should display at the vessel control station or in a prominent location, visible to

all employees operating the vessel, a temporary sign at least 8½ " X 11" reading language similar to the following: "CAUTION BOATERS: MANATEE AREA/ IDLE SPEED IS REQUIRED IN CONSRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8½ " X 11" should be posted at a location prominently visible to all personnel engaged in water-related activities and should read language similar to the following: "CAUTION: MANATEE AREA/ EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

Collisions with, injury to, or sightings of manatees should be immediately reported to the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Please provide the nature of the call (i.e., report of an incident, manatee sighting, etc.); time of incident/sighting; and the approximate location, including the latitude and longitude coordinates, if possible.

The pallid sturgeon (*Scaphirhynchus albus*) is an endangered, bottom-oriented, fish that inhabits large river systems from Montana to Louisiana. Within this range, pallid sturgeon tend to select main channel habitats in the Mississippi River and main channel areas with islands or sand bars in the upper Missouri River. In Louisiana it occurs in the Atchafalaya and Mississippi Rivers, and below Lock and Dam Number 3 on the Red River (with known concentrations in the vicinity of the Old River Control Structure Complex). The pallid sturgeon is adapted to large, free-flowing, turbid rivers with a diverse assemblage of physical characteristics that are in a constant state of change. Many life history details and subsequent habitat requirements of this fish are not known. However, the pallid sturgeon is believed to utilize Louisiana riverine habitat during reproductive stages of its life cycle. Habitat loss through river channelization and dams has adversely affected this species throughout its range.

Entrainment issues associated with dredging operations in the Mississippi and Atchafalaya Rivers and through diversion structures off the Mississippi River are two potential effects that should be addressed in future planning studies and/or in analyzing current project effects. We recommend the following to minimize potential impacts to pallid sturgeon associated with dredging to ensure protection of the pallid sturgeon: (1) the cutterhead should remain completely buried in the bottom material during dredging operations. If pumping water through the cutterhead is necessary to dislodge material or to clean the pumps or cutterhead, etc., the pumping rate should be reduced to the lowest rate possible until the cutterhead is at mid-depth, where the pumping rate can then be increase; (2) during dredging, the pumping rates should be reduced to the slowest speed feasible while the cutterhead is descending to the channel bottom.

The piping plover (*Charadrius melodus*), federally listed as a threatened species, is a small (7 inches long), pale, sand-colored shorebird that winters in coastal Louisiana and may be present for 8 to 10 months annually. Piping plovers arrive from their northern breeding grounds as early as late July and remain until late March or April. They feed on polychaete marine worms, various crustaceans, insects and their larvae, and bivalve mollusks that they peck from the top of or just beneath the sand. Piping plovers forage on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation. They roost in unvegetated or sparsely vegetated areas, which may have debris, detritus, or micro-topographic relief offering refuge to plovers from high winds and cold weather. They also forage and roost in wrack (i.e., seaweed or other marine vegetation) deposited on beaches. In most areas, wintering piping

plovers are dependent on a mosaic of sites distributed throughout the landscape, because the suitability of a particular site for foraging or roosting is dependent on local weather and tidal conditions. Plovers move among sites as environmental conditions change, and studies have indicated that they generally remain within a 2-mile area. Major threats to this species include the loss and degradation of habitat due to development, disturbance by humans and pets, and predation.

On July 10, 2001, the Service designated critical habitat for wintering piping plovers (Federal Register Volume 66, No. 132); a map of the seven critical habitat units in Louisiana can be found at http://criticalhabitat.fws.gov/crithab. Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support those habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent unvegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers

The red knot (*Calidris canutus rufa*), federally listed as a threatened species, is a medium-sized shorebird about 9 to 11 inches (23 to 28 centimeters) in length with a proportionately small head, small eyes, short neck, and short legs. The black bill tapers steadily from a relatively thick base to a relatively fine tip; bill length is not much longer than head length. Legs are typically dark gray to black, but sometimes greenish in juveniles or older birds in non-breeding plumage. Non-breeding plumage is dusky gray above and whitish below. The red knot breeds in the central Canadian arctic but is found in Louisiana during spring and fall migrations and the winter months (generally September through May).

During migration and on their wintering grounds, red knots forage along sandy beaches, tidal mudflats, salt marshes, and peat banks. Observations along the Texas coast indicate that red knots forage on beaches, oyster reefs, and exposed bay bottoms, and they roost on high sand flats, reefs, and other sites protected from high tides. In wintering and migration habitats, red knots commonly forage on bivalves, gastropods, and crustaceans. Coquina clams (*Donax variabilis*), a frequent and often important food resource for red knots, are common along many gulf beaches. Major threats to this species along the Gulf of Mexico include the loss and degradation of habitat due to erosion, shoreline stabilization, and development; disturbance by humans and pets; and predation

