DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
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Regional Planning and
Environment Division South
Environmental Compliance Branch

DECISION RECORD

PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT 36
TIERED INDIVIDUAL ENVIRONMENTAL REPORT 1

MILTON ISLAND MARSH RESTORATION PROJECT
SAINT TAMMANY PARISH, LOUISIANA

Description of Proposed Action. The U.S. Army Corps of Engineers, New Orleans District (CEMVN) proposes to compensate for habitat losses to non-refuge, fresh and intermediate marsh incurred during construction of the Lake Pontchartrain and Vicinity component of the Hurricane and Storm Damage Risk Reduction System (LPV HSDRRS) in Greater New Orleans, Louisiana. The proposed mitigation would replace the lost functions and services of the impacted habitat through restoration activities designed to create, increase, and improve the habitat functions and services at the specific mitigation site. This intermediate marsh restoration project is located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge. The proposed marsh creation site is located in a shallow lake immediately adjacent to Lake Pontchartrain that was previously separated from Lake Pontchartrain. Approximately 1,000 feet of the eastern lakeshore-marsh boundary has been breached into the lake, and a shoreline restoration feature is proposed to provide future protection of the proposed marsh feature.

In order to ensure that HSDRRS impacts were adequately mitigated, a functional assessment model titled the Wetland Value Assessment Model (WVA) was utilized to predict the Average Annual Habitat Units (AAHUs) lost due to HSDRRS impacts against the AAHUs generated by the proposed marsh mitigation feature. The proposed intermediate marsh restoration project would encompass 152 acres, not including the 115-acre borrow source for fill material in Lake Pontchartrain. Within the 152-acre project area, 7 acres are existing dikes partially surrounding the perimeter and 2 acres are where a shoreline protection feature is proposed. The remaining 143 acres are currently shallow open water that would be filled with dredged material to develop into marsh. Up to approximately 15 acres of interior borrow ditches would be excavated to provide material to build and improve dikes to contain the dredged material. Only about 4.5 acres of the 15 acres of borrow ditches are expected to become marsh, leaving about 10.5 acres un-vegetated. Therefore, the calculated amount of marsh that would be developed is 132.5 acres.

The proposed intermediate marsh restoration project would provide slightly more than the required 45.7 AAHUs of mitigation credit. As designed, the project has been calculated to provide 48.2 AAHUs, or approximately 5% more AAHUs than required, which is considered to be within the margin of error for the analysis.

The project consists of dredging material from the bottom of Lake Pontchartrain beginning about 2,000 feet from the shoreline. A hydraulic cutterhead dredge would be used to remove the material and pump the material via a pipeline to the proposed marsh creation site. Initial elevation for dredge fill would be to approximate elevation +2.25 feet NAVD88, to ultimately result in a target marsh elevation of between +1.5 and +1.0 feet NAVD88. Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. Existing retention features exist along the east, west, and south perimeters of the project footprint, except for a 1,000 foot reach of lake shoreline which would require restoration efforts as described at the end of this section. Rehabilitation of these existing dikes would be accomplished as necessary to retain the dredge material slurry. Approximately 5,600 linear feet of new retention dike would be required along the northern limit of the project footprint. The dike would be built with borrow material obtained within the marsh creation footprint to an elevation +4.5 feet NAVD88 and with a 5-foot crown width, to provide two feet of freeboard during the dredged material pumping operation. Plugs would be left in the borrow ditch at 1,000-foot intervals to minimize water flow and material loss during pumping operations. Spill boxes and/or weirs would be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the marsh creation area for approximately one year after construction, when the perimeter dikes are breached and degraded. If deemed necessary by the construction contractor, a low-level interior weir or baffle dikes would be constructed to assist in vertical stacking of dredged material. The dike along the north side of the marsh creation area would be degraded approximately one year after project construction, upon settlement and dewatering of the created marsh platform. The existing western dike would be gapped approximately one year after project construction to allow interaction with the existing marsh and scrub/shrub wetlands to the west of the project area. The gaps would be spaced with care being taken to locate gaps at existing natural bayous, canals, or other openings. The gaps would require a 25-foot bottom at approximately elevation +0.0 NAVD88 (lower limit of existing nearby marsh platform) to assure water interchange with the existing marsh. Two to three gaps would be placed in the eastern dike to allow water exchange with the existing canal located to the east of the project area. The southern dike would remain to provide protection from Lake Pontchartrain waves and water intrusion.

The proposed marsh restoration layout would result in an open water area immediately north and adjacent to the marsh footprint. The entire northern retention dike would be degraded to marsh elevation, allowing unimpeded access for fish and wildlife between the open water and created marsh platform. The degraded material may be disposed in the original borrow ditch if settlement allows, or cast into open water immediately outside of the project footprint. Construction of trenasses (small ditches) is not

proposed within the created marsh footprint. It is anticipated that natural sloughs and/or access corridors would develop over the project life.

The marsh footprint would be planted upon satisfactory settlement and dewatering of the dredged material, approximately 1 year after initial construction. Plugs of appropriate marsh vegetation would be planted over the marsh restoration acreage on 7-foot centers. The planting contractor would access the site from the lake or use the existing canal along the eastern border of the project area. Either way, no dredging would be allowed. The planting contractor would be allowed to use the staging area previously used for initial project construction. That staging area would be planted with appropriate native vegetation under the planting contract. Mixtures of herbaceous and woody plants would be used to re-vegetate the staging area. The staging area is not part of the area that would be monitored or adaptively managed.

The southern limit of the proposed marsh creation footprint is bounded by the Lake Pontchartrain shoreline. Aerial photography confirmed by a site visit shows that this shoreline has breached, and lake waters are free to enter and exit the interior shallow water and remnant marsh. Approximately 1,000 feet of shoreline restoration is proposed to reestablish the shoreline. The shoreline restoration feature may need to be longer than 1,000 feet if the shoreline erodes appreciably before the construction contract is awarded. The shoreline repair would be an earthen dike feature, with an approximate crown width of 25 feet to match existing shoreline elevations to the east and west. Material to rebuild the shoreline would be obtained by dredging on both the lake-side and marsh side of the alignment. An earthen-filled bag system, which would accommodate planting of shoreline vegetation, would be constructed on the lake-side of the shoreline dike to minimize erosion.

The borrow plan is to obtain material from Lake Pontchartrain, requiring a buffer of 2,000 feet between the existing shoreline and the borrow area limit. Marsh restoration would require borrow of approximately 1,000,000 cubic yards of material. A primary borrow site of 60 acres would accommodate this requirement. To assure adequate borrow material is available, a 45-acre secondary borrow pit adjacent to the primary area is proposed to allow for the potential that the primary borrow site may contain unsuitable materials, unknown utilities, unidentified anomalies, and/or undocumented cultural resources. Borrow excavation would not be allowed greater than 10 feet below the existing lake bottom, which ranges from 9 to 10 feet in depth, except that a tolerance of 1-feet below this target elevation would be allowed to account for inaccuracies in the dredging process. Existing electrical transmission lines are located in Lake Pontchartrain, south of the proposed borrow site. A minimum buffer of 800 feet would be required between the borrow site footprint and the transmission line alignment. A pipeline corridor has been designated from the borrow source to the shoreline, with no allowances for excavation. The dredge pipeline will be floated and or submerged within this corridor, and then the dredge pipe would be laid across the shoreline and into the marsh creation area. The area of shoreline disturbed by this pipeline access effort will be repaired upon completion of the dredging operation. The pipeline would cross the existing lakeshore approximately at the east/west midpoint of the marsh polygon.

The only dredging in Lake Pontchartrain that is addressed in TIER #1 and supporting environmental documentation is for the borrow source. No access dredging is allowed. The access path for equipment was previously dredged by private interests to provide vessel access to and from residences along the canal system that is located to the east of the proposed project. If the access route requires dredging to construct the action proposed in this document, additional consultation with the Louisiana State Historic Preservation Officer and Federally-recognized Indian Tribes would be conducted, and supplemental compliance with the Endangered Species Act, Coastal Zone Management Act, and Clean Water Act would be completed.

Factors Considered in Determination. This office has assessed the impacts of the action and the no action alternative on important resources in the project area including wildlife, threatened and endangered species, aquatic resources and water quality, essential fish habitat, cultural resources, and recreational resources. No significant adverse impacts were identified for any of the important resources. Other resources considered and found to not be impacted were air quality, noise, aesthetic resources, environmental justice, socioeconomics, and hazardous, toxic and radioactive waste. The risk of encountering hazardous, toxic, and radioactive waste is low. No impacts were identified that would require compensatory mitigation.

By letters dated May 13, 2014 and September 8, 2014, respectively, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) confirmed that the proposed action is not likely to adversely affect any endangered or threatened species, if certain recommendations are followed. Those recommendations will be part of the project construction plan. This office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the USFWS, dated May 22, 2014. This office has concurred with, or resolved, all comments addressing essential fish habitat and general fisheries habitat conservation contained in a letter from the NMFS, Habitat Conservation Division dated May 14, 2014. Public review of the Clean Water Act Section 404(b)(1) Public Notice was completed on May 14, 2014. The Section 404(b)(1) evaluation was signed on June 13, 2014.

In a letter dated May 29, 2014, the Louisiana Department of Natural Resources concurred with this office's determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. A State Water Quality Certificate, dated June 4, 2014 was received from the Louisiana Department of Environmental Quality. The Louisiana Department of Wildlife and Fisheries commented that manatees may be found in the project area and that the project area should be surveyed for the presence of colonial nesting birds. No comments on the air quality were received from the Louisiana Department of Environmental Quality. Under the terms of the Programmatic Agreement executed on June 18, 2013, the CEMVN has considered the effects of the proposed action upon historic properties and has afforded the Advisory Council on Historic Preservation an opportunity to comment. The Louisiana SHPO (May 21, 2014), Seminole Tribe of

Florida (May 12, 2014), Caddo Nation of Oklahoma (May 15, 2014), Jena Band of Choctaw Indians (May 20, 2014), and Choctaw Nation of Oklahoma (June 3, 2014) reviewed the proposed action and concurred with the CEMVN finding of "no adverse effects with conditions." The CEMVN agreed to develop an unanticipated discoveries plan and provide archaeological monitoring during construction activities.

Environmental Design Commitments. The following commitments are an integral part of the proposed action:

1. To ensure West Indian manatee or bottlenose dolphin are not trapped behind containment dikes, the entire project area as well as the open water area to the north will also be surveyed prior to commencement of work activities associated with construction of proposed containment. (USFWS recommendation)

2. All Gulf Sturgeon Protection Measures and West Indian Manatee Protection Measures and all Sea Turtle Construction Conditions found in Section 3.2.3 of the Final TIER will be performed by the contractor. (USFWS policy/CEMVN standard practice)

3. If the proposed action is changed significantly or is not implemented within one year, the New Orleans District will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any Federally-listed threatened or endangered species, or their habitat. (USFWS policy/CEMVN standard practice)

4. If construction activities will occur in the nesting season (February 16 to September 16), a survey for bird nesting colonies will be conducted and provided to Louisiana Department of Wildlife and Fisheries. The survey will be conducted by a qualified biologist to document the presence, absence and the extent of colonial nesting birds. If active nesting colonies are found within the stated distances of the proposed project, further consultation with LDWF will be required. (LDWF recommendation)

5. The CEMVN will develop an unanticipated discovery plan to be implemented in the event that archeological remains are found during construction activities, and archaeological monitoring will be conducted throughout construction of the proposed restoration project. (CEMVN commitment in accordance with the Section 106 Programmatic Agreement executed on June 18, 2013)

Agency and Public Involvement. The proposed action was coordinated with appropriate Federal, Tribal, state, and local agencies and businesses, organizations, and individuals through distribution of the draft TIER and Section 404(b)(1) public notice for their review and comment. The TIER was sent out for 30-day public and agency review on April 14, 2014. As a result, no substantial comments were received from the general public. Agency comments were either neutral or supportive in nature. Their actionable recommendations were specified in the Design Commitments section above

and addressed in the final TIER. Copies of public and agency correspondence are included in appendices to the TIER. PIER 36, TIER 1 is attached hereto and made a part of this Decision Record.

CEMVN will prepare a Comprehensive Environmental Document that will contain additional information related to the Final LPV HSDRRS Mitigation Plan as well as a cumulative impacts analysis, and any additional information that addresses outstanding data gaps in any of the IERs.

Decision. CEMVN has assessed the potential environmental impacts of the proposed action described in PIER 36, TIER 1 and has reviewed the comments received during the public review period. In accordance with the environmental considerations discussed above, and the findings of the TIER, the public interest will be best served by implementing proposed LPV HSDRRS mitigation at Milton Island.

I have reviewed LPV HSDRRS PIER #36, TIER 1 and have considered agency recommendations. I find the proposed mitigation plan will allow CEMVN to fully offset the habitat losses caused by the construction of the LPV HSDRRS to non-refuge fresh and intermediate marsh as directed by the Water Resources Development Acts of 1986 and 2007 (Public Law 99-662 §906 and Public Law 110-114 §2036) and other laws.

The plan is justified and in accordance with environmental statutes. It is in the public interest to construct the proposed marsh at Milton Island to compensate for losses to those habitats as described in this document and in PIER #36, TIER 1.

19 Sept 2014
Date

Richard L. Hansen
Colonel, U.S. Army
District Commander

FINAL TIERED INDIVIDUAL ENVIRONMENTAL REPORT

PREPARED TO COMPLEMENT: PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT 36

MILTON ISLAND MARSH RESTORATION PROJECT SAINT TAMMANY PARISH, LOUISIANA

PIER 36, TIER 1, MILTON ISLAND

US Army Corps of Engineers®

September 2014

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Tiered Individual Environmental Report (TIER) to evaluate the potential impacts associated with the proposed restoration of intermediate marsh at Milton Island as compensatory mitigation for impacts to non-refuge intermediate marsh caused by construction of flood risk reduction features on the east bank of the Mississippi River in the New Orleans Metropolitan Area as described in the Programmatic Individual Environmental Report (PIER) 36 titled "Lake Pontchartrain and Vicinity (LPV) Hurricane and Storm Damage Risk Reduction System (HSDRRS) Mitigation, Orleans, Plaquemines, St. Bernard, St. Charles, St. John the Baptist and St. Tammany Parishes, Louisiana" and the Decision Record approved by the CEMVN Commander on November 22, 2013. Both documents are hereby incorporated by reference. Since this document is the first TIER being prepared after completion of the PIER, it is designated as PIER 36, TIER 1, Milton Island.

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR §1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2, Procedures for Implementing NEPA. These regulations allow Federal agencies, in consultation with the Council on Environmental Quality (CEQ), to implement alternative arrangements for complying with NEPA in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS) in certain emergency circumstances (40 CFR 1506.11). The CEMVN published the CEQ-approved Emergency Alternative Arrangements on March 13, 2007 in the Federal Register. This process was implemented in order to expeditiously complete the environmental analyses for the HSDRRS. The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.

The approved LPV HSDRRS mitigation plan set forth in the PIER was comprised of both constructible and programmatic features. The programmatic features are being addressed through further NEPA documents called TIERs to provide specific project design details and environmental analysis. The LPV HSDRRS mitigation plan provides compensatory mitigation for the following habitat types:

Habitat Type	**Average Annual Habitat Units (AAHUs) Impacted**
Non-Refuge Bottomland Hardwood (BLH) -Wet/Dry	93.85 AAHUs
Non-Refuge Swamp	108.01 AAHUs
Non-Refuge Fresh/Intermediate Marsh	45.70 AAHUs
Non-Refuge Brackish Marsh	118.06 AAHUs
Refuge Brackish Marsh	8.79 AAHUs
Refuge Protected Side BLH-Wet	83.92 AAHUs
Refuge Intermediate Marsh	41.29 AAHUs
Refuge Flood Side BLH-Wet	8.91 AAHUs

The LPV HSDRRS mitigation plan is summarized as follows:

Constructible Features	Mitigation Bank (BLH-Wet/Dry)
	Mitigation Bank (Swamp)
Programmatic Features	Milton Island Marsh Restoration (Non-Refuge Intermediate Marsh)
	Bayou Sauvage Marsh Restoration (Non-Refuge/Refuge Brackish Marsh)
	Bayou Sauvage Protected Side Refuge BLH-Wet/ Intermediate Marsh Restoration
	Fritchie Flood Side Refuge BLH-Wet Enhancement

The proposed Milton Island Marsh Restoration project is located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge in St. Tammany Parish. Figure 1 shows the location of the project including the designated borrow source in Lake Pontchartrain. Figure 2 shows the water access route to the project site and the staging area needed for equipment. Figure 3 is an aerial photograph of the project area clearly showing the breach that has developed along the lake's shoreline and sediment from the eroded shoreline and the lake bottom deposited in the marsh restoration area during storms.

The Milton Island project is designed to compensate for unavoidable impacts resulting from construction of the LPV HSDRRS on fresh and intermediate marsh located on the flood side of the levees and floodwalls, and not on National Wildlife Refuge lands. Freshwater marsh is found in low-lying frequently flooded areas, with the water level remaining on or near the surface for extended periods of time during growing season. It contains emergent herbaceous (non-woody) vegetation adapted to predominantly non-tidal freshwater conditions (salinity less than 5 parts per thousand (ppt) during the growing season: March-November). Intermediate marsh is found between brackish marsh and freshwater marsh. This marsh is characterized by a diversity of species, many of which are found in freshwater marsh and some of which are found in brackish marsh (e.g. *Cyperus* species, wire grass). Intermediate marsh has an irregular tidal regime and experiences a mean salinity equal to or less than 7 ppt during the growing season.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to compensate for habitat losses to non-refuge, fresh and intermediate marsh incurred during construction of the LPV HSDRRS. The proposed mitigation would replace the lost functions and services of the impacted habitat through restoration activities designed to create, increase, and improve the habitat functions or services at the specific mitigation site. The proposed action is an integral part of the overall effort to compensate for habitat losses caused by construction of the HSDRRS, which includes the levee, floodwall, and water control structure impacts. The future with the mitigation project would not result in a net increase in wetlands or associated support functions, including fisheries, relative to the overall HSDRRS project as the mitigation features are designed to offset the construction impacts.

Figure 1 – Milton Island Project – All Features

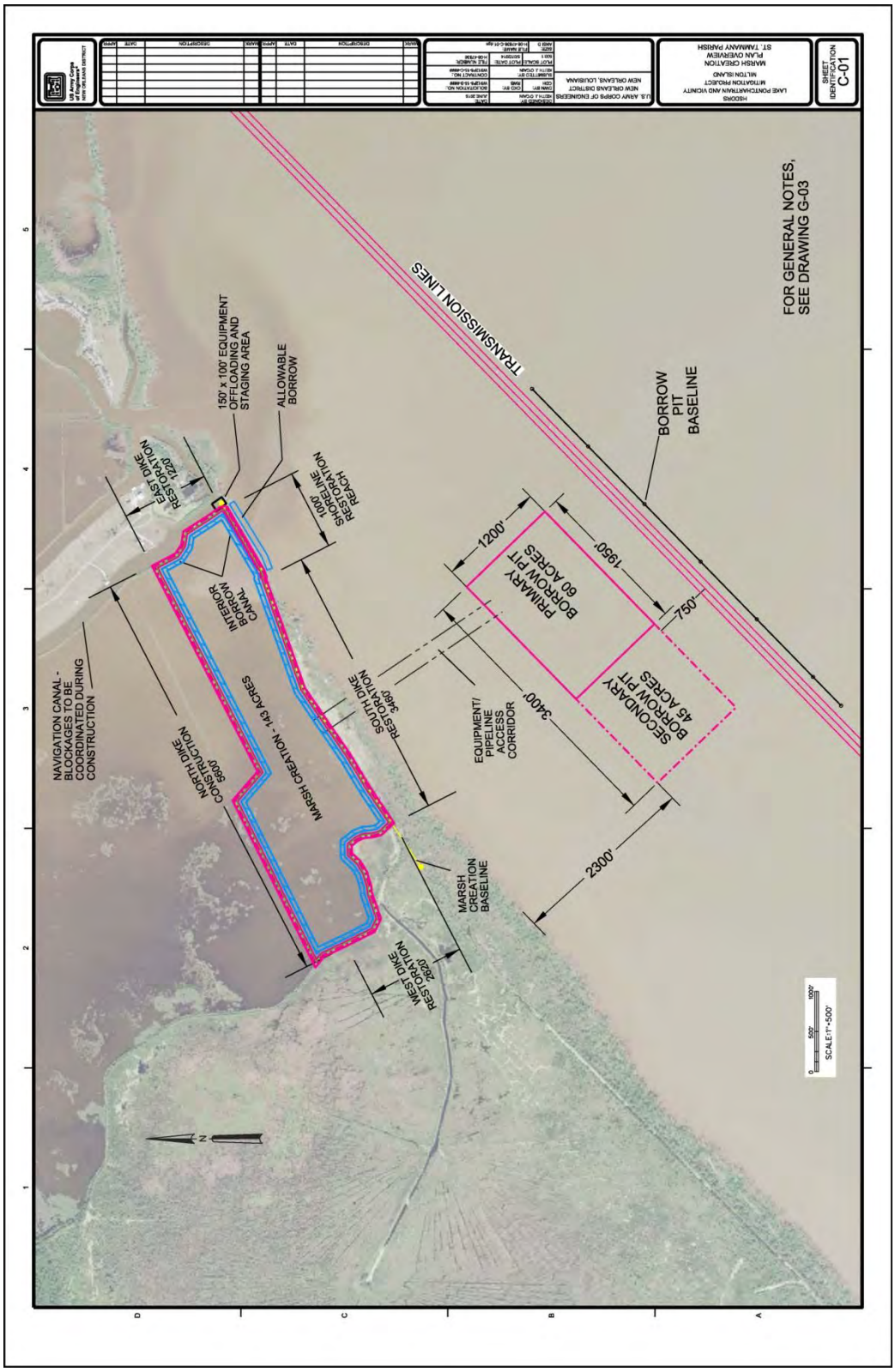

Figure 2 – Milton Island Project – Access Route and Staging Area

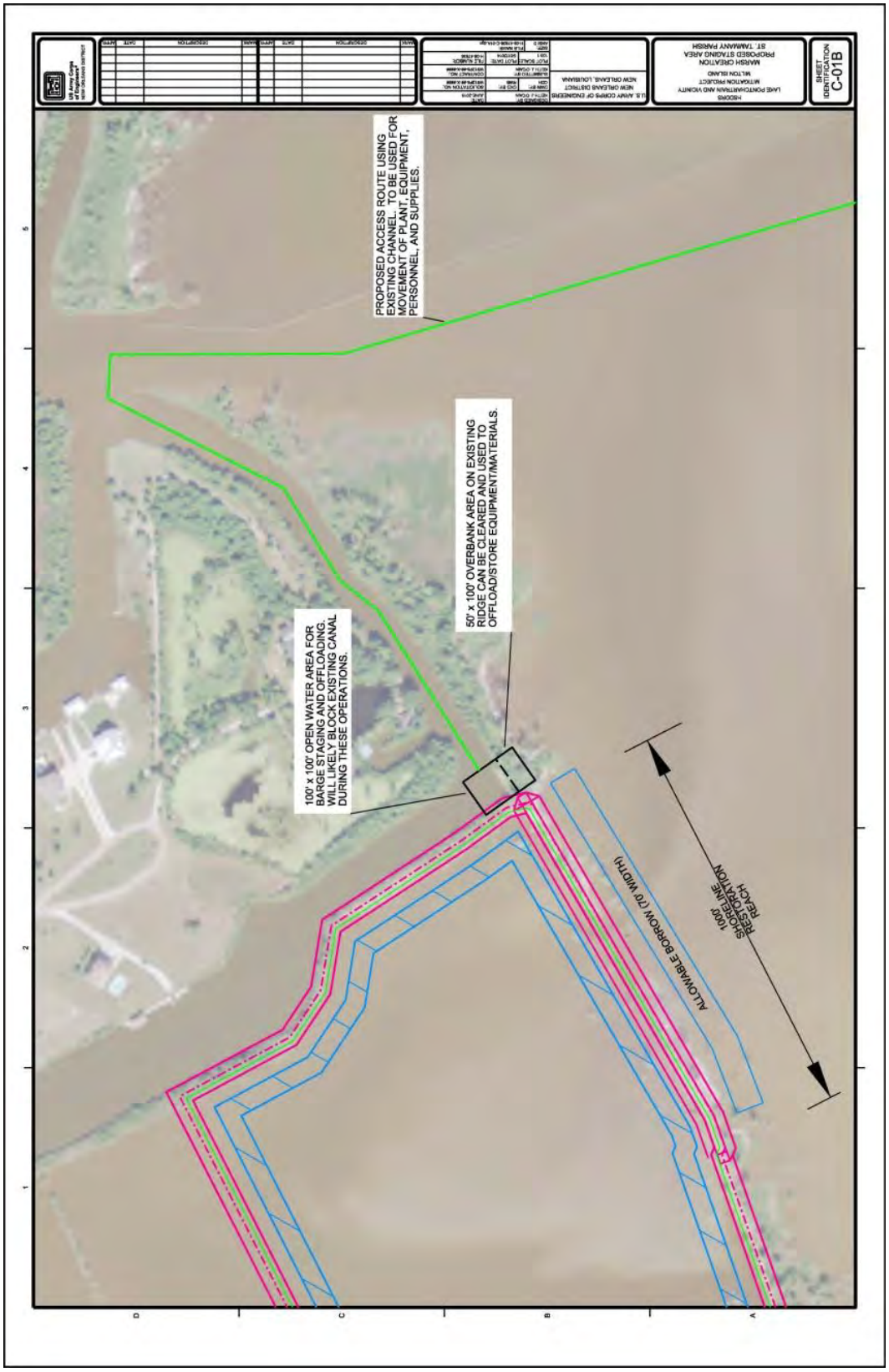

Figure 3 – Aerial Photograph of Project Area - March 5, 2013

1.2 AUTHORITY FOR THE PROPOSED ACTION

The LPV project was authorized under the Flood Control Act of 1965 (P.L. [Public Law] 89-298, Title II, Sec. 204) which authorized a "project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress." The original statutory authorization for the LPV Project was amended by the Water Resources Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Sec. 92), 1986 (P.L. 99-662, Title VIII, Sec. 805), 1990 (P.L. 101-640, Sec. 116); 1992 (P.L. 102-580, Sec. 102), 1996 (P.L. 104-303, Sec. 325), 1999 (P.L. 106-53, Sec. 324), and 2000 (P.L. 106-541, Sec. 432); and Energy and Water Development Appropriations Acts of 1992 (PL 102-104, Title I, Construction, General), 1993 (PL 102-377, Title I, Construction, General), and 1994 (PL 103-126, Title I, Construction, General).

The authority for the HSDRRS and its associated compensatory mitigation was provided as part of a number of hurricane and storm damage risk reduction supplemental appropriations. These authorizations and appropriations included funding for modifications and improvements to several existing USACE projects in southeastern Louisiana, including the Lake Pontchartrain and Vicinity project, which is located on the east bank of the Mississippi River in Saint Charles, Jefferson, Orleans, and Saint Bernard Parishes.

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the Lake Pontchartrain and Vicinity project and restoration of project features to design elevations at 100 percent Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorizes construction of authorized a 100-year level of protection; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations.

The 6th Supplement, P.L. 110-252, Title III, Chapter 3, authorized additional amounts for "Construction," for necessary expenses related to the consequences of Hurricane Katrina and other hurricanes of the 2005 season, to modify authorized projects in southeast Louisiana to provide hurricane, storm and flood damage reduction in the greater New Orleans and surrounding areas to the levels of protection necessary for participation in the National Flood Insurance Program under the base flood elevations current at the time of enactment of this Act, including funding for the Lake Pontchartrain and Vicinity project.

1.3 PRIOR REPORTS

A number of studies and reports on water resources development in the proposed project area have been prepared by the USACE, other Federal, state, and local agencies, universities, research institutes, and individuals. The most relevant report to the proposed

action is PIER 36. PIER 36 references all pertinent previous reports and studies and is hereby incorporated by reference.

This TIER addresses project-specific design information and environmental analysis not discussed in detail in the PIER. Additional TIER(s) will be developed to address the specific details of the programmatic features contained in the mitigation plan set forth in the PIER 36 Decision Record.

1.4 INTEGRATION WITH OTHER INDIVIDUAL ENVIRONMENTAL REPORTS

The CEMVN has prepared a Final Comprehensive Environmental Document (CED), Phase I, dated May 22, 2013. The CED, Phase I described the cumulative impacts of the HSDRRS construction completed by July 2011 and incorporated information from IERs and supplemental IERs completed by November 15, 2010. The IERs completed after November 15, 2010, and HSDRRS features constructed after July 2011 will be described in a future phase of the CED. Once sufficient information is available concerning the cumulative impacts of the HSDRRS, including the HSDRRS features and the IERs not addressed in CED, Phase I, a future final phase of the CED would be published for public comment, after which, in accordance with the Emergency Alternative Arrangements, the District Commander will issue a CED Decision Record.

1.5 PUBLIC CONCERNS

The foremost public concern is reducing risk of hurricane, storm, and flood damage for businesses and residences, and enhancing public safety during major storm events in the New Orleans metropolitan area. Throughout the Lake Pontchartrain basin, the public has expressed concern that sufficient funding be allocated for the HSDRRS mitigation efforts and that the HSDRRS mitigation is completed in a timely manner.

1.6 DATA GAPS AND UNCERTAINTIES

All marsh restoration projects contain certain inherent uncertainties. Those uncertainties and accompanying contingencies are further discussed in the project-specific monitoring and adaptive management plans which are included as appendices to this report.

2. ALTERNATIVES

2.1 ALTERNATIVES DEVELOPMENT AND PRELIMINARY SCREENING CRITERIA

NEPA requires that in analyzing alternatives to a proposed action a Federal agency consider an alternative of "No Action." That alternative will be evaluated in this document. Multiple alternative projects to meet the requirements of mitigation for fresh and intermediate marsh impacts were evaluated in the PIER 36. The Milton Island project performed better than all other projects for this habitat type under the Risk and Reliability, Cost Effectiveness and Other Cost Considerations criteria, and performed as well as most under the Time criterion. Therefore the Milton Island project is the proposed action.

2.2 DESCRIPTION OF THE ALTERNATIVES

Descriptions of the alternatives considered to meet the fresh and intermediate marsh mitigation requirements can be found in detail in PIER 36. Fresh and intermediate marsh is combined together for mitigation purposes because the ecological functions of the two marsh types are very similar and the Wetland Value Assessment model for both marsh types is nearly identical. Briefly, six alternatives for mitigating impacts to fresh and intermediate marsh were considered in the PIER. All six alternatives were similar in nature; all would dredge material from the bottoms of nearby lakes and pump the material via hydraulic cutterhead dredge to shallow open water areas to restore marshes. Five of the projects (Bayou Des Mats, Fritchie, Big Branch, LaBranche, and Milton) would have borrowed fill material from the bottom of Lake Pontchartrain, whereas the Caernarvon project would have borrowed material from the bottom of Lake Lery on the border between St. Bernard and Plaquemines Parishes. The Milton Island project was determined to be the most cost-effective of these projects and performed better in comparisons of other selection criteria and therefore was selected for implementation.

2.3 PROPOSED ACTION

This intermediate marsh restoration project is located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge. The proposed marsh creation site is located in a shallow lake immediately adjacent to Lake Pontchartrain that was previously separated from Lake Pontchartrain. Approximately 1,000 feet of the eastern lakeshore-marsh boundary has been breached into the lake, and a shoreline restoration feature is proposed to provide future protection of the proposed marsh feature

In order to ensure that HSDRSS impacts were adequately mitigated, a functional assessment model titled the Wetland Value Assessment Model (WVA) was utilized to predict the Average Annual Habitat Units (AAHUs) lost from the project impact against the AAHUs generated by the proposed mitigation. The proposed intermediate marsh restoration project would encompass 152 acres, not including the 115-acre borrow source for fill material in Lake Pontchartrain. Within the 152-acre project area, 7 acres are existing dikes partially surrounding the perimeter and 2 acres are where a shoreline protection feature is proposed. The remaining 143 acres are currently shallow open water that would be filled with dredged material to develop into marsh. Up to approximately 15 acres of interior borrow ditches would be excavated to provide material to build and improve dikes to contain the dredged material. Only about 4.5 acres of the 15 acres of borrow ditches are expected to become marsh, leaving about 10.5 acres un-vegetated. Therefore, the calculated amount of marsh that would be developed is 132.5 acres.

The proposed intermediate marsh restoration project would provide slightly more than the required 45.7 AAHUs of mitigation credit through restoration of approximately 132.5 acres of intermediate marsh within a 152-acre project area. As designed, the project has been calculated to provide 48.2 AAHUs, or approximately 5% more AAHUs than required, which is considered to be within the margin of error for the analysis.

The project consists of dredging material from the bottom of Lake Pontchartrain beginning about 2,000 feet from the shoreline. A hydraulic cutterhead dredge would be

used to remove the material and pump the material via a pipeline to the proposed marsh creation site. Initial elevation for dredge fill would be to approximate elevation +2.25 feet NAVD88, to ultimately result in a target marsh elevation of between +1.5 and +1.0 feet NAVD88. Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. Existing retention features exist along the east, west, and south perimeters of the project footprint, except for a 1,000 foot reach of lake shoreline which would require restoration efforts as described at the end of this section. Rehabilitation of these existing dikes would be accomplished as necessary to retain the dredge material slurry. Approximately 5,600 linear feet of new retention dike would be required along the northern limit of the project footprint. The dike would be built with borrow material obtained within the marsh creation footprint to an elevation +4.5 feet NAVD88 and with a 5-foot crown width, to provide two feet of freeboard during the dredged material pumping operation. Plugs would be left in the borrow ditch at 1,000-foot intervals to minimize water flow and material loss during pumping operations. Spill boxes and/or weirs would be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the marsh creation area for approximately one year after construction, when the perimeter dikes are breached and degraded. If deemed necessary by the construction contractor, a low-level interior weir or baffle dikes would be constructed to assist in vertical stacking of dredged material. The dike along the north side of the marsh creation area would be degraded approximately one year after project construction, upon settlement and dewatering of the created marsh platform. The existing western dike would be gapped approximately one year after project construction to allow interaction with the existing marsh and scrub/shrub wetlands to the west of the project area. The gaps would be spaced with care being taken to locate gaps at existing natural bayous, canals, or other openings. The gaps would require a 25-foot bottom at approximately elevation +0.0 NAVD88 (lower limit of existing nearby marsh platform) to assure water interchange with the existing marsh. Two to three gaps would be placed in the eastern dike to allow water exchange with the existing canal located to the east of the project area. The southern dike would remain to provide protection from Lake Pontchartrain waves and water intrusion.

The proposed marsh restoration layout would result in an open water area immediately north and adjacent to the marsh footprint. The entire northern retention dike would be degraded to marsh elevation, allowing unimpeded access for fish and wildlife between the open water and created marsh platform. The degraded material may be disposed in the original borrow ditch if settlement allows, or cast into open water immediately outside of the project footprint. Construction of trenasses (small ditches) is not proposed within the created marsh footprint. It is anticipated that natural sloughs and/or access corridors would develop over the project life.

The marsh footprint would be planted upon satisfactory settlement and dewatering of the dredged material, approximately 1 year after initial construction. Plugs of appropriate marsh vegetation would be planted over the marsh restoration acreage on 7-foot centers. The planting contractor would access the site from the lake or use the existing canal along the eastern border of the project area. Either way, no dredging would be allowed. The planting contractor would be allowed to use the staging area previously used for

initial project construction as shown on Figure 2. That staging area would be planted with appropriate native vegetation under the planting contract. A mixture of herbaceous and woody plants is envisioned for re-vegetating the staging area. The staging area is not part of the area that would be monitored or adaptively managed.

The southern limit of the proposed marsh creation footprint is bounded by the Lake Pontchartrain shoreline. Aerial photography confirmed by a site visit shows that this shoreline has breached, and lake waters are free to enter and exit the interior shallow water and remnant marsh. Approximately 1,000 feet of shoreline restoration is proposed to reestablish the shoreline. The shoreline restoration feature may need to be longer than 1,000 feet if the shoreline erodes appreciably before the construction contract is awarded. The shoreline repair would be an earthen dike feature, with an approximate crown width of 25 feet to match existing shoreline elevations to the east and west. Material to rebuild the shoreline would be obtained by dredging on both the lake-side and marsh side of the alignment. An earthen-filled bag system, which would accommodate planting of shoreline vegetation, would be constructed on the lake-side of the shoreline dike to minimize erosion.

The borrow plan is to obtain material from Lake Pontchartrain, requiring a buffer of 2,000 feet between the existing shoreline and the borrow area limit. Marsh restoration would require borrow of approximately 1,000,000 cubic yards of material. A primary borrow site of 60 acres would accommodate this requirement. To assure adequate borrow material is available, a 45-acre secondary borrow pit adjacent to the primary area is proposed to account for unsuitable materials, unknown utilities, unidentified anomalies, and/or undocumented cultural resources. Borrow excavation would not be allowed greater than 10 feet below the existing lake bottom, which ranges from 9 to 10 feet in depth, except that a tolerance of 1-feet below this target elevation would be allowed to account for inaccuracies in the dredging process. Existing electrical transmission lines are located in Lake Pontchartrain, south of the proposed borrow site. A minimum buffer of 800 feet would be required between the borrow site footprint and the transmission line alignment. A pipeline corridor has been designated from the borrow source to the shoreline, with no allowances for excavation. The dredge pipeline will be floated and or submerged within this corridor, and then the dredge pipe would be laid across the shoreline and into the marsh creation area. The area of shoreline disturbed by this pipeline access effort will be repaired upon completion of the dredging operation. The pipeline would cross the existing lakeshore approximately at the east/west midpoint of the marsh polygon.

The only dredging in Lake Pontchartrain that is addressed in this TIER and supporting environmental documentation is for the borrow source. No access dredging is allowed. The access path for equipment shown on Figure 2 is anticipated to be deep enough for barges to deliver the required construction equipment. This path has been dredged previously by private interests to provide vessel access to and from residences along the canal system that is located to the east of the proposed project. If the access route requires dredging to construct the action proposed in this document, additional consultation with the Louisiana State Historic Preservation Officer (SHPO) and

Federally-recognized Indian Tribes (Tribes) would be conducted, and supplemental compliance with the Endangered Species Act, Coastal Zone Management Act, and Clean Water Act would be completed.

2.4 ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the proposed action were considered in detail in PIER 36. This TIER will address only the No Action alternative and the Proposed Action. All other alternatives were addressed and eliminated from consideration in PIER 36. Under the no action alternative, environmental impacts to fresh and intermediate marsh caused by construction of the HSDRRS would go unmitigated. Failure by the USACE to adequately mitigate for those impacts would violate Federal laws, USACE regulations and policy, and lead to a net loss of environmental functions and values.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

NEPA requires that in analyzing alternatives to a proposed action, a Federal agency consider an alternative of "No Action". Typically the No Action alternative evaluates not implementing any of the alternatives and represents the future without-project condition against which alternatives considered in detail are compared. However, because compensatory mitigation for unavoidable impacts is required by law (e.g. Clean Water Act and the Water Resources Development Acts of 1986 and 2007), the No Action alternative is not considered a reasonable or legally viable alternative. Under the no action alternative, the Pontchartrain Basin would continue a trend of land loss caused by both natural factors such as subsidence, erosion, tropical storms and sea level rise, and human factors such as flood risk reduction projects, canal dredging, development, interruption of accretion processes, and oil and gas exploration. The No Action alternative would not provide for the compensatory mitigation of unavoidable impacts from the construction of the HSDRRS.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1. ENVIRONMENTAL SETTING

The Lake Pontchartrain and Vicinity HSDRRS mitigation planning basin is bounded to the north by Interstate 12 from the Louisiana/Mississippi state line to the Mississippi River at Baton Rouge. From Baton Rouge, the boundary then proceeds south utilizing the centerline of the Mississippi River. The southern boundary is situated to exclude the barrier islands since the HSDRRS work did not impact the barrier islands.

The Milton Island project area is located near the middle of the HSDRRS mitigation planning basin along the northern shoreline of Lake Pontchartrain. The lake is slightly brackish, with a silty to sandy bottom, and up to about 15 feet deep. Specifically, the project area consisting of the borrow site and the marsh restoration site are located along the northern shoreline of Lake Pontchartrain with existing water depths of approximately nine feet and two feet, respectively. Historically, the shorelines of the lake were bordered

by cypress/tupelo gum swamps, fresh to intermediate marshes, and bands of bottomland hardwood forests bordering natural drainages and the lake rim in some areas. Currently much of the lake's southern and northeastern shoreline is composed of urban and suburban development. The lake shoreline near the project area is a mixture of low-density residential development and undeveloped wetlands, including second-growth swamp and bottomland hardwood forest, scrub/shrub wetlands and fresh to intermediate marshes. The general project area supports a wide variety of fish and wildlife resources, many of which are important to recreational and commercial fishermen and hunters.

3.2. SIGNIFICANT RESOURCES

This section contains a list of the significant resources located in and near the proposed action, and describes in detail those resources that would be impacted, directly or indirectly. Direct impacts are those that are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). A cumulative impact is defined as the "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" (40 CFR §1508.7).

The resources described in this section are those recognized as significant 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 1 shows those significant resources found in and near the project area, and notes whether they would be impacted by the proposed alternative.

All resources that would not be impacted, or only negligibly impacted are not discussed in this document. Aesthetics is not addressed since the project site is only visible from a small number of residences located east of the project area, and because the undeveloped nature of the project area would be preserved. Air quality is not addressed since the only emissions would be from temporary construction equipment, and St. Tammany Parish is in attainment for all monitored air quality parameters. No construction emissions assessment to demonstrate conformity with any air quality program is required. Noise is not addressed due to the undeveloped nature of the project area and the distance between the project area and the closest receptors, which are the residences to the east of the project area.