The brown pelican (*Pelecanus occidentalis*), a year-round resident of coastal Louisiana that may occur in the project area, was removed from the Federal List of Endangered and Threatened Wildlife (i.e., "delisted") by the Service on November 17, 2009. Despite its recent delisting, brown pelicans—and other colonial nesting wading birds and seabirds—remain protected under the MBTA. Portions of the proposed project area may contain habitats commonly inhabited by colonial nesting wading birds and seabirds. To minimize disturbance to pelicans and other colonial nesting birds and seabirds potentially occurring in the project area, the USACE would observe restrictions on activity provided by the Fish and Wildlife Service, Lafayette, Louisiana Field Office. Special operating conditions addressing pelicans and other colonial nesting wading

birds and seabirds (including reporting presence of birds and/or nests; no-work distance restrictions—2000 feet for brown pelicans, 1000 feet for colonial nesting wading birds, and 650 feet for terns, gulls, and black skimmers; bird nesting prevention and avoidance measures; marking discovered nests) would be included in any USACE plans and specifications developed prior to dredging and disposal activities. In addition, dredging and disposal activities would be restricted to non-nesting periods for colonial nesting wading birds and seabirds when practicable

Essential Fish Habitat

The project may be located within an area identified as Essential Fish Habitat (EFH) by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, Magnuson-Stevens Act; P.L. 104-297). The USACE should consult with NMFS regarding EFH.

Species of Management Concern

Species of fish, wildlife, and plants labeled as "S1" and S2" by the Louisiana Department of Wildlife and Fisheries are extremely and very rare species, respectively, that are vulnerable to extirpation in Louisiana. These species, along with those identified as priority species by the Gulf Coast Joint Venture are species of management concern. Continued population declines could result in these species becoming candidates for listing under the Endangered Species Act. Some of these species may also be referred to as at-risk species; the Service has defined at-risk species as those species that have either been proposed for listing, are candidates for listing, or have been petitioned for listing.

Species of concern which use the study area include Wilson's plover, gull-billed tern, reddish egret, black skimmer, and peregrine falcon. Species of concern that would use study area's fresh, intermediate, brackish and saline marsh habitat and adjacent open waters, include the Louisiana-eyed silk moth, glossy ibis, seaside sparrow, black rail, mottled duck, and the peregrine falcon.

DESCRIPTION OF TENTATIVELY SELECTED PLAN AND EVALUATED ALTERNATIVES

Through coordination between the USACE' Product Development Team (PDT), the non-federal sponsor (Plaquemines Parish), and natural resource agencies, the following initial list of alternatives was developed:

Tentatively Selected Plan (TSP): Tiger Pass Marsh/Ridge (5,000 feet) Restoration at Spanish Pass (TP-3)

The LCA BUDMAT - Spanish Pass Ridge Restoration project alternative was originally proposed as part of the State's 2012 Coastal Master Plan and Plaquemines Parish Ridge Restoration Program. The project calls for the restoration of a portion of the historic ridge that ran along the banks of Spanish Pass. Since Spanish Pass was cut off from the Mississippi River by levees, the historic ridge has subsided and eroded through time.

The created feature would include an approximately 5,000-feet long ridge (approximately 23 acres) constructed to an elevation of +6.5 feet North American Vertical Datum 1988 (NAVD88) with a 200-feet wide base. The ridge would begin west of LA Highway (Hwy) 23 in Venice, LA and continue to the west along the north side of Spanish Pass. The earthen ridge would be backed by a 500-feet wide marsh platform (approximately 55 acres) along the entire length of the ridge on its north side. The marsh platform would be constructed to a height of +3.5 feet NAVD88. All

elevations listed are considered to be post-construction. The construction of this project would require 1,650,000 cubic yards of sandy material. The ridge and marsh platform feature would serve as a means to reduce wave energy on the leeward side of the project. The construction of this feature would impact 17.08 acres of existing marsh in the fill footprint and 1.09 acres of marsh in the access right-of-way. The access right-of-way would be 50-feet wide to allow for dredge pipeline and earth-moving equipment ingress-egress and would remain in state-claimed water bottoms.

To transport the dredge material from the HDDA, a cutterhead suction dredge would load hopper barges utilizing a spider barge. The arms of a spider barge are designed to optimize loading characteristics and production efficiency of loading the sediment into the hopper barges. Once loaded, the hopper barges would be transported by tugboat to the designated pump-out location in the Mississippi River outside of the navigation channel. The material would be removed from the hopper barges by an unloader and transported via pipeline to the fill placement area. Once the slurry line reaches shore from the unloader, it would travel along and under Jump Basin Road to open water. The pipeline would continue through existing open water to its terminus at the project site. The proposed route would not require the pipeline to traverse any levees, federal or otherwise. The construction equipment would access the site through open water bodies in order to prevent damage to existing wetlands.

The final placement of material being pumped through the dredge pipe would be handled similarly to material placement in the USACE disposal projects in the Delta National Wildlife Refuge. This method does not require the use of retention dikes from in situ material; rather the hydraulically dredged material would be pumped to the project site and shaped by conventional land based construction equipment (dozers, front end loaders, excavators, marsh cranes, etc.). The side slopes are allowed to take a natural angle of repose, and the crown elevations are well above the water surface permitting cost effective management of the fill material.

Tiger Pass Marsh/Ridge (7,500 feet) Restoration at Spanish Pass (TP-3)
This alternative would be located in the same area and similar to the TSP, but the created feature would include an approximately 7,500-feet long ridge (approximately 34 acres) constructed to an elevation of +6.5 feet NAVD88 with a 200-feet wide base. The ridge would begin west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. The earthen ridge would be backed by a 1000-feet wide marsh platform (approximately 167 acres) along the entire length of the ridge on its north side. The marsh platform would be constructed to a height of +3.5 feet NAVD88. The construction of this project would require 4,000,000 cubic yard of sandy material. The ridge and marsh platform feature would serve as a means to reduce wave energy on the leeward side of the project. Dredged material transport would be the same as the TSP.

Tiger Pass Marsh/Ridge (2,500 feet) Restoration at Spanish Pass (TP-3)
This alternative would be located in the same area and similar to the TSP, but the created feature would include an approximately 2,500-feet long ridge (approximately 11.5 acres) constructed to an elevation of +6.5 feet NAVD88 with a 200-feet wide base. The ridge would begin west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. The earthen ridge would be backed by a 500-feet wide marsh platform (approximately 30 acres) along the entire length of the ridge on its north side. The marsh platform would be constructed to a height of +3.5 feet NAVD88. The construction of this project would require 4,000,000 cubic yard of

sandy material. The ridge and marsh platform feature would serve as a means to reduce wave energy on the leeward side of the project. Dredged material transport would be the same as the TSP.

Venice Ponds Marsh Creation (TP-4 A&B)
This alternative would create marsh within 2 proposed marsh restoration sites designated as Sites TP-4A and TP-4B, and is located south east of the community of Venice, LA, beginning at the fork of Tiger Pass and Grand Pass. Restoration sites TP-4A and 4B would be approximately 95 and 97.5 acres in size, respectively. The dredge material for this alternative would be obtained from the lower portion of Tiger Pass through long distance transport of dredged material that would be obtained during USACE O&M dredging of the lower portion of Tiger Pass.

Dredge material will be limited to a maximum elevation of between +4 feet and +4.5 feet NAVD88. The dredge discharge pipeline and dike construction equipment would access the sites through a natural opening in the west bank of Tiger Pass and from there follow existing shallow water bodies to the restoration sites in order to prevent damage to existing wetlands. Approximately 2,000,000 cubic yards would be required to construct the project.

Construction of earthen retentions dikes (10,650 linear feet), closures (2,680 linear feet), and weirs at each site would be required in order to maximize retention of the dredged fill for the development of the wetlands, and to prevent the material from entering adjacent lands, waterways, and pipeline canals. Material necessary for dike, weir and closure construction would come from within the restoration sites themselves. The perimeter retention dikes would be constructed inside the marsh and to an elevation of +6 feet NAVD88, with 1 on 5 side slopes. The weirs would be constructed to an elevation of +4 feet NAVD88, with 1 on 5 side slopes.

Tiger Pass Bird Island
This alternative would create coastal bird nesting habitat for migratory shorebirds. Unconfined dredge spoil placement would be placed to a maximum initial elevation of +5.5 feet NAVD88 with an expected final elevation of approximately +3.5 feet NAVD88. Approximate dimension are 1,000 feet North-South by 1,400 feet East-West and the island would be located west of Tiger Pass.

PROPOSED DESIGN CHANGES TO THE TSP

Changes to the TSP resulted from advanced engineering and design investigations and accommodation of existing project area infrastructure (i.e., pipelines). The proposed changes include modifications to the ridge and marsh platform design, inclusion of perimeter dikes and associated borrow sites, equipment staging areas to facilitate construction, and dredge material transport routes with associated access points. The proposed design changes to the TSP are described in further detail below.

Ridge Restoration and Marsh Platform
Two (2) existing crude pipelines, owned by Plains All American, have been identified in the project area. The pipelines, which include a currently active 12-inch crude line and an abandoned 6-inch crude line, pass through the location of the proposed ridge restoration and marsh creation platform.

To avoid impacts to the pipelines, a no-work corridor has been established between the western and eastern sections. With the exception of allowable placement of dredge fill over the pipelines to provide a land bridge for equipment access, no work will be performed within 50-feet of either pipeline. The no work area includes the outside toes of the earthen retention dikes that are to be constructed adjacent to and parallel to these pipelines, but offset by a minimum of 50-feet. The width of this no work corridor between the allowable dike toes, that is to be maintained at these pipeline crossings, will vary from approximately 140-feet on the north end and approximately 160-feet on the south end.

In order to accommodate the pipeline corridor, the ridge and marsh platform would be divided into two sections, the western section and the eastern section. The ridge would begin approximately 1.3 miles west of LA Hwy 23 in Venice, LA and continue to the west along the north side of Spanish Pass. All elevations listed are considered to be post-construction and it is expected that the ridge crown would settle to an elevation of approximately +6.0-feet NAVD88 within 1-2 years of completion of construction. Restoration of the ridge would impact approximately 21.6 acres of open water intermingled with patches of existing intermediate marsh, with 13.3 acres within the western section and 8.3 acres within the eastern section.