The potential for impacts to socioeconomic resources including environmental justice were also considered. There are no anticipated impacts to population, housing, or minority or low-income populated areas since the project area and surrounding lands are uninhabited, remote, and privately owned. Environmental justice was determined to not be relevant to this project due to the undeveloped nature of the area. Additionally, the only residences in the vicinity are indicative of high value and are not primarily occupied by minorities. There are no commercial/industrial properties, public facilities, or transportation infrastructure within the project boundaries or in adjacent areas, and therefore no impacts to employment, businesses, industry, public facilities and services,

community and regional growth, community cohesion, or property values are anticipated to occur with construction of this project. The proposed project does not require any agricultural or forestry land to be impacted or converted, therefore the requirements of the Farmland Protection Policy Act, Section 1541(b), do not apply. Since most, if not all, of the construction equipment and personnel would access the project from Lake Pontchartrain, no impacts to land-based transportation would be anticipated.

Table 1
Significant Resources In and Near the Project Area

Significant Resource	Impacted	Not Impacted
Wildlife	X	
Threatened & Endangered Species	X	
Aquatic Resources	X	
Water Quality	X	
Essential Fish Habitat	X	
Recreation	X	
Cultural Resources[1]		X
Air Quality		X
Noise		X
Aesthetics		X
Environmental Justice		X
Socioeconomic Resources		X
HTRW[2]		X

[1]Although not impacted, cultural resources are addressed in this document to comply with NEPA and 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 Wildlife

Existing Conditions. The coastal wetlands in the Lake Pontchartrain Basin provide important and essential fish and wildlife habitats, especially transitional habitat between estuarine and marine environments, used for shelter, nesting, feeding, roosting, cover, nursery, and other life requirements. Emergent fresh and intermediate wetlands are typically used by many different wildlife species, including: Seabirds; wading birds; shorebirds; dabbling and diving ducks; raptors; rails; coots and gallinules; nutria; muskrat; mink; river otter; and raccoon; rabbit; white-tailed deer; and American alligator (LCWCRTF & WCRA, 1999). All of these species are likely to be found in or near the projects area.

The Louisiana Department of Wildlife and Fisheries reported that they have records of a wading bird nesting colony within one mile of the project site. The birds occasionally move their nesting sites so it is possible that a nesting site could be located near the project area.

Open water habitats such as Lake Pontchartrain provide wintering and multiple use functions for brown pelicans, various seabirds, and other open water residents such as laughing gulls and least terns, and migrants such as lesser scaup and double crested cormorants. (LCWCRTF & WCRA, 1999). Open water areas within the project area provide suitable habitat for many of these species, especially dabbling ducks, coots, and gallinules, which feed primarily on submerged aquatic vegetation.

Bottlenose dolphins are protected under the Marine Mammal Protection Act of 1972, and are found in temperate and tropical waters around the world including Lake Pontchartrain. The lake appears to have a semi-resident population of dolphins that generally are found in the eastern side of the lake which has the higher salinity level. They likely feed on various estuarine fish and shellfish. It is highly unlikely that dolphins venture into the area proposed for wetland mitigation due to existing very shallow water and submerged aquatic vegetation.

No Action: Without implementation of the proposed action it is likely that the land berm partially separating the interior shallow open water area (proposed mitigation site) from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies and salinity. Changes to adjacent plant communities and submerged aquatic vegetation would likely take place due to these factors, thus negatively impacting wildlife diversity and utilization of the existing area. Land based animals would be the most directly affected, due to loss of the herbaceous and wooded wetlands around the project area.

Proposed Action: Direct impacts to wildlife would result from the conversion of 143 acres of open water habitat within the project area to herbaceous intertidal wetland (marsh). This conversion would reduce use and function for brown pelicans, seabirds, dabbling and diving ducks, coots, and gallinules and other species that feed in the shallow open water in this location, but it is anticipated they would utilize an adjacent large area of open water habitat to the north of the project site, as well as the improved overall wetland habitat functions provided by the proposed intermediate marsh creation. The establishment of intermediate marsh in the area would provide 132.5 acres of new habitat for terrestrial and semi-aquatic species such as nutria, muskrat, mink, river otter, and raccoon, all of which are commercially important furbearers. Reptiles including the American alligator, western cottonmouth, water snakes, speckled kingsnake, rat snake, and eastern mud turtle are likely to utilize and populate the proposed marsh area. Amphibians expected to colonize the area include the bullfrog, southern leopard frog, and Gulf coast toad. The edges and small areas of open water than would form over time would also provide feeding habitat for common wading bird species including great blue heron, green heron, tricolored heron, great egret, snowy egret, yellow-crowned night-heron, black-crowned night-heron, and white ibis.

There is a possibility that colonial nesting wading birds may be located near the project area. The LDWF recommends that the area within a 400 meter perimeter of the project area be surveyed for the presence of nesting bird colonies if construction is to occur during the nesting season. In order to avoid disturbance to colonial nesting birds, a

survey will be conducted as recommended prior to construction if construction is anticipated during the nesting season, and avoidance procedures would be enacted if nesting birds are found.

Incidentally created mudflats and shallow-water areas would provide habitat for numerous species of shorebirds and seabirds. Shorebirds expected to utilize such areas include American avocet, willet, black-necked stilt, dowitchers, and various species of sandpipers. White pelican, black skimmer, herring gull, laughing gull, and several species of terns would also be expected to forage in and near the project area. Migratory and resident non-game birds, such as the boat-tailed grackle, red-winged blackbird, seaside sparrow, northern harrier, belted kingfisher, and marsh wrens, would also utilize the project area. Gamebirds utilizing the area would include the clapper rail, sora rail, Virginia rail, American coot, common moorhen, and common snipe in addition to resident and migratory waterfowl. The project area is not anticipated to be of sufficient depth to be utilized by bottlenose dolphins nor is sufficient access available to anticipate the use of it by this species. As such, construction of the project should not result in entrapment of this species within the marsh creation site.

Indirectly, species that utilize shallow open water habitats would be displaced by the habitat conversion. However, these species would utilize adjacent shallow open water areas. Many species utilizing the current habitat type would thrive with the additional foraging, cover and resting habitat the project would create. A rise in turbidity at the borrow site could immediately reduce water quality in the area; however those effects would be temporary and would be reduced by movement of the tides. Any bottlenose dolphins or their prey in the borrow area would be free to relocate during construction since the borrow area encompasses only a small section of a 403,200 acre estuarine/brackish lake. This project would prevent an overall loss in the basin of intermediate marsh habitat necessary for many wildlife species. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin, would prevent the net loss of fresh and intermediate wetland function and overall decline of wildlife species within the basin and would be beneficial in both preserving the species bio-diversity and combating the current trend of conversion of coastal marsh to open water which would be accelerated due to sea level rise.

3.2.3 Threatened and Endangered Species

Existing Conditions: Within St. Tammany Parish there are ten documented animal and one plant species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS), presently classified as endangered or threatened (Table 2). The State of Louisiana has also designated these same species as state threatened and endangered species. In addition, the state also lists the bald eagle as endangered. Designated critical habitat for one of the animal species (Gulf sturgeon) is located within St. Tammany Parish. The USFWS and the NMFS share jurisdictional responsibility for sea turtles and Gulf sturgeon. Other species that were listed on the Endangered Species List but have since then been de-listed because population levels

have improved are bald eagle and brown pelican. Currently, American alligators and shovelnose sturgeon are listed as threatened under the Similarity of Appearance clause in the Endangered Species Act (ESA) of 1973, as amended, but are not subject to ESA Section 7 consultation requirements.

Table 2: Threatened and Endangered Species in St. Tammany Parish

Species	Potentially in Project Area	Status	Jurisdiction	
			USFWS	NFMS
West Indian Manatee (*Trichechus manatus*)	X	E	X	
Red Cockaded Woodpecker (*Picoides borealis*)		E	X	
Gopher Tortoise (*Gopherus polyphemus*)		T	X	
Ringed Map Turtle (*Graptemys oculifera*)		T	X	
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)	X	E	X	X
Green Sea Turtle (*Chelonia mydas*)	X	T	X	X
Loggerhead Sea Turtle (*Caretta caretta*)	X	T	X	X
Pallid Sturgeon (*Scaphirhynchus albus*)		E	X	
Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)	X	T	X	X
Alabama Heelsplitter Mussel (*Potamilus inflatus*)		T	X	
Louisiana Quillwort (*Isoetes louisianensis*)		E	X	

Of the listed animal and plant species occurring in St. Tammany Parish, only the West Indian manatee; Gulf sturgeon; and Kemp's ridley, loggerhead, and green sea turtles are expected to potentially be found in the proposed borrow area in Lake Pontchartrain. It would be highly unlikely that any of the listed species would be found in the proposed marsh mitigation area due to very shallow water. All of these species are typically found in deeper water where they are able to maneuver and forage effectively.

West Indian Manatee

The West Indian manatee is Federally and state-listed as endangered and also is protected under the Marine Mammal Protection Act of 1972, under which it is considered depleted (USFWS 2001). Critical habitat for the manatee has been designated in Florida, but not in Louisiana (USFWS 1977). The manatee is a large gray or brown aquatic mammal that may reach a length of 13 ft and a weight of over 2,200 pounds. It occurs in both

freshwater and saltwater habitats within tropical and subtropical regions. The manatee is not a year-round resident in Louisiana, but it may migrate there during warmer months. The primary human-related threats to the manatee include watercraft-related strikes (impacts and/or propeller strikes), crushing and/or entrapment in water control structures (flood gates, navigation locks), and entanglement in fishing gear, such as discarded fishing line or crab traps (USFWS 2007).

There have been 110 reported sightings of manatees in Louisiana since 1975 (LDWF 2005). Sightings in Louisiana, which have been uncommon and sporadic, have included occurrences in Lake Pontchartrain as well as the Amite, Blind, Tchefuncte, and Tickfaw Rivers. Between 1997 and 2000, there were approximately 16 sightings in the Lake Pontchartrain area and a general increase in the number of manatees per sighting (Abadie et al. 2000). Sightings of the manatee in the Lake Pontchartrain basin have increased in recent years, and in late July 2005, 20 to 30 manatees were observed in the lake from the air (Powell and Taylor 2005).

Gulf Sturgeon

The Gulf sturgeon was listed as threatened throughout its range on September 30, 1991. The Gulf sturgeon is an anadromous fish that migrates from salt water into coastal rivers to spawn and spend the warm summer months. Subadults and adults typically spend the three to four coolest months of the year in estuaries or Gulf waters foraging before migrating into the rivers. This migration typically occurs from mid-February through April. Most adults arrive in the rivers when temperatures reach 70 degrees Fahrenheit and spend eight to nine months each year in the rivers before returning to estuaries or the Gulf of Mexico by the beginning of October.

Critical habitat identifies specific areas that have been designated as essential to the conservation of a listed species. Critical habitat units (areas) designated for the Gulf sturgeon in Louisiana include the eastern half of Lake Pontchartrain east of the Causeway, Lake Catherine, Lake Borgne, out into the Mississippi Sound (USACE 2006a). Studies conducted by the LDWF have shown the presence of Gulf sturgeon in Lake Pontchartrain during the winter and during periods of migration between marine and riverine environments. Most records of Gulf sturgeon from Lake Pontchartrain have been located east of the Causeway, particularly on the eastern north shore. Gulf sturgeon have also been documented west of the Causeway, typically near the mouths of small rivers (USFWS and NMFS 2003).

Kemp's Ridley, Loggerhead, and Green Sea Turtles

Sea turtles inhabit tropical and subtropical marine and estuarine waters around the world. Of the seven species in the world, six occur in waters of the U.S., and all are listed as threatened or endangered. The three species potentially occurring in Lake Pontchartrain and Lake Borgne in the vicinity of the mitigation projects have a similar appearance, though they differ in maximum size and coloration. The Kemp's ridley sea turtle is the smallest sea turtle – adults average about 100 pounds with a carapace length of 24 to 28

inches and a shell color that varies from gray in young individuals to olive green in adults. The loggerhead sea turtle is the next largest of these three species – adults average about 250 pounds with a carapace length of 36 inches and a reddish brown shell color. The green sea turtle is the largest of these three species – adults average 300 to 350 pounds with a length of more than 3 feet and a brown coloration (its name comes from its greenish colored fat). The Kemp's Ridley has a carnivorous diet that includes fish, jellyfish, and mollusks. The loggerhead has an omnivorous diet that includes fish, jellyfish, mollusks, crustaceans, and aquatic plants. The green sea turtle has an herbivorous diet of aquatic plants, mainly sea grasses and algae, which is unique among sea turtles. All three species nest on sandy beaches, which are not present near Lake Pontchartrain. The life stages that may occur in Lake Pontchartrain range from older juveniles to adults.

No Action: Without implementation of the proposed action it is likely that the land berm partially separating the interior lake (proposed project area) from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies and salinity changes. Even with this erosion, no listed species would be expected to utilize the area due to the shallow water depths. The area proposed for borrowing fill material (Lake Pontchartrain), would continue to be available to any of the listed species in the area. The borrow site would not provide feeding habitat for manatees and green sea turtles due to the lack of submerged aquatic vegetation, but they may pass through the area. This area of the lake could provide feeding habitat for Gulf sturgeon although the mud/silt substrate is not to their preference, which is sandy bottom. Kemp's ridley and loggerhead sea turtles may forage in the lake at the borrow site, although available evidence is they very rarely are found in the lake.

Proposed Action: No listed species are expected to be directly impacted within the proposed marsh mitigation area since they would not be expected there due to shallow water depths (typically less than two feet). Still, precautions will be taken during construction to avoid impacts to listed species, particularly Gulf sturgeon and sea turtles. Gulf sturgeon protection measures will be implemented, including the following. A bucket (or similar equipment) will be dropped into the water and retrieved empty one time. After the bucket has been dropped and retrieved, a one-minute no work period must be observed. During this no work period, personnel would carefully observe the work area in an effort to visually detect listed species. If listed species are sighted, no bucket dredging would be initiated until the listed species have left the work area. If the water turbidity makes such visual sighting impossible, work would proceed after the one-minute no work period has elapsed. If more than fifteen minutes elapses with no work, then the empty bucket drop/retrieval process would be performed again prior to work commencing.

In order to minimize the potential for construction activities to cause adverse impacts to manatees the following standard manatee protection measures, developed by the USFWS, Lafayette, Louisiana Field Office, and the following standard sea turtle construction conditions developed by the National Marine Fisheries Service would be implemented. During in-water work in areas that potentially support manatees and/or sea turtles all

personnel associated with the project would be instructed about the potential presence of manatees and sea turtles, manatee speed zones, and the need to avoid collisions with, and injury to manatees and sea turtles. All personnel would be advised that there are civil and criminal penalties for harming, harassing or killing manatees and sea turtles which are protected under the Marine Mammal Protection Act (manatees) and the Endangered Species Act (manatees and sea turtles). Additionally, personnel would 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 would be responsible for observing water-related activities for the presence of manatee(s) and sea turtles. To minimize potential impacts to manatees and sea turtles in areas of their potential presence, the following procedures would be followed:

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

- All vessels associated with the project shall 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 would be properly secured, made of material in which manatees or sea turtles cannot become entangled, and be monitored to avoid manatee or sea turtle entrapment or impeding their movement.

- Temporary signs concerning manatees would be posted prior to and during all in-water project activities and removed upon completion. Each vessel involved in construction activities would 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 CONSTRUCTION AREA AND WHERE THERE IS LESS THAN FOUR FOOT BOTTOM CLEARANCE WHEN MANATEE IS PRESENT". A second temporary sign measuring 8" X 11" would be posted at a location prominently visible to all personnel engaged in water-related activities and would have language similar to the following: "CAUTION: MANATEE AREA / EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION".

- To ensure manatees are not trapped due to construction of containment or water control structures, the project area would be surveyed prior to commencement of

work activities. Should manatee be observed within those areas, the contractor would immediately contact the US Fish and Wildlife Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821).

- Collisions with, injury to, or sightings of manatees would be immediately reported to the US Fish and Wildlife Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821). Collisions with and/or injury to a sea turtle would be immediately reported to the National Marine Fisheries Service's Protected Resources Division (727-824-5312). Information to be provided includes 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 borrow area could potentially be utilized by manatees, sturgeon and sea turtles. Direct impacts to listed species in the proposed borrow area are unlikely as the site is located outside of designated critical habitat and the construction activities would be of a nature that are not known to directly injury the species. The indirect impacts resulting from the temporary loss of the area as foraging habitat would be insignificant given the small size of the borrow area compared to the overall area of Lake Pontchartrain. The presence of construction- related activity, machinery, and noise would be expected to cause these species to avoid the project area during the construction period. Dredging for borrow material would occur via hydraulic cutterhead dredge. Entrainment of sea turtles is not expected since hydraulic dredges are slow moving and use of them is not known to impact these species. Manatee could potentially be affected by dredging operations, but the impacts would be mitigated by implementation of standard manatee protection measures developed by the USFWS as a method to minimize the likelihood that CEMVN dredging contracts in coastal Louisiana would adversely affect manatees. Those measures are provided above.

Potential indirect impacts from the proposed action would primarily consist of effects from dredging operations, notably turbidity. However, although the rise in turbidity could immediately reduce water quality in the project area, those effects would be temporary and would be reduced by movement of the tides. Any sea turtles in the area would be free to relocate during construction since the project area encompasses only a small section of Lake Pontchartrain. As such, no impacts to sea turtles are anticipated from temporary minor impacts to water quality. Potential cumulative impacts to the threatened or endangered species that could occur in the vicinity of the project area from construction of the other HSDRRS mitigation projects are minimal.

The CEMVN has assessed the potential of the proposed action to affect listed species. It has been determined that the proposed action may affect, but is not likely to adversely affect Federally-listed species. This determination, along with supporting documentation, was transmitted to the USFWS and NMFS under informal consultation procedures for implementing Section 7 of the Endangered Species Act. The USFWS concurred with the

CEMVN determination by letter dated May 13, 2014, provided that avoidance measures as detailed previously in this section are followed. The NMFS concurred with the CEMVN determination by letter dated September 8, 2014.

3.2.4 Aquatic Resources and Water Quality

Existing Conditions: The NMFS oversees and manages our Nation's domestic fisheries through development and implementation of fishery management plans and actions. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), first enacted in 1976, amended in 1996, and reauthorized in 2006, is the primary law governing marine fisheries management in United States Federal waters to end overfishing, promote market-based management approaches, improve science, serve a larger role in decision-making, and enhance international cooperation.

The NMFS has determined that Lake Pontchartrain and adjacent wetlands provide nursery and foraging habitats which support varieties of economically important marine fishery species, including striped mullet, Atlantic croaker, Gulf menhaden, spotted and sand sea trout, southern flounder, black drum, and blue crab. Some of these species also serve as prey for other fish species managed under the MSFCMA by the Gulf of Mexico Fishery Management Council (e.g., mackerel, snapper, and grouper) and highly migratory species managed by NMFS (e.g., billfish and shark).

The existing submerged aquatic vegetation and shallow open water within the project area, and adjacent wetlands, provide important estuarine fisheries habitat, including transitional habitat between estuarine and marine environments used by migratory and resident fish, as well as other aquatic organisms for nursery, foraging, spawning, and other life requirements. Historically and currently, the area provides valuable recreational and commercial fishing opportunities a wide variety of finfish and shellfish (Rounsefell, 1964; Penland et al., 2002).

The assemblage of species in the proposed project area is largely dictated by salinity levels and season. During low-salinity periods, species such as Gulf menhaden, blue crab, white shrimp, blue catfish, largemouth bass and striped mullet are present in the project area. During high-salinity periods, more salt-tolerant species such as sand seatrout, spotted seatrout, black drum, red drum, Atlantic croaker, sheepshead, southern flounder, Spanish mackerel, and brown shrimp may move into the project area, especially the borrow area in Lake Pontchartrain. Wetlands throughout the project area also support small resident fishes and shellfish such as least killifish, sheepshead minnow, sailfin molly, grass shrimp and others. Those species are typically found along marsh edges or among submerged aquatic vegetation, and provide forage for a variety of fish and wildlife.

The water quality of the hydrologic unit which this project is in does not fully support one of its designated uses: Fish and Wildlife Propagation. The suspected sources of these impairments include loss of wetlands, littoral/shore area modifications, atmospheric

deposition of toxins, and habitat modification. Lake Pontchartrain, the project's borrow source, is considered to fully support it designated uses.

No Action: Without implementation of the proposed action it is likely that the land berm partially separating the interior lake (proposed project area) from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies, turbidity, loss of aquatic vegetation, and increased salinity levels. Continued loss of submerged aquatic vegetation would lower habitat value for some species of resident species such as grass shrimp and killifishes that provide food for many species of birds. Increased salinity would allow more estuarine species to utilize the proposed marsh mitigation area. The proposed borrow source would likely remain unchanged.