The marsh platform would be constructed to an initial fill height of +3.5-feet NAVD88 and would be surrounded by a perimeter retention dike. The western side would measure 450-feet on the backside and 40 to 50-feet on the south side of the ridge. (Figure 2) All elevations listed are considered to be post-construction and it is expected that the marsh platform would settle/dewater to an elevation of approximately +2.0-feet NAVD88, an increase of +0.5-feet NAVD88 from previous expectations, within 10 years of completion of construction. Approximately 36.5 acres of marsh would be created within the western section and approximately 19.2 acres of marsh would be created within the eastern section.

The final placement of material being pumped through the dredge pipeline would otherwise be handled in a manner similar to the handling of dredged materials for the normal Operation and Maintenance dredging of the HDDA when it disposes of materials in the Delta National Wildlife Refuge, the Pass a Loutre Wildlife Management Area, and the open waters of West Bay.

Acres of impacts from the ridge and marsh platform amount to 77.3 acres, which were previously addressed in EA #542 and the Finding of No Significant Impact dated March 2016.

Retention Dikes

Earthen dikes would be needed in order to facilitate construction of the ridge and marsh platforms and maximize retention of the dredged material, as well as to prevent the material from entering adjacent lands, waterways, and pipeline rights-of-way. Unless otherwise specified, any material necessary for dike, weir, and closure construction would come from within the restoration sites themselves, unless otherwise specified. Post construction, the dikes would be allowed to settle and/or erode, as well as vegetate naturally over time. If necessary, these retention dikes would later be breached or degraded to the settled elevations of the disposal area by the Non-Federal Sponsors.

The retention dikes would be constructed to a crown width of 5-feet, crown elevation of +5-feet NAVD88, and side slopes no steeper than 1V on 4H. The dikes to be constructed along the south side of the ridge would also include a 25-foot wide berm, to be constructed to elevation 0.0-feet NAVD88, and with slopes no steeper than 1V on 4H. The berm would tie into the southern slope

of the retention dike, extend 25-feet at elevation 0.0-feet NAVD88, and then tie into natural ground (approximately -3.5-feet NAVD88) on a slope no steeper than 1V on 4H. Construction of the dikes would impact approximately 22.5 additional acres of open water mingled with patches of intermediate marsh.

EA #542 addressed the 77.3 acre footprint needed for construction of the ridge restoration and marsh creation platform. With the addition of the 22.5 acres needed for construction of the earthen dikes, the total impacts for the ridge, marsh and dike amounts to a total acreage of 99.8 acres of impact.

Borrow Requirements

Borrow for construction of the retention dikes would be obtained from borrow sites either from within or outside of the ridge and marsh platform footprint. However, borrow excavation or placement would not be allowed within the pipeline corridors. The potential borrow sources are identified as follows:

Approximately 28.2 acres could be impacted through interior and exterior borrow for the western cell:

a) Exterior Borrow Pit north of western section = 7.3 acres
b) Exterior Borrow Pit west of western section = 1.4 acres
c) Exterior Borrow Pit south of western section and within adjacent Spanish Pass = 5.8 acres
d) Interior Borrow Pit in western section, which would be backfilled during construction of the Project with dredged material = 13.7 acres

Approximately 15.3 acres could be impacted through interior and exterior borrow for the eastern cell:

a) Exterior Borrow Pit north of eastern section = 2.9 acres
b) Exterior Borrow Pit south of eastern section and within adjacent Spanish Pass = 4.4 acres
c) Interior Borrow Pit of eastern section, which would be backfilled during construction of the project with dredge material = 8.0 acres

Overall, an additional 43.5 acres of open water intermingled with existing intermediate marsh would be impacted for the acquisition of borrow for dike construction associated with the project, which is an increase of 43.5 acres of impact not previously addressed in EA #542 which identified all borrow material as coming from the HDDA. Any borrow obtained within the ridge and marsh platform footprint would be backfilled during the placement of dredged material. Material obtained from borrow locations outside of the ridge and marsh platform locations would not be backfilled and would instead be allowed to refill naturally over time. The construction of the Project would require approximately 1,700,000 cubic yards of silty sandy material to be obtained solely from the HDDA. This is an increase of 50,000 cubic yards of material from the 1,650,000 previously estimated.

Dredge Material Transportation

The dredge discharge pipeline would begin at the slip at the end of Halliburton Road, travel along the north side of Halliburton Road and be placed within the existing drainage canal paralleling the road. A temporary ramp would be constructed over the dredge pipeline in order to provide ingress and egress at the end of Halliburton Road. The ramp would measure approximately 12-feet in width by approximately 150-feet in length and consist of crushed stone. Upon completion of the

contract, the dredge pipeline would be removed and the ramp graded in order to restore the area to pre-existing conditions.

The dredge pipeline would then cross under Tide Water Road via a 42-inch casing to be jack and bored under the road in advance and available for use by the dredging contractor. The dredge pipeline would then travel approximately 850-feet from the north end of the bored culvert to Spanish Pass Road via a corridor covering approximately 1.4 acres, of which approximately 1.1 acres is intermittent marsh that could be impacted. The dredge pipeline would then pass over Spanish Pass Road and enter Spanish Pass itself. Once in the open waters of Spanish Pass, the dredge pipeline would then traverse an approximate distance of 1.25 miles to reach the eastern end of the ridge and an additional 1.0 mile to reach the western edge of the proposed ridge. The dredge pipeline and all construction equipment would remain within the banks of Spanish Pass itself. It is not expected that any utilities or pipelines would be impacted along the access route, or within the entire ridge area. Delivery of dredge material to the project area would be in a manner that would avoid impacting pipeline rights-of-way and utilities passing through the access route.

The proposed route would not require the dredge material pipeline to traverse across any levees, federal or otherwise. The construction equipment would access the site primarily through open water bodies in order to minimize damage to existing wetlands.

Staging Area

Construction of a permanent staging area would be necessary to facilitate the construction. The staging area would measure approximately 75-feet by 75-feet and would be located at the west end of Spanish Pass Road, and adjacent to Spanish Pass. The staging area would be comprised of crushed stone aggregate, placed over a geotextile base (if needed) and would remain in place upon completion of construction. The staging area would permanently impact approximately 1.3 acres of intermediate marsh.

Jack and Bore

The jack and bore, is a method of horizontal boring that allows the placement of a pipeline beneath the surface of the earth, thereby eliminating above ground impacts. This method would be used to place the dredge pipeline beneath Tidewater Road. The equipment for the installation of the 42-inch casing and the dredge pipeline would impact approximately 0.27 acres on the north side (Spanish Pass Side) of Tidewater Road and 0.19 acres on the south side (Grand Pass Side) of Tidewater Road, for an overall impact of 0.46 acres of intermediate marsh.

EVALUATION METHODS FOR SELECTED PLAN, ALTERNATIVES, AND DESIGN CHANGES

Wetland Value Assessment (WVA)

Evaluations of the effects of the alternatives to fish and wildlife resources were conducted using the WVA methodology. Implementation of the WVA requires that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. Each WVA model utilizes an assemblage of variables considered important to the suitability of that habitat type to support a diversity of fish and wildlife species. The WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for bottomland hardwoods, chenier/coastal ridge, fresh/intermediate marsh, brackish marsh, and saline marsh. Although, the WVA may not include every environmental or behavioral variable that could limit populations

below their habitat potential, it is widely acknowledged to provide a cost-effective means of assessing restoration measures in coastal wetland communities.

The WVA models operate under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland type can be characterized, and that existing or predicted conditions can be compared to that optimum to provide an index of habitat quality. Habitat quality is estimated and expressed through the use of a mathematical model developed specifically for each wetland type. Each model consists of: (1) a list of variables that are considered important in characterizing community-level fish and wildlife habitat values; (2) a Suitability Index graph for each variable, which defines the assumed relationship between habitat quality (Suitability Index) and different variable values; and, (3) a mathematical formula that combines the Suitability Indices for each variable into a single value for wetland habitat quality, termed the Habitat Suitability Index (HSI).

The product of an HSI value and the acreage of available habitat for a given target year is known as the Habitat Unit (HU) and is the basic unit for measuring project effects on fish and wildlife habitat. HUs are annualized over the project life to determine the Average Annual Habitat Units (AAHUs) available for each habitat type. The change (increase or decrease) in AAHUs for each future with-project scenario, compared to future without-project conditions, provides a measure of anticipated impacts. A net gain in AAHUs indicates that the project is beneficial to the fish and wildlife community within that habitat type; a net loss of AAHUs indicates that the project would adversely impact fish and wildlife resources.

IMPACTS OF SELECTED PLAN, ALTERNATIVES, AND DESIGN CHANGES

Because all of the alternatives include placement of dredged material in shallow water bottoms, they would impact benthic and slower moving aquatic demersal organisms; however shallow water bottom habitat area is increasing relative to emergent marsh area and coastal islands in most of coastal Louisiana. The construction of the TSP and the other ridge/marsh alternatives would impact remnant degraded marsh but they would create new ridge habitat and emergent marsh with greater refugia and forage benefits than open water bottoms and would increase the overall net habitat value of the area. The projected effects of the alternatives and design changes are summarized in Table 1 and 2 respectively.

Table 1. Tiger Pass BUDMAT alternatives with associated acres and net AAHUs that would be generated.

Alternative	Marsh created by dredged material placement (acres)	Net marsh AAHUs	Forested ridge habitat created by dredged material placement (acres)	Net ridge AAHUs	Coastal island migratory bird nesting habitat (acres)	Total project AAHUs
TP3 5,000 ft ridge (not planted) and marsh creation (TSP)	55	24.11	23	9.8		33.9
TP3 5,000 ft ridge (planted) and marsh creation	55	24.11	23	13.01		37.1

TP3 7,500 ft ridge (not planted) and marsh creation	167	74.33	34	14.29		88.6
TP3 7,500 ft ridge (planted) and marsh creation	167	74.33	34	19.01		93.3
TP3 2,500 ft ridge (not planted) and marsh creation	30	13.17	11.5	4.9		18.07
TP3 2,500 ft ridge (planted) and marsh creation	30	13.17	11.5	6.5		19.67
TP4 marsh creation	190	70.99				70.99
TP Bird Island					26	15.08

Table 2. Tiger Pass BUDMAT proposed design changes with associated acres and net AAHUs that would be generated.