Proposed Action: Approximately 143 acres of open water and mud substrate would be replaced with intermediate marsh, increasing spawning, nursery, forage and cover habitat for fisheries resources over the long term. For approximately 5 years after project construction the area would be above daily tidal inundation and only partially vegetated, so maximum fisheries benefits would not be realized until after this 5-year period. Turbidity during borrow excavation and fill placement would temporarily impair visual predators and impact filter feeders, but this impact is expected to cease and benthic species rebound once construction is complete. Temporary water quality impacts from turbidity are not anticipated to be substantial enough to cause impairment of the water body's designated uses as defined under the standards of Louisiana Administrative Code, Title 33, Part IX, Chapter 11. Water quality impacts in the fill area would temporarily add to the water quality impairment of this sub-segment, but these impacts would be minimized through best management practices and would diminish to background levels after construction.

Fish access to this area would be extremely limited until the material consolidated and settled to an elevation conducive to that of a natural intermediate marsh. It is expected this "lag" time would be approximately 5 years. Once the success criteria have been achieved, this area would once again serve its traditional functional role in the local ecosystem.

It is probable that crab fishermen sometimes place crab traps within the proposed borrow area just like they do throughout Lake Pontchartrain. Shrimp fishermen may venture into the area either pulling trawls or pushing "skimmer" nets. The fishermen and their gear would be temporarily displaced during project construction, and the borrow area may be less productive for a few months after project construction due to loss of benthic animals from the dredging operation. The depth restriction on the borrow pit, preventing it from being more than 10 feet deeper than adjacent lake bottom, would minimize the chance that the area would suffer from low oxygen conditions. The borrow pit should revert to productive habitat within a few months of project construction. Overall, commercial fisheries in Lake Pontchartrain would not be disrupted by the proposed action.

Although there would be a loss of 143 acres of open water from construction of this project, open water is found in abundance throughout the Lake Pontchartrain Basin. The

resulting marsh would provide a cumulative benefit in the form of additional spawning, nursery, forage and cover habitat for important fish species in the basin. Combined with other HSDRRS mitigation efforts, the proposed action would provide a great overall environmental lift with an incidental improvement to water quality within the basin. However, it is important to note that the lift in environmental function is relative to only the mitigation efforts, and not considering the overall adverse impacts of the storm surge risk reduction features of the LPV HSDRRS project. Implementation of this project would prevent an overall loss in the basin of intermediate marsh habitat. This project, when added to other past, present, and reasonably foreseeable ecosystem restoration and mitigation projects in the basin would help retard the loss of wetlands and combat the current trend of conversion of marsh to open water. There would be an overall loss of open water habitat containing submerged aquatic vegetation in the basin, but no permanent adverse impacts are anticipated because this habitat is prevalent throughout the basin. Direct impacts from the aquatic vegetation loss were factored into the mitigation planning analysis and would be mitigated by the restoration of intermediate marsh in the proposed project area.

3.2.5 Essential Fish Habitat

Existing Conditions: The MSFCMA (50 CFR 600) states that EFH is "those waters and substrate necessary for fish for spawning, breeding or growth to maturity" (16 United States Code [USC] 1802(10); 50 CFR 600.10). The 2005 amendments to the MSFCMA set forth a mandate for the NMFS, regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fish. A provision of the MSFCMA requires that FMCs identify and protect EFH for every species managed by a Fishery Management Plan (FMP) 16 USC 1853. The public places a high value on seafood and recreational and commercial opportunities provided by EFH. Specific categories of EFH include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), subtidal vegetation (seagrasses and algae), and adjacent intertidal vegetation (marshes and mangroves). Table 3 shows the categories of EFH and the managed species that occur in the project area.

Table 3- EFH for the Managed Species Expected in Project Area

Life Stage	Brown Shrimp	White Shrimp	Red Drum
Adults		R	R
Eggs			
Juveniles	C to HA	C to A	C
Larvae			
Spawners			

Relative Abundance:
Blank - Not Present A – Abundant
R – Rare HA - Highly Abundant
C – Common
(Variation in abundance due to seasonality) (NMFS, 1998)

Life Stage	Essential Fish Habitat
Brown Shrimp - Adults	Silt, sand, muddy sand
Brown Shrimp - Juveniles	Marsh edge, submerged aquatic vegetation, tidal creeks, inner marsh
White Shrimp - Adults	Silt, soft mud
White Shrimp - Juveniles	Marsh edge, submerged aquatic vegetation, marsh ponds, inner marsh, oyster reefs
Red Drum - Adults	Estuarine mud substrate
Red Drum - Juveniles	Submerged aquatic vegetation, estuarine mud substrate, marsh/water interface

The project is located within an area identified as essential fish habitat for postlarval/juvenile brown shrimp; postlarval/juvenile white shrimp; and postlarval/juvenile and adult red drum. The 2005 generic amendment of the FMP for the Gulf of Mexico, prepared by the Gulf of Mexico FMC, identifies EFH in the project area to be estuarine intertidal wetlands, submerged aquatic vegetation, estuarine water column, and mud substrates.

No Action: Without implementation of the proposed action it is likely that the land berm partially separating the proposed marsh mitigation area from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies and salinity changes. Loss of adjacent intertidal wetlands and submerged aquatic vegetation would likely take place thus adversely impacting these essential fish habitats. These habitats would likely convert to shallow, mud bottom estuarine, which is another category of essential fish habitat. Mud bottom estuarine habitat is more common in the Lake Pontchartrain Basin and generally considered to be less valuable habitat for critical early life stages of these managed species.

Proposed Action: The existing essential fish habitat at the marsh restoration site includes estuarine water bottom, estuarine water column, and submerged aquatic vegetation. These habitats would be largely converted to another type of essential fish habitat – estuarine intertidal herbaceous wetlands (marsh). Benthic resources within the borrow site would be lost until they can re-colonize the borrow area which should take no more than a year or so following project construction. The borrow area would not be excavated more than 10 feet below the adjacent lake bottom thereby minimizing the possibility of anoxic conditions forming. Fisheries access to the marsh mitigation area would be extremely limited during the initial 3-5 years of the project life while the pumped-in sediments are dewatering and subsiding. This area was once a functional marsh system that provided nursery and feeding habitat to local fisheries. Over time, the proposed action would result in a net gain of functional marsh and associated shallow water habitat thereby accomplishing the required level of mitigation and offsetting adverse impacts to certain categories of EFH. The gain in habitat value due to the mitigation project offsets habitat impacts of the LPV HSDRRS project. Consequently, the mitigation project does not result in any net gain in overall habitat values in the LPV basin. The adverse impacts to essential fish habitat that would result from the proposed action may affect, but should not adversely affect, managed species considering the small acreage involved relative to Lake Pontchartrain, plus the project would provide long-term benefit to the managed species by providing intertidal wetlands, a valuable type of essential fish habitat.

Indirect impacts to managed species include increased turbidity and disturbance of Lake Pontchartrain in the vicinity of the borrow area. These species may be temporarily displaced. Cumulative impacts to fresh and intermediate marsh EFH resulting from construction of the LPV HSDRRS were considered and found to be adequately offset by the resulting increase in habitat quality from the proposed action. Implementation of the proposed action would result in sufficient EFH habitat improvement to offset adverse impacts to fresh and intermediate marsh EFH and open water designated as essential fish habitat from the LPV HSDRRS construction projects as well as the construction of this proposed mitigation project. The other LPV HSDRRS mitigation projects recommended in PIER 36 were evaluated and found to have inconsequential cumulative impacts to EFH as the overall objective of the LPV HSDRRS mitigation is to achieve a minimum of no net loss of EFH within the Lake Pontchartrain Basin. No additional Corps activities that would impact similar open water EFH were identified in the project vicinity.

3.2.6. Cultural Resources

Existing Conditions: Few surveys for cultural resources have been carried out in the vicinity of the proposed project area. In 1982, a Level I cultural resources survey of the proposed 300-acre Port Louis Tract was conducted for a proposed residential development (Gagliano et al. 1982, with addendum by Thigpen and Pearson 1983). In the summer of 2000, a Phase I terrestrial survey of the proposed Entergy Little Gypsy to Madisonville project area was conducted (Lee et al. 2000). Portions of this survey were carried out along the Lake Pontchartrain shoreline and southern boundary of the proposed

marsh creation area. In 2012, cultural resources surveys for a similar project were carried out in the vicinity of the currently proposed project, but further consideration was not given to the project in 2012, and the results of the surveys were not published at that time. The results of the 2012 survey were incorporated into the April 2014 report "*Phase I Cultural Resources Survey and Evaluation, Miltons Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana*" (Pearson et al. 2014). Previous surveys identified four cultural resources sites within one mile of the proposed project area, and the 2014 report documented an extensive shell ridge offshore that is likely the submerged portion of a cultural site located on the nearby shoreline.

The CEMVN elected to fulfill its obligations under Section 106 of the National Historic Preservation Act of 1966, as amended, through the execution and implementation of a Programmatic Agreement (PA) for the HSDRRS, Lake Pontchartrain and Vicinity and West Bank and Vicinity mitigation projects. The PA was developed in consultation with the Advisory Council on Historic Preservation (ACHP), the Louisiana SHPO, Tribes, and other identified interested parties, and was executed on June 18, 2013. The PA is available at the nolaenvironmental.gov website (click on Projects, Mitigation, PIER 36). Pursuant to the stipulations of the PA, the CEMVN consulted with the Louisiana SHPO and signatory Tribes to identify and evaluate historic properties potentially affected by the Milton Island mitigation project, assessed effects, and sought ways to avoid any adverse effects. As a result, the CEMVN modified the proposed action to avoid potential impacts to cultural resources.

No Action: Without implementation of the proposed action it is likely that the shoreline partially separating the proposed marsh mitigation area from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies and erosion. Cultural resources that are present would continue to be impacted and eventually lost to erosion and conversion of existing land areas to open water.

Proposed Action: Existing and as yet undiscovered cultural resources could be adversely impacted by activities associated with the proposed project such as retention dike construction, gapping along natural bayous, degrading of dikes, staging area location, access corridor use, shoreline restoration, and other activities. Implementation of the proposed action to restore marsh could help to prevent or slow future erosion, and over time would contribute to the protection and preservation of cultural resources that may exist in the project area.

In partial fulfillment of responsibilities under NEPA, Section 106 and Executive Order 13175, the CEMVN offered 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. Consultation with the Louisiana SHPO and Tribes pursuant to Section 106 and in accordance with the PA executed on June 18, 2013, has concluded. The draft report *"Phase I Cultural Resources Survey and Evaluation, Miltons Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana"* documenting the findings of the 2012 cultural resources survey was provided to the Louisiana SHPO and Tribes for review and comment, along with the CEMVN finding of "no adverse effect

with conditions." Through consultation, the CEMVN agreed to develop an unanticipated discoveries plan and provide archaeological monitoring during construction activities. In their letter dated May 21, 2014, the SHPO concurred with the CEMVN finding. The Seminole Tribe of Florida (May 12, 2014), Caddo Nation of Oklahoma (May 15, 2014), Jena Band of Choctaw Indians (May 20, 2014), and Choctaw Nation of Oklahoma (June 3, 2014) also concurred with the CEMVN finding, and no objections to the effect determination were received. Copies of the correspondence are provided in Appendix B.

3.2.7. Recreational Resources

Existing Conditions: A variety of recreation areas occur in the Lake Pontchartrain Basin, including two National Wildlife Refuges, four Louisiana Wildlife Management Areas, four Louisiana State Parks, and one State Historic Site. Other recreational features are provided by parishes and communities that attract visitors to a variety of heritage and cultural festivals, historical sites, parks offering opportunities for passive and active recreation that include tennis courts, soccer and softball fields, swimming pools, and golf courses. There are no public recreation areas in the immediate vicinity of the proposed project. The 27,500- acre, state-managed Joyce Wildlife Management Area extends to within about two miles of the western edge of the proposed project area This management area is used primarily by fishermen and hunters to pursue freshwater fish (bass, catfish, and bream), alligator, waterfowl, whitetail deer, and small game. The proposed project area is privately owned. Although not documented, the proposed project area and areas nearby are probably hunted for waterfowl, deer and possibly small game (rabbits and squirrel). The secluded nature of the area and the shallow open water with submerged aquatic vegetation could make waterfowl hunting a successful venture. There is probably a limited amount of recreational fishing in the area as well with freshwater species pursued in and near the proposed marsh mitigation area and estuarine species pursued along the lake shoreline. The proposed borrow area in Lake Pontchartrain and nearby areas of the lake are not likely fished due to the lack of any structure on the lake bottom in this area.

No Action: The land berm partially separating the proposed marsh mitigation area from Lake Pontchartrain would continue to erode exposing the interior area to increased wave energies and salinity changes. Changes to adjacent plant communities and submerged aquatic vegetation would likely take place reducing its utilization by waterfowl, and the likelihood that hunters would try to hunt them. Fisheries usage would likely decrease as well with a related decrease in recreational fishing success due to continued encroachment of the lake into the project area due to erosion.

Proposed Action: The project area would be acquired in fee to preserve the benefits of the proposed mitigation in perpetuity. A non-Federal entity would be responsible for managing the area. A plan for managing the area has not been developed. If the non-Federal managing entity chooses, and the USACE and the NFS are in agreement, public use would be allowed as long as it does not reduce the mitigation aspects of the area. The likelihood of public access to the mitigation area is impossible to determine at this time. Potential recreational opportunities in the marsh mitigation area would include hunting

for deer, wild hogs, rabbit, and possibly waterfowl. Fishing opportunities would be limited by the small amount of open water expected to form within the area. The proposed action would indirectly benefit recreational fishing opportunities through habitat improvement for the small juveniles of sought-after species that would eventually mature into harvestable size fish. The HSDRRS restoration projects within the Lake Pontchartrain Basin would have a positive cumulative effect on recreation by improving habitat for species sought after by recreational fishermen.

3.3. HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

In accordance with Engineering Regulation 1165-2-132, the potential to encounter HTRW in the project area was investigated. Generally, HTRW investigations are focused on land areas. Any contamination occurring under water is addressed through application of regulations promulgated under the Clean Water Act, primarily Section 401 and 404. Since the proposed borrow area is all open water and the marsh mitigation area is nearly all open water, except for the perimeter, Clean Water Act regulations are applicable, whereas the USACE HTRW regulations are only marginally applicable. However, the proposed borrow and marsh mitigation areas were nevertheless subjected to investigations for the potential presence of HTRW.

The proposed mitigation site was surveyed via aerial photographs, topographic maps, field investigation, and database searches. The proposed site has not been developed in recent historic times based on a time-series of aerial photography. No recognized environmental concerns were found or identified within or near the proposed mitigation area. The database searches failed to identify any pipelines crossing the proposed mitigation area or borrow area. Likewise, no oil or gas well or waste pits have been identified. In conclusion, there would be a low probability of encountering HTRW in the proposed mitigation area and borrow area.

3.4. CUMULATIVE IMPACTS

NEPA requires Federal agencies to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. A cumulative impact is defined as the "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 (40 CFR §1508.7)." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts of the proposed action relative to specific resources were discussed in the evaluation of effects to individual resources in Section 3. Those impacts were determined to be individually and cumulatively insignificant. The proposed action is one part of a larger mitigation plan addressed in PIER 36. PIER 36 and the Final Comprehensive Environmental Document, Phase I, Greater New Orleans Hurricane and Storm Damage Risk Reduction System (USACE 2013) both included detailed cumulative impact analysis and are incorporated herein by reference.

4. COORDINATION AND CONSULTATION

4.1. PUBLIC INVOLVEMENT

Extensive public involvement has been sought in planning the mitigation for HSDRRS impacts beginning with a public notice of the NEPA Alternative Arrangements published in the Federal Register on March 13, 2007 (Federal Register Volume 72, No. 48) which included a commitment to analyze alternatives to determine appropriate mitigation. The notice is also available on the website www.nolaenvironmental.gov.

Mitigation-specific public involvement was sought in preparing PIER 36 from which this document is tiered. The details of that specific coordination are specified in PIER 36 and incorporated herein by reference.

The draft TIER was distributed for a 30-day public and agency review and comment period. No requests for a public meeting were received. The comments received during the public and agency review period are considered part of official record. The CEMVN District Commander will review all comments received during the review period and make a determination if they rise to the level of being substantive in nature. If comments are not considered to be substantive, the District Commander will make a decision on the proposed action. This decision will be documented in a TIER Decision Record. If a comment(s) is determined to be substantive in nature, an addendum to the TIER will be prepared and published for an additional 30-day public review and comment period. After the expiration of the public comment period the District Commander will make a decision on the proposed action. The decision will be documented in a TIER Decision Record.

4.2. AGENCY COORDINATION

Preparation of this TIER was coordinated with appropriate Congressional, Federal, Tribal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established in which Federal and state agency staff played an integral part in the project planning and alternative analysis phases of the HSDRRS mitigation planning (members of this team are listed in appendix C). This interagency environmental team was integrated with the CEMVN project delivery team. A subset of the interagency environmental team participated in the more detailed development and analysis of the Milton Island Mitigation project that continued after preparation of PIER 36 and during preparation of this document.

The following agencies and Tribes, as well as other interested parties, received copies of the draft TIER:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, National Park Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, NOAA National Marine Fisheries Service
U.S. Natural Resources Conservation Service
Louisiana Coastal Protection and Restoration Authority Board

Louisiana 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

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
Tunica-Biloxi Tribe of Louisiana

The USFWS reviewed the proposed action to determine if it would affect any threatened and endangered species, or critical habitat, under its jurisdiction. A determination of may effect, but not likely to adversely affect listed species was submitted to the USFWS for their consideration. The USFWS agreed with the CEMVN determination. Their response letter is provided in Appendix B.

The NMFS, Protected Species Division reviewed the proposed action to determine if it would affect any threatened or endangered species, or critical habitat, under its jurisdiction. A determination of may effect, but not likely to adversely affect listed species was submitted to the NMFS for their consideration. The NMFS agreed with the CEMVN determination. Their response letter is provided in Appendix B.

The Louisiana Department of Natural Resources (LDNR) reviewed the proposed action for consistency with the Louisiana Coastal Resource Program. The proposed action was found to be consistent with the LCRP by the CEMVN, with a determination forwarded to LDNR for their consideration. The LDNR agreed with the CEMVN determination. Their response letter is provided in Appendix B.

The Louisiana Department of Environmental Quality (LDEQ) reviewed the proposed action. An application for Water Quality Certification has been prepared and submitted to LDEQ for their consideration. The LDEQ has issued a water quality certification. Their response letter is provided in Appendix B.

NEPA and Section 106 of the NHPA require consultation with the SHPO and Tribes. The Louisiana SHPO and Tribes with an interest in the region were provided the opportunity to review and comment on the proposed action. Implementation of the terms of the programmatic agreement executed on June 18, 2013, evidences that the USACE has taken into account the effects of the proposed action upon historic properties and has

afforded the ACHP an opportunity to comment. The Louisiana SHPO, Caddo Nation of Oklahoma, Jena Band of Choctaw Indians, and Choctaw Nation of Oklahoma reviewed the proposed action and concurred with the CEMVN finding of "no adverse effects with conditions." The CEMVN agreed to develop an unanticipated discoveries plan and provide archaeological monitoring during construction activities. Documentation of Section 106 consultation is provided in Appendix B.

A final Fish and Wildlife Coordination Act Report (CAR) for PIER 36 was provided by the USFWS on October 28, 2013. The final CAR concluded that the USFWS supports the current constructible features and recognizes that additional Tiered IERs will further address individual mitigation features that were still in early design phases. The USFWS provided a draft CAR to accompany the draft TIER. The USFWS provided a final CAR for the proposed Milton Island Restoration project which is included in Appendix B. The CAR states that the USFWS supports the USACE's plan to mitigate impacts to fish and wildlife resources associated with the HSDRRS and believes that the recommendations provided in their October 28, 2013, CAR addressing PIER 36 continue to remain valid and should be incorporated into future project planning and implementation. In addition, the USFWS provided two project-specific recommendations:

> USFWS Recommendation #1. Newly developed mitigation guidelines are being approved by the Corps' Regulatory Division and the Interagency Review Team. Mitigation guidelines, including monitoring and survey requirements, for this project, as well as future LPV mitigation features, should coincide with those Regulatory guidelines as much as possible and should continue to be conducted in coordination with the Interagency team. Once the Corps revises the Milton Island Marsh Mitigation Guidelines based on comments received on the TIER, please provide the revised plan to the agencies for review.
>
> CEMVN Response. The monitoring and surveying guidelines contained in the final TIER (Appendices C and D) coincide with the CEMVN Regulatory program for mitigation banks. A copy of the final TIER, with appendices, will be provided to the Interagency Team as defined in the Definition of Terms section of Appendix C.
>
> USFWS Recommendation #2. Material to rebuild the shoreline would be obtained from the marsh side and lake side of the proposed shoreline. Should the area contain SAV (submersed aquatic vegetation), we recommend alternative borrow areas be investigated. If alternatives are not available, impacts to SAV, a Resource Category 2 habitat, will need to be assessed and, if necessary, mitigated according to the Service's Mitigation Policy and the Corps' March 2, 2012, guidance for mitigating open water impacts.
>
> CEMVN Response. Based on recent aerial photography, sediment is being reworked in the area of the shoreline restoration feature by wind, current and/or wave action, and the area appears to be devoid of SAV. If SAV is found to be

present in the area prior to project construction, the extent of the SAV will be documented and an appropriate mitigation will be developed.