Activity	New Impacts	Marsh created by dredged material placement (acres)	Net project AAHUs
Retention Dikes	+22.5 acres (open water and intermediate marsh)	19.0	18.34
Borrow Pits	+43.5 acres (open water and intermediate marsh)		
Stability Berm for Borrow Area	+7.85 acres (open water and intermediate marsh)		
Dredge Transportation	+1.4 acres (intermediate marsh)	0.0	-0.45
Jack and Bore	+0.46 acres (intermediate marsh)		
Staging Areas	+1.3 acres (intermediate marsh)		

SERVICE POSITION AND RECOMMENDATIONS

The Service's analysis of project alternatives considered for the study area has shown the potential for beneficial effects on fish and wildlife resources. Construction of the TSP (TP3 5,000 feet) is projected to create 23 acres of forested ridge and 55 acres of intermediate marsh over the 50 year life of the project for a net total 33.9 AAHUs. The net benefits of the other alternatives that were evaluated are listed in Table 1. The Service supports this habitat creation project provided the following fish and wildlife conservation measures are implemented concurrently with project implementation to help ensure that fish and wildlife conservation is maximized:

1. Avoid adverse impacts to water bird colonies through careful design project features and timing of construction. We recommend that a qualified biologist inspect the proposed work site for the presence of undocumented nesting colonies during the nesting season. For areas containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a nesting colony should be restricted to the non-nesting period. For nesting brown pelicans activity should be avoided within 2,000 feet of the colony. Activity is restricted within 650 feet of black skimmers, gulls, and terns.

2. The impacts to Essential Fishery Habitat should be discussed with the National Marine Fisheries Service to determine if the project complies with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Magnuson-Stevens Act: P.L. 104-297, as amended) and its implementing regulations.

3. Access corridors across existing wetlands should be avoided if possible. Impacted wetlands should be restored to a substrate elevation similar to the surrounding marsh. Flotation access channels in open water should be backfilled upon project completion. Post-construction surveys (e.g., centerline surveys) should be taken to ensure access channels have been adequately backfilled. That information should be provided to the natural resource agencies for review.

4. To ensure that dredged material is placed to each particular habitat's specified elevations, we recommend that the USACE use the current datum, NAVD88 (GEOID 12A), which is consistent with the datuu that is referenced for the elevations of existing marsh and water level in the project area.

5. If containment dikes are constructed, they should be breached or degraded to the settled elevations of the disposal area. If soil conditions allow for dikes to be designed in a manner allowing naturally degradation and settlement, the Service recommends the USACE commitment to mechanically degrade the containment dikes in the case that anticipated settlement and degradation does not occur naturally ensuring tidal exchange is restored. Such breaches should be undertaken after consolidation of the dredged sediments and vegetative colonization of the exposed soil surface, or a maximum of 2 years after construction.

6. The Service recognizes the value of submerged aquatic vegetation (SAV) habitat to fish and wildlife, including Federal trust resource species. If SAV is encountered, the USACE should avoid these areas if possible and utilize unvegetated open water areas for marsh creation.

7. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, Water Control Plans, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA and LDNR. The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

8. Any proposed change in project features or plans should be coordinated in advance with the Service, NMFS, LDWF, and LDNR

9. The LCA BUDMAT program specifies that monitoring and adaptive management plans are required for beneficial use habitat creation projects. The USACE should coordinate with the Service during development of those plans.

10. ESA consultation should be reinitiated should the proposed project features change significantly or are not implemented within one year of the last ESA consultation with this office to ensure that the proposed project does not adversely affect any federally listed threatened or endangered species or their habitat.

We appreciate the opportunity to assist in the development of and provide comments on the Tiger Pass BUDMAT project. We look forward to your response to our recommendations and to future coordination to further protect and restore fish and wildlife resources as more specific plans are developed. If you need further assistance or have questions regarding this letter, please contact John Savell (337/291-3144) of this office.

Sincerely,

Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Field Office

cc: USACE, NOD, New Orleans, LA (Attn: Ms. Patricia Leroux)
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
CPRA, Baton Rouge, LA

Literature Cited

Chabreck, R., and G. Linscombe. 1997. Vegetative Type Map of the Louisiana Coastal Marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, LA.

Sasser, C.E., Visser, J.M., Mouton, Edmond, Linscombe, Jeb, and Hartley, S.B., 2008. Vegetation types in coastal Louisiana in 2007: U.S. Geological Survey Open-File Report 2008–1224, 1 sheet, scale 1:550,000.