The NMFS Habitat Conservation Division provided comments on PIER 36 by letter dated September 24, 2013. The NMFS provided a variety of comments related to potential impacts to essential fish habitats and the need to scale the final mitigation projects based on advanced engineering and design to ensure no net loss of wetlands and corresponding functions. The NMFS expressed concern that the WVA analysis may not be addressing all of the potential impacts to aquatic resources. The USFWS, NMFS, and the CEMVN environmental staffs worked together to assess the potential mitigation benefits of the Milton Island mitigation project to assure that the proposed action is capable of fully and adequately compensating for the adverse impacts to fresh and intermediate marsh as a result of constructing the LPV HSDRRS. The NMFS Habitat Conservation Division also provided numerous comments on the draft TIER. Their comment letter and the CEMVN response letter are contained in Appendix A.

4.3. COMPLIANCE WITH ENVIRONMENTAL LAWS, REGULATIONS, AND GUIDANCE

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described below.

Environmental compliance for the proposed action has been achieved. The correspondence documenting compliance is included in Appendix B. Other specific environmental requirements were addressed in PIER 36 and require no further consideration is this TIER. A Section 404 (b)(1) public notice was distributed for 30-day public review and no comments were received. A section 404 evaluation has been developed and signed. The public notice and evaluation are included as Appendix F.

An effective monitoring program is required by the Water Resources Development Act of 2007, Section 2036, to determine if the project outcomes are consistent with the identified success criteria. A monitoring plan including general success criteria, monitoring requirements, and planting guidelines for the proposed mitigation project has been developed and is included as Appendix E.

The purpose of adaptive management activities in the life-cycle of the project is to address ecological and other uncertainties that could prevent successful implementation of a project. Adaptive management also establishes a framework for decision making that utilizes monitoring results and other information, as it becomes available, to update project knowledge and adjust management/mitigation actions. Hence, early implementation of adaptive management and monitoring allows for a project that can succeed under a wide range of conditions and can be adjusted as necessary. Furthermore, careful monitoring of project outcomes both advances scientific understanding and helps adjust operations changes as part of an iterative learning process. An adaptive management plan has been developed and is included as Appendix F.

A "habitat-based methodology" in the form of the wetland value assessment (WVA) model was used to assess impacts from construction of the HSDRRS work and future benefits to be obtained through the compensatory mitigation projects. The WVA model computes the difference in the habitat value over the period of analysis between the future with project and future without project (no-action) conditions. The difference is expressed as net average annual habitat units (AAHUs). The same version of the model was used to calculate both the impacts from construction the HSDRRS work and future benefits to be obtained through the implementation of the proposed mitigation. The WVA model analysis indicated a need for 45.7 AAHUs to compensate for impacts to fresh and intermediate marsh resulting from the construction of the LPV HSDRRS. If the entire project performs as planned, he proposed action could result in the creation of approximately 5% more AAHUs than what is required to offset habitat losses. The detailed assumptions and project specific data utilized in application of the WVA model to the Milton Island mitigation project can be found in Appendix E.

5. CONCLUSION

The proposed action has been assessed for its potential impacts to wildlife, threatened and endangered species, fisheries, aquatic resources, water quality, essential fish habitat, cultural resources, and recreation, and for the potential of the project to encounter HTRW. This assessment has not identified any potential significant environmental effects or impacts from the proposed action. The proposed action would provide slightly more than the 45.7 AAHUs of mitigation required for fresh and intermediate marsh impacts of the Lake Pontchartrain and Vicinity HSDDRS through restoration of 132.5 acres of fresh and intermediate marsh within a 152-acre project area. The CEMVN has determined that the proposed action would adequately mitigate for specific impacts of the HSDRRS.

6. PREPARERS

This TIER was prepared by Howard Ladner, Biologist and Richard Boe, Supervisory Environmental Resources Specialist. Eric Williams, Archeologist, and Rebecca Hill, Tribal Liaison, prepared the Cultural Resources sections. Patrick Erwin, Project Manager, provided support. The address of the preparers is: U.S. Army Corps of Engineers, Regional Planning and Environment Division, CEMVN-RPEDS; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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APPENDIX A

Public Comment and Response

One letter was received from the public in response to the draft TIER. The letter appears on the following page. The writer was mailed a copy of the draft TIER, however the package was returned due to the lack of an inmate identification number, which was not provided by the submitter.

5-3-2014

Can you please send me information on Milton & Island Marsh Restoration Project, St Tammany Parish that meet requirements while I'm incerated at M.C.S.P that's not a threat to Correctional officers fellow mostly our inmate's who our mason before my release which I am uncertain about due my Counselor CCI Richardson on C yard and Lt. Gonzales her superior on C-yard I do not know her boss who is a CC2 which rank equals a CO sergeant and a parole officer on the civilian street's since they all our mostly have military background as my brother Bobby Lee DeMarco X Ranger Lt. at Avenal State Prison

Ernest Jerome
DeMarle
[signature]
3:16

APPENDIX B

TRIBAL AND INTERAGENCY CORRESPONDENCE

The following correspondence was received prior to and during the agency and public review period on the draft TIER. CEMVN response letters follow the letters that contain substantive comments.

From: Bradley Mueller
To: Hill, Rebecca MVN
Subject: [EXTERNAL] RE: CEMVN – TIER - Milton Island Restoration Project, St. Tammany Parish, Louisiana
Date: Monday, May 12, 2014 11:10:16 AM

Good Morning Ms. Hill,

Thank you for contacting the Seminole Tribe of Florida - Tribal Historic Preservation Office (STOF - THPO) about the Milton Island Restoration Project. If you don't receive a reply from the THPO within thirty days you may assume that we have no objections to your proposal.

Regards,

Bradley M. Mueller, MA
Compliance Supervisor
Tribal Historic Preservation Office
Seminole Tribe of Florida

Tel: 863-983-6549 ext 12245
Fax: 863-902-1117
Email: bradleymueller@semtribe.com
Web: www.stofthpo.com

-----Original Message-----
From: Hill, Rebecca MVN [mailto:Rebecca.Hill@usace.army.mil]
Sent: Saturday, May 10, 2014 10:30 PM
To: Paul Backhouse
Cc: Anne Mullins; Bradley Mueller; alisonswing@semtribe.com
Subject: CEMVN – TIER - Milton Island Restoration Project, St. Tammany Parish, Louisiana

Dear Mr. Backhouse,

The United States Army Corps of Engineers, New Orleans District (CEMVN), is continuing consultation for the Milton Island Restoration Project, identified as a programmatic feature in the Programmatic Individual Environmental Report (PIER) #36, in accordance with the Stipulations of the Programmatic Agreement (PA) for the Hurricane Storm Damage Risk Reduction System (HSDRRS) Lake Pontchartrain & Vicinity and West Bank & Vicinity Mitigation Projects, executed on June 18, 2013.

In partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, and pursuant to the stipulations of the PA, the CEMVN offers you the opportunity to review and comment on the potential of the proposed action to significantly affect protected tribal resources, tribal rights, or Indian lands.

The potential environmental impacts associated with the proposed undertaking have been evaluated in a tiered Individual Environmental Report (TIER) titled "Milton Island Marsh Restoration Project, Saint Tammany Parish, Louisiana" The draft TIER prepared by the CEMVN is available for review and comment; an electronic copy is available online at
http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/DraftPIER36TIER1MiltonIsland.pdf

and hard copies are available upon request.

In partial fulfillment of the Stipulations of the PA, a CD with the draft report Phase I Cultural Resources Survey and Evaluation, Milton's Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana has been submitted via USPS for your review and comment. Any comments received will be incorporated into the final report. The draft report presents the findings of a Phase I survey and remote sensing survey of areas on the north shore of Lake Pontchartrain that are part of a proposed intermediate marsh restoration project.

We request that your office review the draft TIER, the draft cultural resources report, and the Section 106 "no adverse effect with conditions" finding and provide comments within 15 days to assist CEMVN with meeting expedited project scheduling requirements. If you are unable to provide an expedited review, we look forward to receiving your comments within 30 days of receipt of this letter.

Please do not hesitate to contact me if you have any questions or concerns about the proposed undertaking.

Respectfully,
Rebecca

Rebecca E. Hill
Archeologist/Tribal Liaison
US Army Corps of Engineers, New Orleans District

From: Robert Cast
To: Hill, Rebecca MVN
Subject: [EXTERNAL] Re: CEMVN – TIER - Milton Island Restoration Project, St. Tammany Parish, Louisiana
Date: Thursday, May 15, 2014 9:39:49 AM

Ms. Hill, we concur with the report findings.

On 05/10/14, "Hill, Rebecca MVN" <Rebecca.Hill@usace.army.mil> wrote:

Dear Mr. Cast,

The United States Army Corps of Engineers, New Orleans District (CEMVN), is continuing consultation for the Milton Island Restoration Project, identified as a programmatic feature in the Programmatic Individual Environmental Report (PIER) #36, in accordance with the Stipulations of the Programmatic Agreement (PA) for the Hurricane Storm Damage Risk Reduction System (HSDRRS) Lake Pontchartrain & Vicinity and West Bank & Vicinity Mitigation Projects, executed on June 18, 2013.

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Respectfully,
Rebecca

Rebecca E. Hill
Archeologist/Tribal Liaison
US Army Corps of Engineers, New Orleans District

--
Robert Cast
Tribal Historic Preservation Officer
Caddo Nation of Oklahoma
P. O. Box 487
Binger, Oklahoma 73009

From: JBC THPO Office
To: Hill, Rebecca MVN
Subject: [EXTERNAL] Draft EA #512, St. Mary Parish; Milton Island Restoration Project, St. Tammany Parish, LA
Date: Tuesday, May 20, 2014 11:31:40 AM

Dear Ms. Hill,

Regarding the Draft EA #512, St. Mary Parish, the Jena Band of Choctaw THPO hereby concurs with the determination of No Properties. Also, regarding the Milton Island Restoration Project, St. Tammany Parish, the Jena Band of Choctaw THPO hereby concurs with the determination of No Adverse Effect. However, in the event of inadvertent discoveries, please contact our office immediately via the information below. Thank you.

Sincerely,

Dana Masters, JBC THPO
danammasters@aol.com

Prepared By:
Alina J. Shively
JBC Deputy THPO/Cultural Dept.
P.O. Box 14
Jena, LA 71342
(318)-992-1205
Email: jbc.thpo106@aol.com

From: Lindsey Bilyeu
To: Hill, Rebecca MVN
Subject: [EXTERNAL] RE: CEMVN – TIER - Milton Island Restoration Project, St. Tammany Parish, Louisiana
Date: Tuesday, June 03, 2014 1:03:42 PM

Dear Ms. Hill,

The Choctaw Nation of Oklahoma thanks the U.S. Army Corps of Engineers, New Orleans District, for the correspondence regarding the above referenced project. St. Tammany Parish, LA lies within the Choctaw Nation of Oklahoma's area of historic interest. The Choctaw Nation of Oklahoma is unaware of any Choctaw cultural or sacred sites within the immediate project area. The Choctaw Nation Historic Preservation Department concurs that there should be no adverse effect as long as the conditions stated in the survey report are followed. If you have any questions, please contact our office at 580-924-8280 ext. 2631.

Thank You,

Lindsey Bilyeu
NHPA Senior Section 106 Reviewer
Choctaw Nation of Oklahoma
Historic Preservation Department
P.O. Box 1210
Durant, OK 74702
580-924-8280 Ext. 2631

-----Original Message-----
From: Hill, Rebecca MVN [mailto:Rebecca.Hill@usace.army.mil]
Sent: Saturday, May 10, 2014 9:28 PM
To: Ian Thompson; Lindsey Bilyeu
Subject: CEMVN – TIER - Milton Island Restoration Project, St. Tammany Parish, Louisiana

Dear Dr. Thompson and Ms. Bilyeu,

The United States Army Corps of Engineers, New Orleans District (CEMVN), is continuing consultation for the Milton Island Restoration Project, identified as a programmatic feature in the Programmatic Individual Environmental Report (PIER) #36, in accordance with the Stipulations of the Programmatic Agreement (PA) for the Hurricane Storm Damage Risk Reduction System (HSDRRS) Lake Pontchartrain & Vicinity and West Bank & Vicinity Mitigation Projects, executed on June 18, 2013.

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We request that your office review the draft TIER, the draft cultural resources report, and the Section 106 "no adverse effect with conditions" finding and provide comments within 15 days to assist CEMVN with meeting expedited project scheduling requirements. If you are unable to provide an expedited review, we look forward to receiving your comments within 30 days of receipt of this letter.

Please do not hesitate to contact me if you have any questions or concerns about the proposed undertaking.

Respectfully,
Rebecca

Rebecca E. Hill
Archeologist/Tribal Liaison
US Army Corps of Engineers, New Orleans District

United States Department of the Interior

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

May 22, 2014

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Hansen:

Please reference Programmatic Individual Environmental Report (PIER #36) addressing the final array of mitigation alternatives and the Draft Tiered Individual Environmental Report #1 (TIER 1) for the Milton Island Marsh Restoration Project feature. Those reports are prepared under the approval of the Council on Environmental Quality (CEQ) and will partially fulfill the U.S. Army Corps of Engineers' (Corps) compliance with the National Environmental Policy Act of 1969 (NEPA) (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347). Individual Environmental Reports are CEQ-approved alternative arrangements for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures in Louisiana. Work proposed under this TIER would mitigate impacts to fresh and intermediate marsh habitats resulting from the improved hurricane protection measures to the Lake Pontchartrain and Vicinity (LPV) project and would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana.

The Fish and Wildlife Service (Service) provides this report to assist your staff in fulfilling mitigation needs associated with those efforts in accordance with the Fish and Wildlife Coordination Act (FWCA) (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 the FWCA. Copies of this report were provided to the National Marine Fisheries Service (NMFS) and the Louisiana Department of Wildlife and Fisheries. NMFS provided comments, and their comments on the draft FWCA report and the draft TIER have been incorporated into this final report (Appendix D). Their comments include a cursory review of the Draft Mitigation Guidelines; please refer to their comments for those specific comments.

Through the Corps' alternative evaluation process (AEP) the Milton Island Intermediate Marsh Restoration (non-refuge impacts) project was selected as a Tentatively Selected Plan (TSP) to mitigate impacts to fresh and intermediate marsh. This report is provided to assist in fulfilling those mitigation needs. This report incorporates and supplements our October 28, 2013, FWCA Report provided during the development of the PIER#36, as well as our November 26, 2007, Draft FWCA Report that provided twenty-six programmatic recommendations for the Hurricane and Storm Damage Risk Reduction System (HSDRRS) authorized work to help avoid and minimize impacts to fisheries, wetlands, forested habitats, migratory birds, and public lands. This report also incorporates, and supplements the numerous FWCA Reports provided for the work authorized under 4th and 5th Supplemental for the LPV Hurricane Protection Project only (i.e., IERS 1-11, including supplemental documents). Those reports contain a thorough discussion of the significant fish and wildlife resources (including those habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to update the previously mentioned reports and provide specific information and recommendations.

Project Impacts & Mitigation

As a result of HSDRRS impacts to approximately 100 acres and 45.7 average annual habitat units (AAHUs, based on 95-100% design of levee impacts) of intermediate and fresh marsh, mitigation plans are jointly being developed by the Corps, the Service and the NMFS. The current plan consists of acquisition and management of a 152-acre area near Madisonville in St. Tammany Parish, Louisiana. The site is located within an area that was converted from a marsh and swamp complex into a mechanically-dependent agricultural area surrounded by dikes. The area is no longer used for agriculture but is managed to attract wintering waterfowl. Recent shoreline loss has resulting in breaching of the Lake Pontchartrain shoreline allowing tidal influence into the immediate project area. The project area is bounded on the north by similar open water habitat, on the west by a cypress-tupelo swamp and on the east by a borrow canal that supports a residential development along the Milton's Island ridge.

HSDRRS project activities are located in the Mississippi River Deltaic Plain. Habitats (bottomland hardwoods, swamp, and estuarine marshes) within this area have decreased because of urbanization, especially adjacent to the New Orleans metropolitan area, and conversion to agriculture along the adjacent natural river levees. Other factors contributing to the loss of those habitats include hydrologic alterations associated with navigation channels, isolation from historic riverine overbank flows by flood-control levees, oil and gas exploration, extraction and transportation activities, sea-level rise, and subsidence. Due to their value and scarcity, in-kind compensation for project-induced losses to estuarine marsh habitats would be implemented. Avoidance and minimization of impacts to wetlands and incorporation of environmental features, when feasible, into levee designs were Corps' planning objectives. A more detailed description of the habitats and their value to fish and wildlife resources was presented in our October 28, 2013, FWCA Report and herein incorporated by reference.

The Service quantified unavoidable project impacts on wildlife resources and calculated mitigation needs and benefits through the use of Wetland Value Assessment (WVA). Habitat units fluctuate in response to changes in habitat quality, represented by the Habitat Suitability Index (HSI), and/or quantity (acres); those changes are predicted for various target years over the period-of-analysis (i.e., 50 years), for future without-project and future with-project scenarios. Target years (TY) were selected for this analysis to capture the effects of important biological events. Values for model variables were obtained from site visits to the area, previous wetland assessments in similar habitats, communication with personnel knowledgeable about the study area and similar habitats, and review of aerial photographs and reports documenting fish and wildlife habitat conditions in the study area and similar habitats. For all the habitat assessments, the products of the resulting HSI values and acreage estimates were then summed and annualized for each habitat type to determine the AAHUs available. The net change (increase or decrease) in AAHUs under future with-project conditions, compared to future without-project conditions, provides a quantitative comparison of anticipated project impact/benefits in AAHUs. By dividing the AAHU by the proposed mitigation project acreage a mitigation potential per acre was determined. Using an iterative analysis, that mitigation potential was used to refine the project size to meet the mitigation needs. Further explanation of how impacts/benefits are assessed with the WVA and an explanation of the assumptions affecting HSI values are available for review at the Service's Louisiana Ecological Services Office. Impact assessments and mitigation benefit assessments considered sea-level rise, subsidence, accretion, and historic marsh loss trends and were coordinated with other State and Federal agencies.

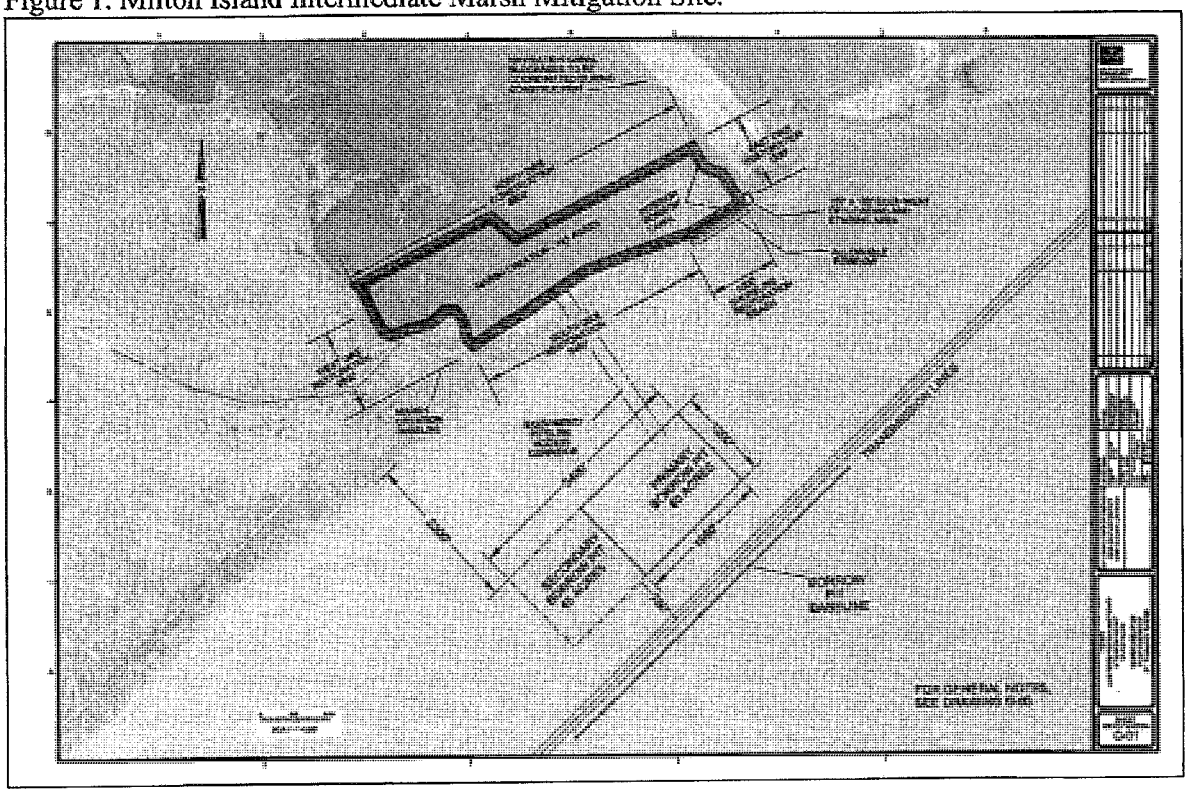
Milton Island Intermediate Marsh Mitigation Site and Plan

The proposed mitigation area is within the Pontchartrain Basin and is considered to be located in the "middle" Pontchartrain Basin along with the areas of impact. Intermediate marsh is generally found between brackish and freshwater marsh, usually characterized by an irregular tidal regime, whereas brackish marsh is generally found near estuaries of coastal rivers where an influx of freshwater dilutes seawater to a brackish level of salinity. Chabreck (1972) classified fresh and intermediate marshes as having an average salinity range of 0.1 parts per thousand (ppt) to 9.9 ppt with a mean of < 3.0 ppt for fresh and 3.3 ppt for intermediate marshes, whereas brackish marsh average salinities can range from 0.4 ppt to 28.1 ppt (average 8.0 ppt). Implementation of the mitigation plans would maintain and/or increase fish and wildlife resource values via the improvement and re-establishment of estuarine marsh. The proposed mitigation plan is being developed to offset losses to fresh/intermediate marshes and includes the purchase of protective easements (or fee-title) and the construction of a marsh restoration project (containment dike construction, dedicated dredging, and filling of open water areas) on 152 acres along the Lake Pontchartrain shoreline (Figure 1). Mitigation lands are to be purchased by the Corps and managed by the Non-Federal Sponsor, the Coastal Protection and Restoration Authority Board.