O'Neil, T. 1949. Map of Louisiana showing the vegetation types of Louisiana coastal marshes 1949. U.S. Geological Survey, National Wetlands Research Center Coastal Restoration Project Office.

Turner, R.E. 1977. Intertidal vegetation and commercial yields of penaeid shrimp. Trans. Am. Fish. Soc. 106:411-416.

Turner, R.E. 1982. Wetland losses and coastal fisheries: an enigmatic and economically significant dependency. *In* Boesch, D.F.(ed.). Proceedings of the conference on coastal erosion and wetland modification in Louisiana: causes, consequences, and options. Fish and Wildlife Service, Biological Services Program, Washington, D.C. FWS/OBS-82/59. 256 pp.

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

December 5, 2016

Regional Planning and Environment
Division South

Ms. Pam Breaux
State Historic Preservation Officer
LA Office of Cultural Development
P.O. Box 44247
Baton Rouge, LA 70804-4247

No known historic properties will be affected by this undertaking. Therefore, our office has no objection to the implementation of this project. This effect determination could change should new information come to our attention.

Phil Boggan
State Historic Preservation Officer

Date
12/19/2016

Dear Ms. Breaux:

Draft Supplemental Environmental Assessment (SEA) #542.A for Tiger Pass Marsh/Ridge Restoration Tier 2 Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT), Louisiana project has been prepared by the U.S. Army Corps of Engineers, New Orleans District and is enclosed for your review.

SEA #542.A presents changes and additional potential impacts to the approved dredge material plan which was described in Environmental Assessment #542 (EA #542) titled "Louisiana Coastal Area (LCA), Beneficial Use of Dredged Material Program at Tiger Pass Project, Plaquemines Parish, Louisiana". The Finding of No Significant Impact (FONSI) for EA #542 was approved by the CEMVN Commander on March 9, 2016.

The proposed action assessed in this SEA involves changes to the approved Project Plan for ridge restoration and marsh creation previously described in EA #542. Changes include adjustments to the design of the ridge and marsh platform in the Project Area, the expansion of the marsh platform to include perimeter dikes, borrow pits for the construction of the perimeter dikes, the addition of an equipment and pipeline staging area, and the impacts associated with the equipment needed for the jack and bore pipeline casing installation of a 42 inch pipeline casing under portions of Tide Water Road. Also being proposed is an alternative route to facilitate the transport of the dredged material from the marina via a dredge material discharge pipeline. Utilization of the proposed alternative route would require dredging of a marine vessel slip located at the eastern end of Haliburton Road to accommodate a barge traffic.

Please review the enclosed documents and provide comments within 30 days of the date of this letter. The FONSI will not be signed until all environmental review and compliance requirements have been completed. A copy of the signed FONSI will be provided upon request.

Comments should be mailed to the attention of Ms. Patricia S. Leroux; U.S. Army Corps of Engineers; Regional Planning and Environment Division South; New Orleans Environmental Branch; CEMVN-PDN-CEP; 7400 Leake Avenue, New Orleans, Louisiana 70118. Comments may also be provided by email to patricia.s.leroux@usace.army.mil, or by fax to (504) 862-2088. Ms. Patricia S. Leroux may be contacted at (504) 862-1544 if questions arise.

RECEIVED
DEC 05 2016
ARCHAEOLOGY

Joan M. Exnicios
Chief, Environmental Planning Branch

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

January 4, 2016 F/SER46/TC:jk
225/389-0508

Ms. Joan M Exnicios, Chief
Regional Planning and Environmental Division South
New Orleans District Environmental Branch
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

NOAA's National Marine Fisheries Service (NMFS) has received the draft Supplemental Environmental Assessment (SEA) titled "Tiger Pass Marsh/Ridge Restoration, Tier 2, Louisiana Coastal Area (LCA) Beneficial Use of Dredged Material Program (BUDMAT), Louisiana" transmitted for our review by your December 5, 2016, letter. The draft SEA presents revisions to the approved dredge material plan described in Environmental Assessment #542.

The NMFS has reviewed the draft SEA and finds the resources potentially affected have been adequately described and impacts to those resources adequately evaluated. As such, we have no recommended revisions to the draft SEA. Given the overall positive benefit of project implementation to habitat supportive of marine fishery resources, NMFS fully supports project implementation. Additionally, the NMFS concurs with the determination provided on page 46 of the draft SEA that project implementation would result in a net positive benefit to EFH supportive of federally managed fishery species. Unless the project is significantly revised, this concludes the EFH coordination responsibilities for this project required by the Magnuson-Stevens Fishery Conservation and Management Act.

The NMFS appreciates the opportunity to review and comment on the draft SEA.

Sincerely,

Virginia M. Fay

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette, Walther
EPA, Dallas, Keller
LA DNR, Consistency, Haydel
F/SER46, Swafford
Files

APPENDIX E

Monitoring and Adaptive Management

Section 2039 of the Water Resources Development Act (WRDA) of 2007 and Implementation guidance for Section 2039, in the form of a CECW-PB Memorandum dated 31 August 2009, require ecosystem restoration projects develop a plan for monitoring the success of the ecosystem restoration and develop an Adaptive Management Plan (contingency plan) should the project monitoring show that the project is not performing as expected.