The Milton Island Flood Side Intermediate Marsh Restoration project will consist of a 152-acre project area, of which includes 7 acres of existing dikes and 2 acres of shoreline restoration. The remaining 143 acres is open water that would be filled to create marsh. Approximately 15 acres of borrow ditches will be dredged within the marsh creation area for containment. Of those 15

acres, 4.5 acres are expected to be back filled to target marsh elevations, leaving 10.5 acres of shallow open water. Based on these calculations, approximately 132.5 acres of floodside intermediate marsh and 10.5 acres of associated open water (143 acres total) will provide the necessary benefits to offset levee construction impacts. The WVA evaluated the 145-acre project area to account for the conversion of 2 acres of open water to non-wetland habitat for shoreline restoration.

Figure 1. Milton Island Intermediate Marsh Mitigation Site.



The project consists of dredging material from Lake Pontchartrain about 2,000 feet from the shoreline using a hydraulic cutterhead dredge. Initial elevation for dredge fill would be to an approximate elevation of +2.25 feet North American Vertical Datum 1988 (NAVD88), to ultimately result in a target marsh elevation of between +1.5 and +1.0 feet NAVD88 within the project life. Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. Existing retention features exist along the east, west, and south perimeters of the project footprint, except for a 1,000-foot reach of shoreline along the lake which would require shoreline restoration efforts. Rehabilitation of these existing dikes would be accomplished as necessary to retain the dredge material slurry. Over 5,500 linear feet of new retention dike would be required along the northern limit of the project footprint. The dike would be built to an elevation +4.5 feet NAVD88 with borrow material obtained within the marsh creation footprint and would have a 5-foot crown width to provide two feet of freeboard during the dredged material pumping operation. Interior weirs or baffle dikes may be constructed to assist in vertical stacking of dredged material. Dikes surrounding the project will be either gapped or degraded approximately one year after project construction, upon settlement

and dewatering of the created marsh platform. Gaps would require a 25-foot bottom width at approximately elevation +0.0 NAVD88 (lower limit of existing marsh platform) to assure water interchange with the existing marsh and would be spaced with care being taken to locate gaps at existing natural bayous, canals, and other openings. Gap locations should also be considered at low areas within the mitigation site. The southern dike would remain to provide protection from Lake Pontchartrain waves and water intrusion.

With regards to the lake shoreline, a design element of the project will be to restore 1,000-foot reach of that shoreline which has breached, allowing lake waters to freely enter the project footprint. An earthen berm, with a 25-foot crown width, 1:4 foot (rise to run) side slope, at elevation +5.0 feet NAVD88 is proposed. An earthen-filled bag system, which will accommodate planting of shoreline vegetation, is being considered as a viable shoreline protection alternative. It is estimated that the footprint of the shoreline restoration would result in 2 acres of impacted water bottoms. Additionally, approximately 2-3 acres of water bottom lake side of the shoreline restoration feature will be dredged to obtain material for the shoreline restoration.

The marsh footprint will be planted upon satisfactory settlement and dewatering of the dredged material, approximately one year after initial construction. Plugs of appropriate marsh vegetation will be planted over 100% of the marsh restoration acreage on seven (7) foot centers. To ensure adequate species diversity, the planting will include at least two (2) of the following different species: California Bulrush, Black Needle Rush, Giant Cutgrass, Marshhay Cordgrass, Maidencane, and/or Seashore Paspalum.

Land Use

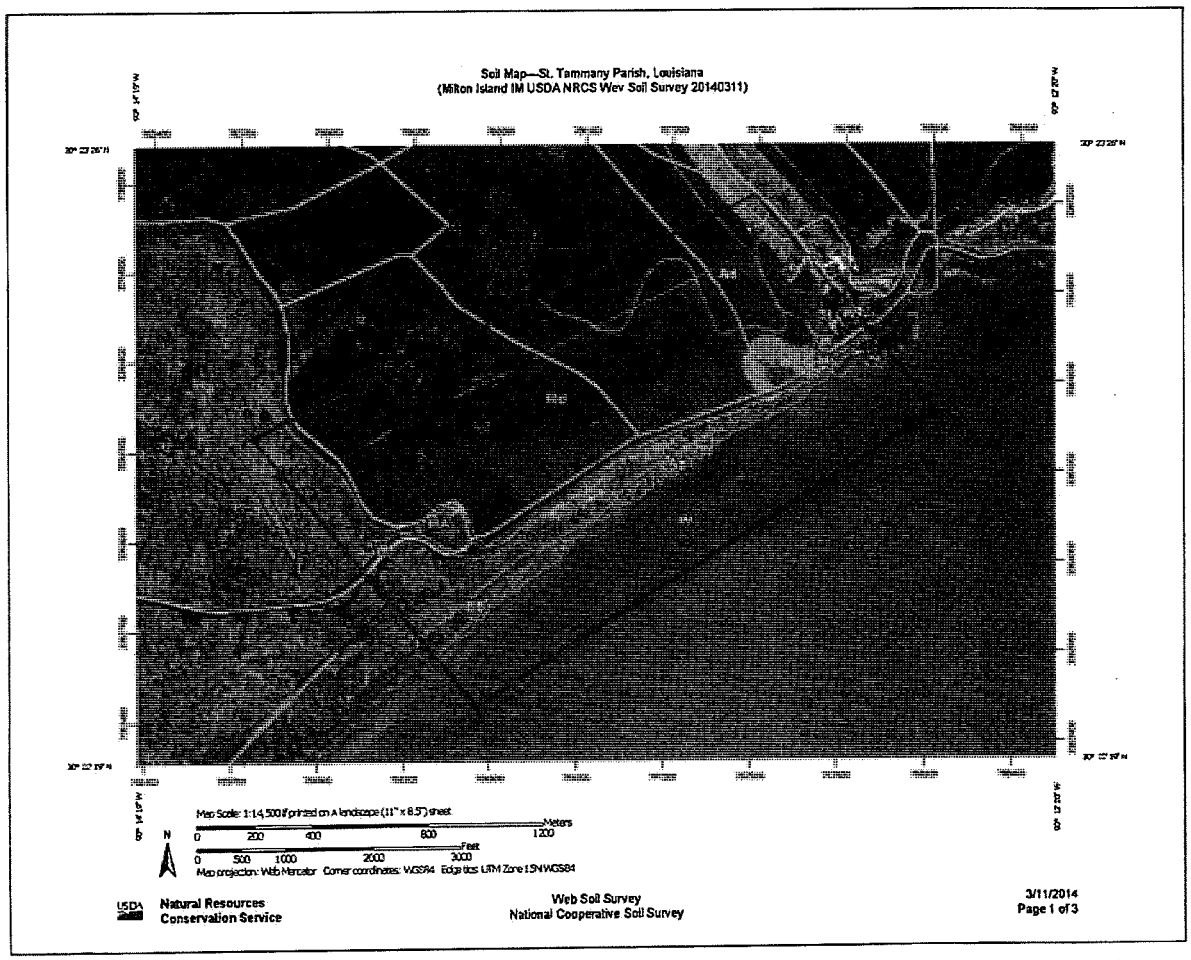
The proposed mitigation project was part of a larger parcel that was considered by the Interagency Review Team as a Section 404 of the Clean Water Act mitigation bank proposal. Of the larger parcel considered as a private mitigation bank, only Unit 6 was pursued as a Phase 1 mitigation proposal. That unit is not the same unit being considered for HSDRRS mitigation (Unit 8). Currently the mitigation bank proposal has been withdrawn. According to information presented during the project evaluation process, the site underwent a massive land conversion from swamp and marsh to a pumped agricultural area during the 1950's. Construction was completed in the 1960's, and has since been used for agriculture and hunting. The impounded area historically underwent spring and summer drawdowns and winter filling to attract waterfowl. A recent breach in the Lake Pontchartrain shoreline connects the project area to the lake. Except for the remnant dikes most of the site is currently open water, and until recently was cut off from tidal fluctuations. A portion of the Milton Island ridge, just east of the project area, has been developed into a residential area.

Soils

Soils found within and near the proposed mitigation area include Maurepas muck, drained (Md); Maurepas muck (MA); Allemands muck (drained) (Ad); and Aquents, dredged (Ag) (Figure 2).

The site is predominantly Maurepas muck which consists of very poorly drained organic soils formed in woody plant remains characteristic of soils found in very large swamps. According to the *Soil Survey of St, Tammany Parish, Louisiana*, (1990), Maurepas soils are flooded and ponded most of the time by freshwater, and have a low capacity to support loads. Allemands muck soils make up a significant portion of the project area and are organic soils that are in former freshwater marshes that have been drained. They are similar to the Maurepas soils with an organic layer on top of a clay layer; however the organic layer in the Allemands soils is shallower (18 inches thick). Both series are best used as habitat for wetland fish and wildlife. The natural vegetation for the Allemands series includes bulltongue, maidencane, alligator weed, cattail, common rush, pickerel weed, and giant cutgrass. Bald cypress has been known to occur occasionally throughout the area.

Figure 2. Soil Classifications within the Milton Island Intermediate Marsh Project



The shoreline of Lake Pontchartrain is characterized as Aquents (dredged) soils. Aquents soils are created by the placement of dredged material either through the creation of dikes for the agricultural impoundments or dredged material disposal from Lake Pontchartrain. These soils are variable in texture and, according to the *Soil Survey of St. Tammany Parish, Louisiana* (1990)

range from muck and clay to sand. The material was stacked and allowed to dry, then leveled and spread throughout the diked area. Also occurring along the Lake Pontchartrain shoreline near the project area is the Barbary muck clay soils. Typical vegetation supported by this soil includes water tupelo, bald cypress, water oak, white oak, red ample, elm, and water hickory for the overstory, and lizard's tail, spiderlily and buttonbush as the undertstory.

A small portion of the project area near the shoreline breach and along the borrow canal is classified as Stough find sandy loam. This is a somewhat poorly drained soil that formed in loamy marine and fluvial sediments, and is found on terraces of the late Pleistocene age. This soil is well suited for woodland and openland habitat, and moderately suited for crop production and recreational use.

Hydrology

Until recently the project area was part of a larger non-operational agricultural impoundment that was cut off from tidal influences. The area was diked and pumped to support the agricultural activities and dependent on rain water for freshwater input. The 1,000-foot breach that has recently developed allows some tidal flow into the area.

The mitigation plan includes gapping and degrading dikes after initial settlement to restore the tidal regime to the project area. This will also offer hydrologic benefits to adjacent areas that have reduced hydrologic connections near existing dikes.

The Corps' Draft 100% Design Document Report for the Milton Island Intermediate Marsh project used data from the Mandeville tide gage. Using 14,253 usable records taken between January 1, 1959 and May 14, 2011, the minimum stage is estimated at -1.64 feet, the average stage is +1.33 feet, and the maximum stage is +5.00 feet. Tidal data to be used for Milton Island was calculated from the Corps #85575 Mandeville hourly adjusted gage readings, located in the Mandeville Harbor just east of the Causeway Bridge. Since this is about the same distance from the mouth of the Tchefuncte River as the project is, but on opposite sides of this river outlet, this gage is a suitable gage for this project. Using tidal data terminology from National Oceanic and Atmospheric Administration, the results of the Mandeville gage are as follows:

- MHW & MHHW = 1.00 feet NAVD88 (which occurs at 71% above all other lower elevations)
- MSL & MTL = 0.70 feet NAVD88 (which occurs at 53% above all other lower elevations)
- MLW & MLLW = 0.40 feet NAVD88 (which occurs at 32% above all other lower elevations)

  **MHW = Mean High Water, MHHW = Mean High High Water, MLW = Mean Low Water, MLLW = Mean Low Low Water

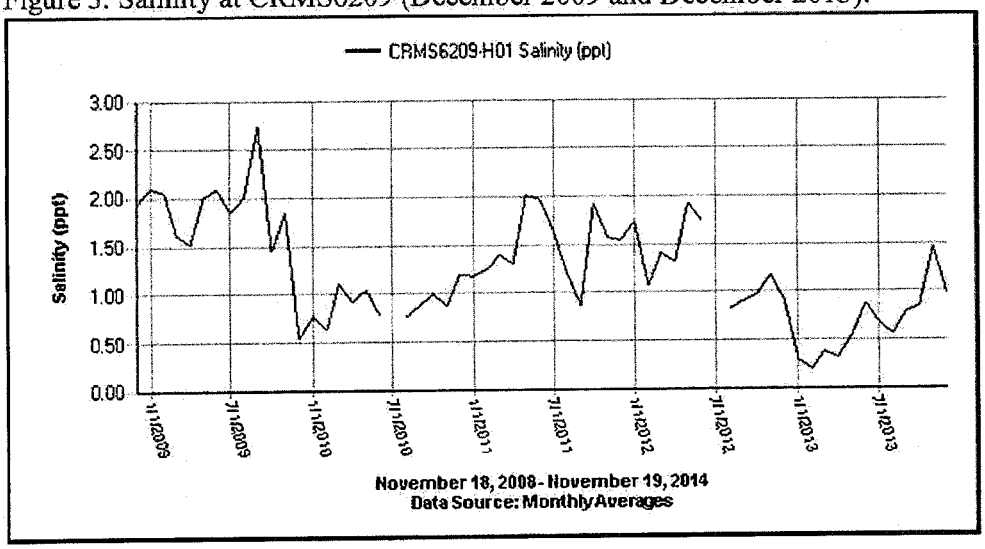
Since Lake Pontchartrain is not subject to diurnal tides, MLLW is the same as MLW and MHHW is the same as MHW. Due to Relative Sea Level Rise (RSLR), water surface elevations in the project area could increase by up to the following amounts by the end of the project's 50

year period of analysis: 1.23 feet for the Low estimate, 1.66 feet for the Intermediate estimate, and 3.06 feet for the High estimate.

Salinities

Two Coastwide Reference Monitoring System (CRMS) stations are located near the project area but further inland likely resulting in fresher conditions observed at those stations compared to the project area. CRMS4094 is located in a fresh marsh area east of the Tchefuncte River. Average salinity between November 2011 and December 2013 was measured at 1.26 ppt. CRMS6209 is located in a swamp also inland from the lake shoreline and has a recorded average salinity of 1.07 ppt between December 2009 and December 2013. The WVA references the proposed Guste Island Mitigation Bank habitat assessment which indicates that the area salinity averages 3.0 ppt during the growing season.

Figure 3. Salinity at CRMS6209 (December 2009 and December 2013).



Future-without Mitigation

Under future without-management conditions, the proposed wetland mitigation area is predicted to remain in private ownership. Without management it is likely that the remnant dikes will further deteriorate and the project area will become an extension of Lake Pontchartrain. Areas further inland will experience increased turbidity and salinities as the site will be exposed to greater wind fetch and tidal conditions. Submerged aquatic vegetation will likely respond negatively to this increase in turbidity and salinity. Aquatic organism ingress and egress will likely increase as the shoreline breaches into the project area.

Future-with Mitigation

General

The goal of the mitigation plan is to provide for equal replacement of the habitat units lost due to re-construction of the hurricane/flood protection projects. The equal replacement compensation goal specifies that the gain of one habitat unit can be used to offset the loss of one habitat unit. Achieving this goal would re-establish, maintain and protect emergent wetland habitats as a species diverse, sustainable habitat by restoring/maintaining unique functions, values, and services. The objectives of the mitigation measures would be to establish and maintain an intermediate marsh habitat at an elevation that would support emergent vegetation for the longest period of time within the project life.

The mitigation plan consists of acquisition (easement or fee-title) and management of approximately 152 acres of intermediate marsh; approximately 7 acres of the 152 acres consist primarily of levees surrounding the proposed mitigation site which will be incorporated into proposed containment dike design. The mitigation plan addresses marsh loss due to induced subsidence as a result of the area being leveed and placed under a pump system. Marsh elevations and natural tidal regimes will need to be restored to support a diversity of native marsh vegetation and intertidal marsh functions for a time period no less than that of a natural marsh.

Success Criteria, Monitoring, and Adaptive Management

"General Mitigation Guidelines" for monitoring, success criteria, and reporting requirements were developed by the Corps in coordination with the Interagency Team, including the Non-Federal Sponsor. According to the "General Mitigation Guidelines", the proposed mitigation actions will include construction with the Non-Federal Sponsor responsible for operation and maintenance of functional portions of work as they are completed. The Corps will monitor completed mitigation to determine whether additional actions are required to achieve mitigation success and will implement those actions in accordance with cost sharing responsibilities applicable to the project and subject to the availability of funds. Once the Corps determines that the mitigation has achieved initial success criteria, monitoring will be performed by the Non-Federal Sponsor. If the mitigation fails to meet the intermediate and/or long term ecological success criteria the Non-Federal Sponsor is responsible for performing the corrective actions and additional monitoring, at their expense, to ensure success criteria are meet.

General mitigation guidelines for Milton Island have also been drafted (Appendix A); however those draft detailed mitigation plans will need to be reviewed and agreed upon by the Interagency Team including the Non-Federal Sponsor. While, it is anticipated that final mitigation plans would not deviate substantially in regards to the general guidelines provided in the PIER, project specific details need to coincide with design parameters (e.g., settlement curves) evaluated in the WVA.

Newly developed mitigation guidelines are being reviewed by the Corps' Regulatory Division and the Interagency Review Team. Mitigation guidelines for this project as well as future HSDRRS mitigation features should coincide with Regulatory guidelines as much as possible and should continue to be conducted in coordination with the Interagency team. Further, future changes to the mitigation plan should be evaluated against the accrued and anticipated benefits and the effect of implementing the proposal on achievement of the mitigation plan goal. Any changes that would prevent the mitigation goal from being achieved would not be recommended for implementation. Furthermore, the following actives are not permitted within the mitigation area:

1. Placing, filling, storing, or dumping of refuse, trash, vehicle bodies or parts, rubbish, debris, junk, waste, or other such items on the property.
2. Mechanized land clearing or deposition of soil, shell, rock or other fill on the property without prior request for approval, excluding the existing right-of-ways.
3. Cutting, removal or destruction of vegetation on the property except in accordance with the restoration plan.
4. Grazing of cattle or other livestock on the property that has been restored or enhanced.
5. Commercial, industrial, agricultural, or residential uses of the property.
6. No other human activities that result in the material degradation of habitat within the area shall occur.

However, it is understood that the mitigation plan shall not prohibit hunting, fishing, trapping, non-consumptive recreational pursuits and exploration and production of minerals. Exploration and production of minerals shall be conducted in accordance with all applicable laws and regulations. The Service acknowledges that such activities have the potential to reduce the ability of the area to achieve the mitigation goal, depending on the extent of the impacts to the mitigation wetlands.

ANTICIPATED BENEFITS FROM THE MITIGATION SITE

Implementation of the proposed restoration plan is predicted to restore 145 acres (132.5 acres of marsh + 10.5 acres of associated open water + 2 acres of shoreline restoration) of intermediate marsh and increase the habitat value of the estuarine habitat for fish and wildlife. Approximately 2 acres of shallow open water will be filled to restore a breach in the Lake Pontchartrain shoreline and will be used as containment during construction. Mitigation-area habitat values would increase due to the increased quantity and quality of estuarine emergent wetlands. Very little emergent vegetation would be present immediately after construction as most of the project area would be un-vegetated dredged material. Planting of the marsh platform is proposed and will reduce the time to achieve a functional marsh community. Under the future-with project conditions, marsh loss would continue in the project area. The WVA assumes that land loss would continue in the project area at a reduced rate of -0.14% percent per year, compared to -0.28% percent per year under the No Action Alternative. Within the project area, 110 acres of marsh would remain at the end of the 50-year project life compared to 0 acres under the No Action Alternative, and a significant amount of acreage of marsh would remain within the project area after the project life. According to Corps' RSLR analysis, assuming an initial

elevation of 2.5 feet NAVD88, a majority of the project area will experience intertidal marsh elevations for a period of 18 years under the intermediate relative sea level rise scenario (Figure 4 and Table 1). While this considers local sediment rates, post construction accretion rates associated with organic production was not considered.

Figure 4. Settlement curves for constructed marsh beginning at 1.0, 1.5, 2.0, and 2.5 feet NAVD88, and tidal ranges for the three future sea level scenarios outlined in the Corps' EC 1165-2-212 (Corps 2014).

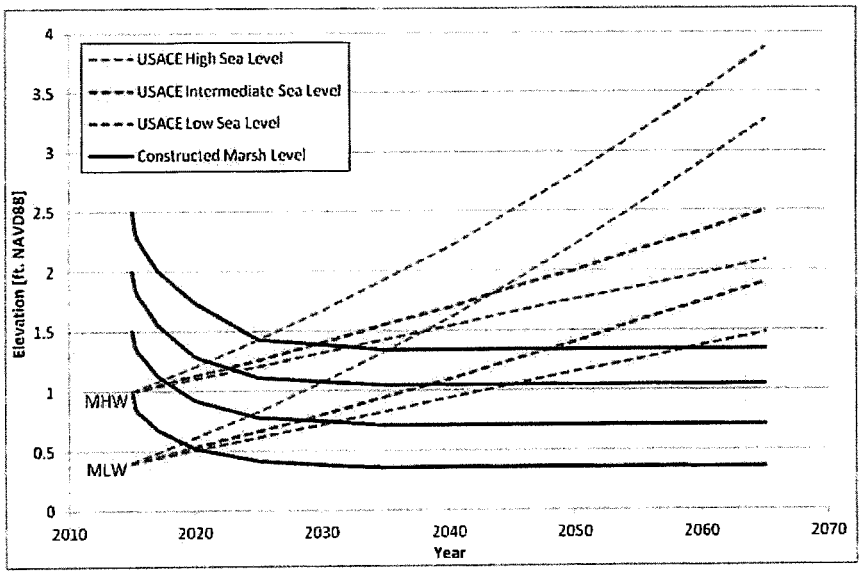


Table 1. Time periods of intertidal marsh elevation under various relative sea level rise scenarios, assuming initial elevation of 2.5 feet NAVD88, as provided by the Corps (2014).

2.5 Ft. Initial Elevation			
RSLR Scenario	USACE Low	USACE Intermediate	USACE High
Intertidal Start Year	2033	2031	2027
Intertidal End Year	2059	2049	2036
Intertidal Duration (Yrs)	26	18	9

The project area would continue to support a diverse assemblage of fishes and shellfishes. The creation and nourishment of intertidal marsh would ensure that the project area continues to provide important nursery functions throughout the project life offsetting those impacts that occurred as a result of the levee improvements. Improved habitat conditions would support several species of wildlife including migratory and resident waterfowl, shorebirds, wading birds, and furbearers. Migratory waterfowl utilizing the project area would benefit from a greater food supply resulting from the increased abundance and diversity of emergent and submerged species. Habitat for the resident mottled duck would also improve considerably as the marsh platform would provide more desirable nesting habitat.

Material to rebuild the shoreline would be obtained from the marsh side and lake side of the proposed shoreline. According to a drawing provided in a May 2, 2014, electronic mail correspondence, the lake side borrow area measures approximately 125 feet wide and 1,000 feet long. Depending on site conditions this area may contain submerged aquatic vegetation (SAV). Should the area contain SAV, we recommend alternative borrow areas be investigated. If alternatives are not available, impacts to SAV, a Resource Category 2 habitat, will need to be assessed and, if necessary, mitigated according to the Service's Mitigation Policy and the Corps' March 2, 2012, guidance for mitigating open water impacts, which were developed in coordination the Service.

Predicted habitat conditions under future-with and without-restoration scenarios are provided in the WVA (Appendix B). Net Change in Habitat Units is provided in Table 2. The difference between future with-project and future without-project Average Annual Habitat Unit (AAHU) values expected to result from the above-described mitigation scenario reflect the expected net benefit of the restoration action, and does not factor in the AAHU values lost as a result of the HSDRRS levee impacts.

Using the 145-acre project area (132.5 acres of marsh + 10.5 acres of open water + 2 acres of shoreline restoration), conditions under the future-with mitigation scenario (i.e., restoration of emergent marsh) proposed were input into the habitat model to calculate the AAHU value of the area over the life of the project. The AAHU value was then used to determine the per acre AAHU value (0.33). This project produces 47.91 AAHUs over the period of analysis accounting for the estimated 45.7 AAHUs of intermediate/fresh marsh habitat needed based on 95-100% design of levee impacts.

Table 2. Net Change in Habitat Units for the Proposed Milton Island Restoration Project

	Emergent Marsh	Open Water
Future With Out Project (AAHUs)	0.00	73.38
Future With Project (AAHUs)	98.04	16.01
Total	98.04	-57.37
Net Benefit	47.91	

SERVICE POSITION AND RECOMMENDATIONS

The Service supports the Corps' tentatively selected plan to mitigate impacts to fish and wildlife resources associated with HSDRRS, specifically the Milton Island Marsh Restoration project, and believes that the recommendations provided in our October 28, 2013, FWCA Report addressing PIER 36 continue to remain valid and should be incorporated into future project planning and implementation. Those recommendations have been provided in Appendix C for

reference. The following recommendation is provided specific to the Milton Island Marsh Restoration project:

1) Newly developed mitigation guidelines are being approved by the Corps' Regulatory Division and the Interagency Review Team. Mitigation guidelines, including monitoring and survey requirements, for this project, as well as future LPV mitigation features, should coincide with those Regulatory guidelines as much as possible and should continue to be conducted in coordination with the Interagency team. Once the Corps revises the Milton Island Marsh Mitigation Guidelines based on comments received on the TIER, please provide the revised plan to the agencies for review.

2) Material to rebuild the shoreline would be obtained from the marsh side and lake side of the proposed shoreline. Should the area contain SAV, we recommend alternative borrow areas be investigated. If alternatives are not available, impacts to SAV, a Resource Category 2 habitat, will need to be assessed and, if necessary, mitigated according to the Service's Mitigation Policy and the Corps' March 2, 2012, guidance for mitigating open water impacts.

Should you or your staff have any questions regarding this letter and our attached report, please contact David Walther (337/291-3122) of this office.

Sincerely,

Jeffrey D. Weller
Field Supervisor
Louisiana Ecological Services Office

cc: National Marine Fisheries Service, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA
LA Dept. of Natural Resources, CRD, Baton Rouge, LA

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Chabreck, R. H. 1972. Vegetation, Water, and Soil Characteristics of the Louisiana Coastal Region. Louisiana State University, Agricultural Experiment Station. Baton Rouge, LA. Bulletin 664. 72 pages.

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U.S. Army Corps of Engineers. 2014. Relative Sea Level Rise and Fill Material Settlement Milton Island, LA. HSDRRS LPV Mitigation Project, Staff Input Paper. January 2014.

NOTICE:

APPENDICES A, C, AND D OF THE FISH AND WILDLIFE COORDINATION ACT REPORT ARE NOT INCLUDED IN THIS DOCUMENT DUE THEIR LENGTH

APPENDIX B OF THE FISH AND WILDLIFE COORDINATION ACT REPORT (WVA PROJECT INFORMATION SHEET) PLUS ADDITIONAL INFORMATION (INCLUDES AN INTRODUCTION AND WVA DATA SHEETS) IS PROVIDED IN THIS DOCUMENT AS APPENDIX E

PLEASE SEE THE FISH AND WILDLIFE COORINDATION ACT REPORT CONTAINED IN A SEPARATE FILE FOR APPENDICES A, C, AND D

United States Department of the Interior

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

May 13, 2014

Mr. Howard Ladner
U.S. Army Corps of Engineers
Planning Division
Environmental Compliance Branch
CEMVN-PDC
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Mr. Ladner:

Please reference the U.S. Army Corps of Engineers (Corps) April 15, 2014, letter and the draft Tiered Individual Environmental Report #1, for the "Milton Island Marsh Restoration Project, St. Tammany Parish, Louisiana" project. That letter requested our concurrence with the Corps' determination that proposed project is not likely to adversely affect the endangered, West Indian manatee. We have reviewed the information provided, and offer the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.), and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

The proposed Milton Island Marsh Restoration project would mitigate impacts to fresh and intermediate marsh associated with the construction and operation of the Lake Pontchartrain and Vicinity (LPV), Hurricane and Storm Damage Risk Reduction System (HSDRRS). The proposed project is located west of Madisonville in St. Tammany Parish, LA, and along the north shore of Lake Pontchartrain. Within the 152-acre proposed project area, approximately 145 acres of open water will be filled to restore the lake shoreline and emergent marsh habitat. Material will be dredged with a hydraulic cutterhead dredge from borrow area within Lake Pontchartrain impacting no more than 115 acres of lake bottom.

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. 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.

Although the proposed borrow area lacks suitable foraging habitat for the West Indian manatee, the Corps' concurrence request ensures that standard manatee protection measures (attached for your convenience) will be implemented in the Corps' construction contracts. To ensure manatee are not trapped behind containment dikes, the entire project area as well as the open water area to the north will also be surveyed prior to commencement of work activities associated with construction of proposed containment. Additionally, the Corps intends to implement the bucket drop method to deter manatees from the borrow area prior to commencement of work activities. The Service, therefore, concurs that the proposed project is not likely to adversely affect the West Indian manatee. No further endangered species consultation will be required for work associated with the Milton Island Marsh Restoration project unless there are changes in the scope or location of project features or should the project not be constructed within one year. Should the scope or location of the proposed project change, consultation with the Service should be conducted as soon as such changes are made.

We look forward to working with the Corps to evaluate impacts and provide recommendations during the development of future LPV mitigation projects. Should you have any questions regarding our comments, please contact Angela Trahan (337/291-3137) of this office.

Sincerely,

Jeffrey D. Weller
Field Supervisor
Louisiana Ecological Services Office

cc: LDWF, Natural Heritage Program, Baton Rouge, LA

West Indian Manatee Protection Measures

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".

- To ensure manatees are not trapped due to construction of containment or water control structures, we recommend that the project area be surveyed prior to commencement of work activities. Should manatee be observed within those areas, the contractor should immediately contact the Service's Louisiana Ecological Services Office (337/291-3100) and the Louisiana Department of Wildlife and Fisheries, Natural Heritage Program (225/765-2821).

- 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.

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

SEP 8 2014 F/SER31: MSP

Ms. Joan M. Exnicios
Chief, Environmental Planning Branch
New Orleans District Corps of Engineers
Department of the Army
P.O. Box 60267
New Orleans, Louisiana 70160-0267

Ref.: 2 Batched Lake Pontchartrain and Vicinity Restoration Projects under the Hurricane Storm Damage Risk Reduction System (HSDRRS) in St. Tammany Parish, Louisiana

Project Number	USACE Project Name	NMFS Consultation Number	Location in Louisiana
1	Milton Island Intermediate Marsh Restoration Project	SER-2014-13425	St. Tammany Parish
2	West Shore-Lake Pontchartrain, Louisiana Hurricane and Storm Damage Risk Reduction Project	SER-2014-13887	St. Tammany Parish

Dear Sir or Madam:

This letter responds to 2 letters received on March 21, 2014, and April 10, 2014, respectively, requesting National Marine Fisheries Service (NMFS) concurrence with the U.S. Army Corps of Engineers' (USACE) project-effect determinations submitted pursuant to Section 7 of the Endangered Species Act (ESA) for restoration projects in St. Tammany Parish, Louisiana. On May 7, 2014, we decided to batch these projects into a single consultation based on the similarity of the proposed activities. You determined that the proposed activities may affect, but are not likely to adversely affect, loggerhead, green, and Kemp's ridley sea turtles, Gulf sturgeon, and West Indian manatee. Additionally, you determined that the proposed action would have no effect on Gulf sturgeon critical habitat. The West Indian manatee is not a species under NMFS purview and remains under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS). It is essential that you coordinate with the USFWS on this species for this project and future projects. On May 15 & May 28, 2014, we requested additional information on both projects. We received the final response on May 29, 2014, and initiated consultation that day. NMFS's findings on the projects' potential effects are based on the project descriptions in this response; any changes to the proposed actions may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

Neither of the project areas is located within designated or proposed critical habitat. Both projects will adhere to the *NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006, which will provide protection by requiring work to stop if a listed species is observed within 50 ft of operating or moving construction equipment. Each project is described in detail below along with an image of the location (project location datums are North

American Datum 1983).

1. The Milton Island Intermediate Marsh Restoration project center point is located at 30.381994°N; 90.223084°W, and the center point of the proposed borrow site is at 30.371453°N; 90.219168°W. The applicant proposes to restore 132.5 acres (ac) of marsh which is adjacent to the Northwest tip of Lake Pontchartrain at Milton Island (see Figure 1). The current conditions at the restoration site are described as slightly brackish, with a silty to sandy bottom, with depths ranging from 2 feet (ft) around the perimeter to 15 ft deep in the center. There are existing retention dikes present along the east, west and most of the southern perimeters of the project footprint. A clamshell or bucket dredge[1] will be used to restore the northern dike and parts of the southern dike with borrow material obtained from within the marsh restoration footprint and from dredging the floatation channel parallel and lakeside of the proposed southern dike repair (see Figure 2). These borrow areas contain the soil type needed to stabilize the new/refurbished dikes. The target elevation of the marsh site (1.5 and 1.0 ft North American Vertical Datum of 1988 [NAVD88]) will be achieved by collecting approximately 1,000,000 cubic yards (yd^3) of material from a borrow site located within Lake Pontchartrain (see Figures 1-3) via cutterhead hydraulic dredge[2] and disposing of it into the restoration site. The dredge material will be transported from the borrow site to the marsh restoration site via a pipeline. Once in the marsh restoration site, the material will be spread around using a bucket dredge. The applicant states that there are no listed or proposed submerged aquatic resources within the project area. All work will be conducted from a barge. Spill boxes and/or weirs will be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the marsh creation area for approximately 1 year after construction. Once dewatering of the marsh platform is completed, the applicant proposes to minimize the height of the berm on the northern dike enough to allow access for fish and wildlife between open water and the created marsh area. Additionally, the applicant proposes to plant the newly formed marsh with appropriate native vegetation.

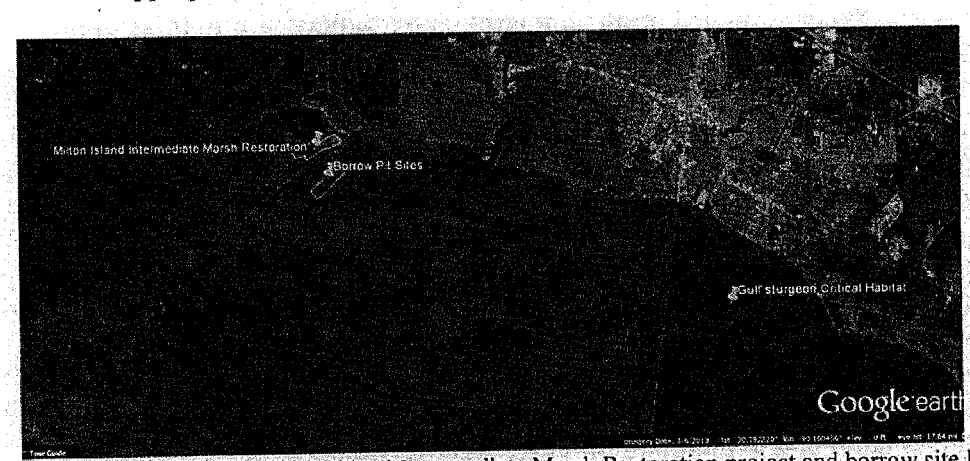


Figure 1. Image of the Milton Island Intermediate Marsh Restoration project and borrow site location and surrounding area (©2013 Google)

[1] Clamshell dredge: use of a bucket to excavate and elevate the dredged material to the surface for transport to a placement location

[2] Cutterhead hydraulic dredge: cuts, slurries, and transports the material from the site to the placement area via a pipeline

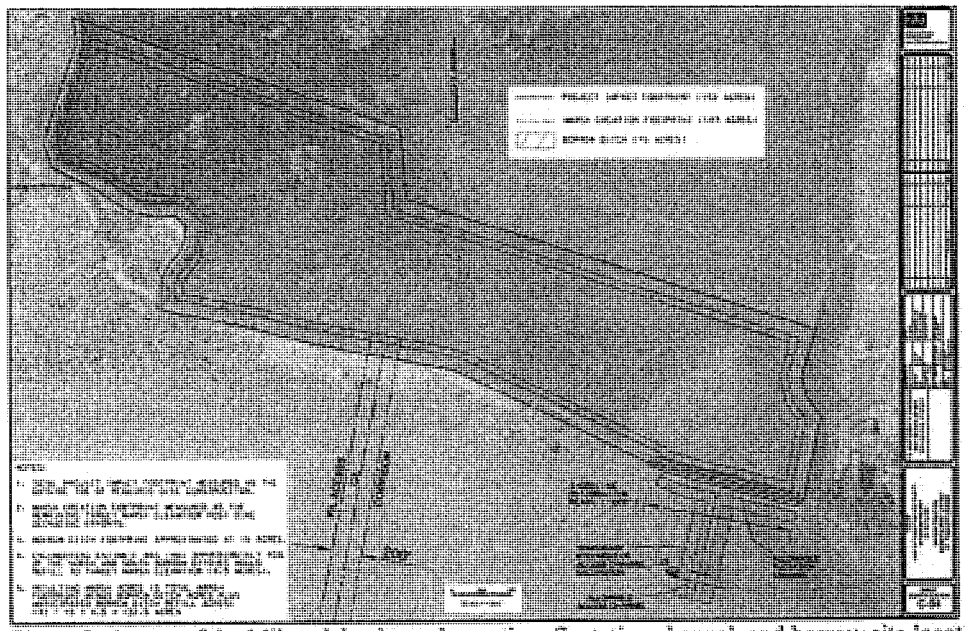


Figure 2. Image of the Milton Island marsh creation, floatation channel, and borrow site location and surrounding area (USACE Interagency Correspondence 2014)

2. The West Shore-Lake Pontchartrain, Louisiana swamp creation project area center point is located at 30.397489°N; 90.236087°W, and the center point of the proposed borrow site is at 30.365536°N; 90.227442°W. The current conditions at the restoration site are described as a substrate which is predominantly clay with an average depth of 12-14 ft. The applicant proposes to create 445 ac of swamp at a site north of Milton Island (see Figure 3). The applicant intends to construct a containment dike around the swamp creation area using a clamshell dredge (bucket). Using dredge material from the surrounding area will ensure that the soil type is appropriate to stabilize the new dikes. The target elevation of the swamp site (0.5 ft NAVD88) will be achieved by collecting approximately 2,094,118 yd^3 of material from a borrow site located within Lake Pontchartrain via hydraulic cutterhead dredge and disposing of it into the restoration site (see Figure 3). The dredge material will be transported from the borrow site to the swamp creation site via a pipeline. Once in the swamp creation site, the material will be distributed using a bucket dredge. The applicant states that there are no listed or proposed submerged aquatic resources within the project area. All work will be conducted from a barge. The applicant intends to eradicate all invasive species within the project site and then plant the area with native swamp canopy and mid-story species.