1. BUDMAT Program

Each BUDMAT Program project is specifically designed for a one-time beneficial use of dredged material from a specific maintenance dredging activity of a federally maintained navigation channel. Consequently, there is no opportunity to adjust the Project once it has been completed. As discussed below, due to the intent of the BUDMAT Program, adaptive management is not considered viable for BUDMAT projects. Hence, performance criteria for BUDMAT projects is simply defined as a positive gain in subaerial land.

1.1 Restoration Objective

The objective of this project is to beneficially use maintenance dredged material from the federally maintained Mississippi River navigation channel to restore the natural coastal landscape through creation of ridge and marsh habitat along the historic Spanish Pass Ridge.

1.2 Adaptive Management

There is no opportunity to adjust this BUDMAT Project once it has been completed. This BUDMAT Project, like all previous BUDMAT Projects, is not a good candidate for adaptive management because there are no actions that could be taken in response to monitoring results for the purposes of adaptive management as it would relate to the intent of the LCA BUDMAT Program. Although some activities could be conducted to adjust Project performance, those actions would have to be part of a separate ecosystem restoration or beneficial use of dredged material project.

Although there is no opportunity for adaptive management, the BUDMAT Program will document lessons learned and provide information and or recommendations to future BUDMAT projects or similar projects. Monitoring results from the Project will help refine modeling, design, and predictions of physical and ecological processes that will in turn inform design of future restoration and beneficial use projects.

1.3 Monitoring and Data Collection

Monitoring will be conducted to ensure project designs were correctly implemented and to evaluate project effectiveness. This monitoring plan will be implemented by the USACE, the non-federal sponsor or their contractor and will be cost shared. Data collection will begin with pre-construction and will continue post-construction dependent upon available funding.

Proposed monitoring and data parameters include:

- Aerial Photography Collection & Analysis- Data will be collected by the USACE Beneficial Use Monitoring Program (or BUMP) aerial photography taken annually as part of the New Orleans District (CEMVN) Federal navigation channel operation and maintenance program. The BUMP program monitors land gain or loss for those navigation projects where dredged material is used beneficially. Total land losses or gains would be reported in acres.

    - Frequency- Annually before and after construction
    - Reporting- BUMP aerial photography is typically acquired in November or December of each calendar year and is available by March or April of the following year. The digital photography is geo-referenced into a suitable format for the use in GIS from which land loss or gain can be calculated. Brief reports based on land loss or gain data using BUMP aerial photography should be released annually prior to 1 June of each calendar year.

- Physical Elevation Surveys- Surveys of the Project site should be carried out pre- and post-construction of this project. Elevation, Bathymetric and As Built Surveys will be conducted by the USACE and/or the local Sponsor (or their designees) before and after construction and will be used to calculate benefits (land acres created) attributed to this project.

    - Frequency- Before and after construction/as built
    - Reporting- From the survey, a brief report describing the land gain or land loss since will be developed. Total land losses or gains would be reported in acres.

- Field surveys – Site visits will be conducted post construction for *in situ* verification of ridge and marsh settlement, vegetative recruitment, and constructed land loss or gain. Field surveys will be conducted by the USACE or the local Sponsor (or their designees)

    - Frequency- Post construction after the initial settlement period

- Data from other projects or programs will be leveraged and used when possible

    - Coastwide Reference Monitoring System (CRMS) Program

        - Annual data from CRMS2608 and CRMS0163 can be used to report on the seasonal variations of salinity, water quality, tide, etc., in the general vicinity of the project area.
        - Annually coastwide aerial imagery is collected that covers this Project area is conducted.
        - Annually land water analysis is conducted for the hydrologic using satellite imagery

1.4 Reporting

Annually all applicable and available data will be compiled, assessed, summarized and archived. The USACE Environmental Management and the non-federal sponsor or its designee will document each of the performed assessments and communicate the results of its deliberations to the managers and decision-makers for the Project. An Annual Project Report will be developed by September 31 of each year to document lessons learned based on assessment results.

The annual reports will compile lessons learned, best practices and experiences relevant to implementation and beneficial use of dredged material for restoration, technical and organizational challenges, and monitoring approaches. Adaptive management is not considered justifiable for this Project. However, lessons and experiences will be clearly documented with recommendations so that they can be easily applied to future projects. Documenting the lessons learned ultimately aims to reduce recurring, technical or programmatic issues that negatively impact cost, schedule, restoration project performance and success.

1.5 Costs

Aerial Photography Collection & Analysis	No additional cost. Study area covered by the existing annual BUMP collections
Elevation Surveys	No additional cost. These surveys are already being conducted under the Construction contract and or Engineering design.
Field Surveys	No additional cost. These surveys are already being conducted under the Construction contract and or Engineering design.
CRMS Data Collection	No additional cost.
Adaptive Management	N/A
Management/Evaluation/Assessment/Decision Making/Report/Data Management	$10,000 annually