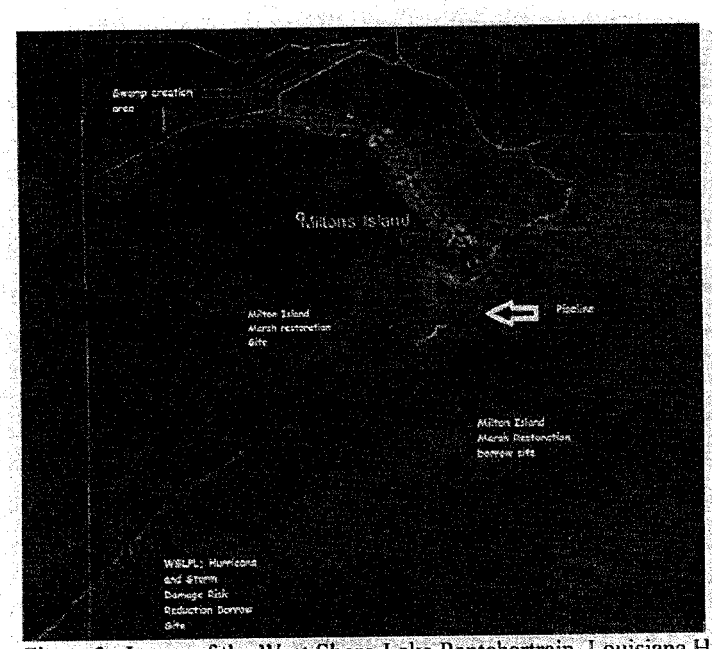


Figure 3. Image of the West Shore-Lake Pontchartrain, Louisiana Hurricane and Storm Damage Risk Reduction Project swamp creation and borrow site location and surrounding area (USACE Interagency Correspondence 2014)

Project Effects on Critical Habitat
Neither of the projects is located within proposed or designated critical habitat. Therefore, these projects will not impact critical habitat.

Project Effects on Species
Three ESA-listed species of sea turtles (the endangered Kemp's ridley; the threatened loggerhead[3] and the threatened/endangered green[4]) and the threatened Gulf sturgeon can be found in or near the action areas and may be affected by dredging at the proposed borrow area in Lake Pontchartrain. Project 2 states that leatherback and hawksbill sea turtles may be found in the project areas. It would be highly unlikely that any of the listed species would be found in the proposed marsh mitigation area and swamp creation area due to very shallow water and limited access availability. We would not expect leatherback or hawksbill sea turtles to be present at the project sites ever due to their habitat requirements which are not present at or near the project sites. For instance, hawksbills forage in areas that have encrusting sponges near coral hardbottom which does not exist in or near the project sites. Leatherback sea turtles prefer open, deepwater habitat where they forage primarily on jellyfish.

We have identified the following potential adverse effects to sea turtles and Gulf sturgeon and concluded the species are not likely to be adversely affected by the proposed actions for the reasons described below. All potential effects are insignificant or discountable for the following reasons:

[3] Northwest Atlantic Ocean distinct population segment (DPS)
[4] Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

1. The proposed projects may cause indirect effects resulting from increased turbidity and the temporary losses of the proposed borrow areas as foraging habitat. Turbidity curtains are not planned to be used in the projects. Although the rise in turbidity could immediately reduce water quality in the project areas, those effects would be temporary and would be reduced by movement of the tides. Additionally, turbidity is naturally high in this area and maintaining a turbidity curtain would be extremely difficult due to storm activity in the lake and the resulting wave action. Therefore, NMFS believes that these indirect effects would be insignificant given the small size of the borrow areas compared to the overall area of Lake Pontchartrain and the natural tidal energy.

2. Dredging via mechanical dredges can have acoustic impacts to nearby sea turtles and Gulf sturgeon. In contrast to hydraulic dredges or hopper dredges, much of the sound produced by mechanical bucket dredges is repetitive rather than continuous. Bucket dredging involves dropping the open bucket through the water column, digging into the sediment after impact with the bottom, lifting the bucket up through the water column, and emptying the bucket on a regular cycle. The duration of individual events with a typical bucket deployment-and-retrieval cycle may range from seconds to a few minutes. The noise produced from the heavy bucket dropped onto the sea bottom has been measured to be 124 dB re 1 µPa (RMS) at 150 m from the work site[5]. Back-calculating the noise attenuation 150 m results in a potential source level of 156 dB re 1 µPa (RMS). This level is 4 dB below the behavioral threshold for disturbance reactions in sea turtles. The noise level of 156 dB re 1 µPa (RMS) is 6 dB above the behavioral threshold for smalltooth sawfish; however, noise levels drop below 150 db dB re 1 µPa (RMS) within a few feet of the work area. Clamshell dredge noise is well below levels that may result in injury (187 dB re 1 µPa (SEL) and will not disturb the natural behavior of sea turtles or Gulf sturgeon Additionally, crews will be required to shut down construction equipment if any sea turtles are sighted within 50 ft of the work sites. We believe that acoustic impacts to sea turtles or Gulf sturgeon as a result of dredging will be insignificant.

3. Mechanical (clamshell) dredging has the potential to kill or injure sea turtles and Gulf sturgeon if the bucket is dropped onto a sea turtle or Gulf sturgeon that enters the dredging areas and is directly beneath the bucket when it is dropped. NMFS believes this risk is extremely low as sea turtles and Gulf sturgeon are highly mobile and are likely to avoid the active construction areas, and because a turtle or sturgeon would have to be directly under the dredge bucket at the precise moment the bucket dropped. Additionally, the construction contractors would be required to induce listed species to leave the immediate work areas prior to any work regardless of water depth by implementing the USFWS approved "bucket drop" technique. This technique requires the contractors to drop a bucket (or similar equipment) into the water and retrieve it empty one time. After the bucket has been dropped and retrieved, a 1 minute, "no-work" period must be observed. During this no-work period, personnel will be required to carefully observe the work areas in an effort to visually detect listed species. If species are sighted, no bucket dredging should be initiated until the listed species have left the work areas. If the water

[5] Dickerson, C., D. G. Clarke, R. M. Engler, and K. J. Reine. 2001. Characterization of Underwater Sounds Produced by Bucket Dredging Operations. ENGINEER RESEARCH AND DEVELOPMENT CENTER VICKSBURG MS.

turbidity makes such visual sighting impossible, work may proceed after the 1 minute no-work period has elapsed. If more than 15 minutes elapses without work, then the empty bucket drop/retrieval process shall be performed again prior to the commencement of work. Therefore, we believe the potential take of a sea turtles or Gulf sturgeon by a clamshell dredge in these projects is extremely unlikely and thus discountable.

Cutterhead dredging also has the potential to kill or injure sea turtles and Gulf sturgeon, but we believe the risk is extremely unlikely. Cutterhead dredges are typically noisy and the cutterhead rotates slowly through its cutting arc as it dredges sediment. Based on the facts that sea turtles and Gulf sturgeon are highly mobile, cutterhead dredges move slowly and are noisy, and reported interactions between cutterhead dredges and sea turtles have been infrequent, we believe the risk of a sea turtle or Gulf sturgeon take by cutterhead dredging is discountable.

Finally, we concur with your analysis that the proposed actions may affect, but is not likely to adversely affect green, loggerhead, Kemp's ridley sea turtles and Gulf sturgeon. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the actions not previously considered, or the identified actions are subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified actions.

Additional relevant information is enclosed for your review. We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Michelle Press, Consultation Biologist, at (727) 209-5977, or by email at michelle.press@noaa.gov.

Sincerely,

Miles M. Croom

for Roy E. Crabtree, Ph.D.
Regional Administrator

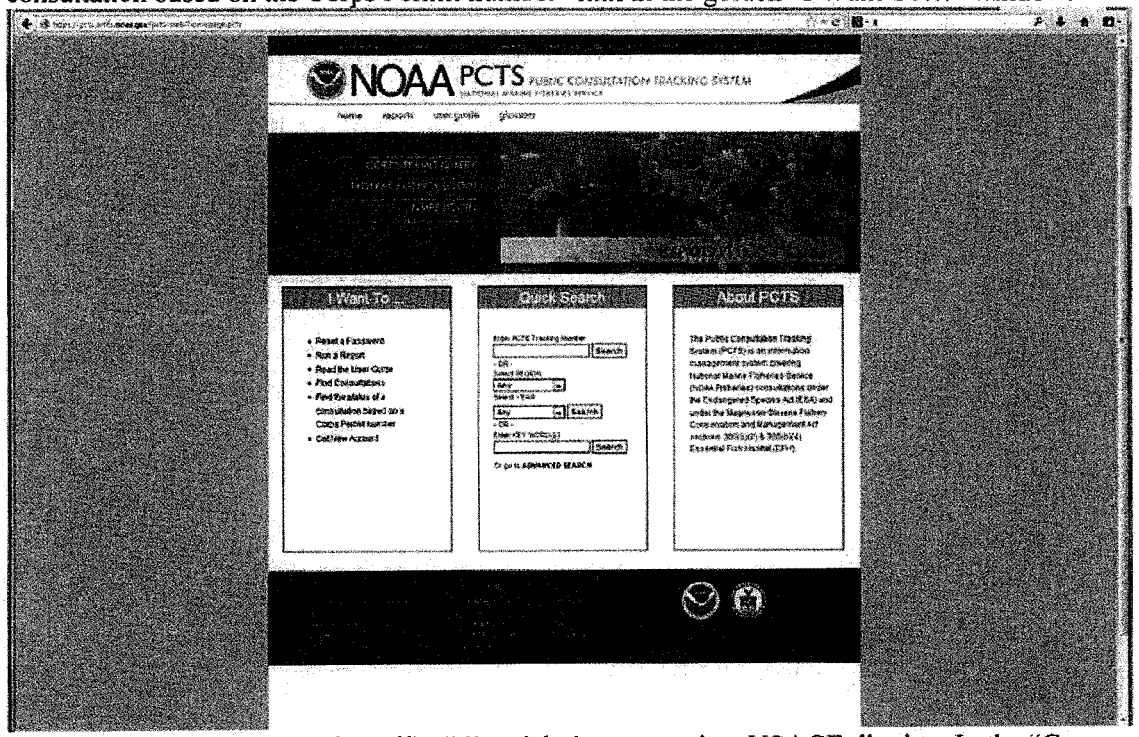
Enc.: 1. Sea *Turtle and Smalltooth Sawfish Construction Conditions* (Revised March 23, 2006)
2. *PCTS Access and Additional Considerations for ESA Section 7 Consultations* (Revised June 11, 2013)

File: 1514-22.F.7

PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised 6-11-2013)

Public Consultation Tracking System (PCTS) Guidance: PCTS is a Web-based query system at **https://pcts.nmfs.noaa.gov/** that allows all federal agencies (e.g., U.S. Army Corps of Engineers - USACE), project managers, permit applicants, consultants, and the general public to find the current status of NMFS's Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations which are being conducted (or have been completed) pursuant to ESA Section 7 and the Magnuson-Stevens Fishery Conservation and Management Act's (MSA) Sections 305(b)2 and 305(b)(4). Basic information including access to documents is available to all.

The PCTS Home Page is shown below. For USACE-permitted projects, the easiest and quickest way to look up a project's status, or review completed ESA/EFH consultations, is to click on either the "Corps Permit Query" link (top left); or, below it, click the "Find the status of a consultation based on the Corps Permit number" link in the golden "I Want To..." window.



Then, from the "Corps District Office" list pick the appropriate USACE district. In the "Corps Permit #" box, type in the 9-digit USACE permit number identifier, with no hyphens or letters. Simply enter the year and the permit number, joined together, using preceding zeros if necessary after the year to obtain the necessary 9-digit (no more, no less) number. For example, the USACE Jacksonville District's issued permit number SAJ-2013-0235 (LP-CMW) must be typed in as 201300235 for PCTS to run a proper search and provide complete and accurate results. For querying permit applications submitted for ESA/EFH consultation by other USACE districts, the procedure is the same. For example, an inquiry on Mobile District's permit MVN201301412 is entered as 201301412 after selecting the Mobile District from the "Corps District Office" list. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov or (727) 551-5773.

EFH Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division pursuant to Section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the MSA requirements for EFH consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Marine Mammal Protection Act (MMPA) Recommendations: The ESA Section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA Section 101 (a)(5) is necessary. Please contact NMFS' Permits, Conservation, and Education Division at (301) 713-2322 for more information regarding MMPA permitting procedures.

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

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

May 14, 2014 F/SER46/PW: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 your letter dated April 11, 2014, transmitting the draft tiered Individual Environmental Report (TIER) #1 titled, "Milton Island Marsh Restoration Project, Saint Tammany Parish, Louisiana." This is the first supplement to the Programmatic Individual Environmental Report (PIER) #36 covering mitigation for the Lake Pontchartrain and Vicinity (LPV) component of the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The TIER evaluates compensatory mitigation to offset non-refuge fresh and intermediate marsh impacts for LPV.

The TIER identifies construction of the Milton Island Marsh Restoration project as the proposed action to offset fresh and intermediate marsh impacts for LPV. The mitigation project is planned to offset 100 acres and 45.7 average annual habitat units (AAHUs) of impacts to fresh and intermediate marsh which has occurred with construction of flood protection features of the LPV portion of HSDRRS. The proposed mitigation project consists of acquisition, construction and management of 145 acres of marsh to be created within a 152 acre area on the north shore of Lake Pontchartrain in St. Tammany Parish, Louisiana. The project would be constructed by confined disposal of sediment hydraulically-dredged from Lake Pontchartrain. The site would be planted with marsh vegetation and containment dikes would be degraded or gapped with the exception of the dike along the lake which would remain to provide erosion protection.

The NMFS has reviewed the draft TIER and overall finds the proposed type and amount of mitigation acceptable and the document thorough and well prepared. Thank you for coordinating with NMFS on developing and evaluating the mitigation. Close and cooperative coordination by the U.S. Army Corps of Engineers (USACE) with NMFS during mitigation planning, review of the Design Delivery Report, Wetland Value Assessment (WVA) of the mitigation, and drafting of the TIER is appreciated. The following general and specific comments are offered.

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General Comments

The NMFS acknowledges the fresh and intermediate marsh impacted by the LPV flood protection features was comprised of limited quality wetlands which in some cases were not tidally-influenced (e.g. perched). In contrast, the Milton mitigation would result in tidal intermediate marsh connected with Lake Pontchartrain. Therefore, a net gain of tidal marsh supportive of NMFS-trust resources could occur with implementation of the Milton mitigation project. Accordingly, please consider comments herein in a programmatic context for other HSDRRS, LPV mitigation despite being submitted project-specifically.

While NMFS acknowledges the project could result in a net gain of tidal marsh, there is a concern project implementation could at least temporarily and unnecessarily re-impound shallow water bottoms north of the marsh creation project which have recently become tidally influenced. If that were to occur, more than 500 acres of shallow water bottoms having submerged aquatic vegetation, and a small amount of marsh, would be re-impounded. Such an impact was not evaluated as part of the WVA done for this project. To ensure such impacts do not occur, the project should be revised to include one 50-ft wide gap in the eastern boundary of the project area just north of the northern limits of the containment dike. The recommended location for such a gap is shown on the enclosed figure (attached).

The document should be revised to identify mitigation is part of the overall project which includes the levee impacts. Specifically, the TIER should be revised to indicate the future with mitigation would not improve wetlands or associated support functions (e.g. fisheries) relative to the overall project, only the mitigation site. The overall project objective is merely to attain no net loss of wetlands, other habitats, and associated functions. This issue could be addressed by clarifying and expanding Section 1.1 (Purpose and Need for the Proposed Action).

The NMFS encourages the USACE to immediately progress to mitigation construction. The USACE is not achieving the intent to implement mitigation concurrent with construction of the levees, floodgates, and pump stations and the impact assessment does not account for all temporal losses if the successful mitigation is not achieved in a timely manner. The USACE should commit to reassessing additive temporal losses and offsetting such losses with additional mitigation if the mitigation project is not constructed as scheduled during 2015. Additional mitigation may be constructed as part of the Milton project or alternatively combined with another marsh mitigation project provided it is constructed in the same watershed as the impacts.

In addition to the already occurred planning and design delays, NMFS is concerned mitigation for non-Federal land may experience implementation delays due to USACE's desire for fee ownership of mitigation lands. To minimize additional delays, increased temporal habitat losses, and potential need to reassess and increase mitigation, the USACE is requested to also consider the option of non-standard real estate agreements by seeking perpetual conservation servitudes in lieu of fee simple acquisition.

The USACE developed project-specific updates for the marsh mitigation guidelines (Appendix C) without coordination with the natural resource agencies who were involved with drafting

programmatic guidelines for HSDRRS. Generally, the project-specific guidelines are well prepared and are acceptable. However, coordination by the USACE with the U.S. Fish and Wildlife Service (USFWS), NMFS, and the rest of the interagency team is encouraged to further update these guidelines case-specifically where needed. A similar, but generic document recently has been completed through interagency review for the Regulatory program and previously served as a partial basis for the civil works mitigation guidelines. The final Regulatory version is suggested to be considered when finalizing the Milton Island-specific mitigation guidelines.

The NMFS has coordinated often with USACE on potential impacts to water quality associated with borrow pits in open water. As the literature suggests, potential environmental impacts from open water borrow pits vary by location and estuary. The USACE is encouraged to include water quality monitoring in the TIER to assess if hypoxia develops in the borrow pit. Such monitoring would help with the development of adaptively manage future designs. Scopes of work similar to water quality monitoring conducted on Individual Environmental Report 11 and the Mississippi River-Gulf Outlet Ecosystem Restoration Study are recommended to be included and repeated annually for three years. The NMFS is willing to assist USACE in further scoping a monitoring plan to assess impacts to water quality.

Specific Comments

Sections 1.3 (Prior Reports) and 1.4 (Integration with other Individual Environmental Reports) These sections incorporate by reference information in PIER #36 and discuss the Cumulative Environmental Document. As written, it is not clear if as-built levee impacts to non-refuge fresh and intermediate marsh have been obtained to determine the final mitigation needs for LPV. For public disclosure, the TIER should be revised to indicate final mitigation needs will not be reconciled until receipt of as-built surveys for the levees and associated flood protection features. The TIER should acknowledge this would occur under additional environmental clearance.

Section 3.2.4, Aquatic Resources and Water Quality
Page 21. The depth specification for excavating the borrow pit in Lake Pontchartrain was developed through consideration of existing literature pit impacts to water quality and interagency input. However, adverse impacts to water quality may result. The NMFS recommends the TIER be revised to incorporate a commitment to conduct water quality monitoring of the borrow pit or the USACE develop a programmatic monitoring plan of borrow pits in open water. This would expand the understanding of potential environmental risks of open water borrow pits in Louisiana.

The last paragraph should be revised to clarify that any lift in environmental function is relative to the mitigation site only and not in consideration of the overall adverse impacts from constructing flood protection features.

3.2.5 Essential Fish Habitat

Page 23. The proposed action section should be revised to clarify the overall project, including the flood protection features and mitigation, would result in no net gain in habitat, whereas a net gain in habitat would result when only considering the mitigation in isolation.

Page 24. The NMFS does not concur the overall objective of the LPV HSDRRS mitigation is to improve EFH within the Lake Pontchartrain Basin. The TIER should be revised to indicate the overall objective is to conserve EFH or attain no net loss of EFH.

Appendix C, General Mitigation Guidelines
2. Topography A, B, and C, Page C-4
The guidelines for years 1, 2, and 5 in the TIER should be revised to the elevations used in the WVA at the corresponding years. This section should be augmented at each target year to also indicate the average of elevations should be at or above the target construction elevation.

The NMFS accepts requiring 80% of the 143 acres for years 1, 2, and 5. However, the elevations and percent cover are relative to the Variable 1 marsh acres projected under the WVA which do not include the water acres. For example, 143 acres of benefit – 15 acres of borrow excavated + 4.5 acres of borrow at target marsh elevation = 132.5 acres. At minimum, 80% of the 132.5 acres must therefore meet the elevation requirements. This acreage comment also applies to items A, B, and C under "3. Native Vegetation".

3. Native Vegetation, D
For long-term success, the minimum cover comprised of native vegetation should be increased to 97%. This would be consistent with the success criteria developed for the Regulatory program.

4. Invasive or Nuisance Vegetation
Item B should be revised to indicate the site should contain less than 3% invasive or nuisance species. This would be consistent with the success criteria developed for the Regulatory program.

Mitigation Monitoring Guidelines
Elevation monitoring is necessary to demonstrate hydroperiod and function. The NMFS requests the spatial coverage for elevation and vegetation be revised to be more similar with the guidelines developed of the Regulatory program. Although the proposed monitoring transects depicted in Figure 1 on page C-6 may be sufficient in combination with aerial photography for vegetation monitoring, it is not sufficient in spatial coverage for elevation monitoring. For example, a minimum of 100 survey plots is required in the Regulatory program if a marsh creation mitigation bank is greater than 20 acres. An additional transect bisecting the length of the disposal area should be included in the TIER for elevation monitoring or alternatively spot shots throughout the disposal area should be recorded over time by reoccupying the same locations each time.

The TIER should be revised to commit to reassessing mitigation if the site is created higher than supportive of a tidal hydroperiod. This is necessary to ensure a loss of tidal waters is incorporated into the impacts assessed and then is offset.

Table 2. Page C-10. Standard mitigation monitoring report schedule and monitoring responsibility. Column one in this table should be revised to include elevation monitoring for emphasis of importance.

Appendix D, Adaptive Management Plan
This section is recommended to be amended to include building additional marsh mitigation elsewhere in the event there is a shortage of necessary acres meeting the required elevations (e.g. settle below water or is higher than the target tidal hydroperiod). Filling small areas in the mitigation site that settle below water may not be practicable and degrading high elevations may do more harm than good. Therefore, including this additive potential action would allow another option.

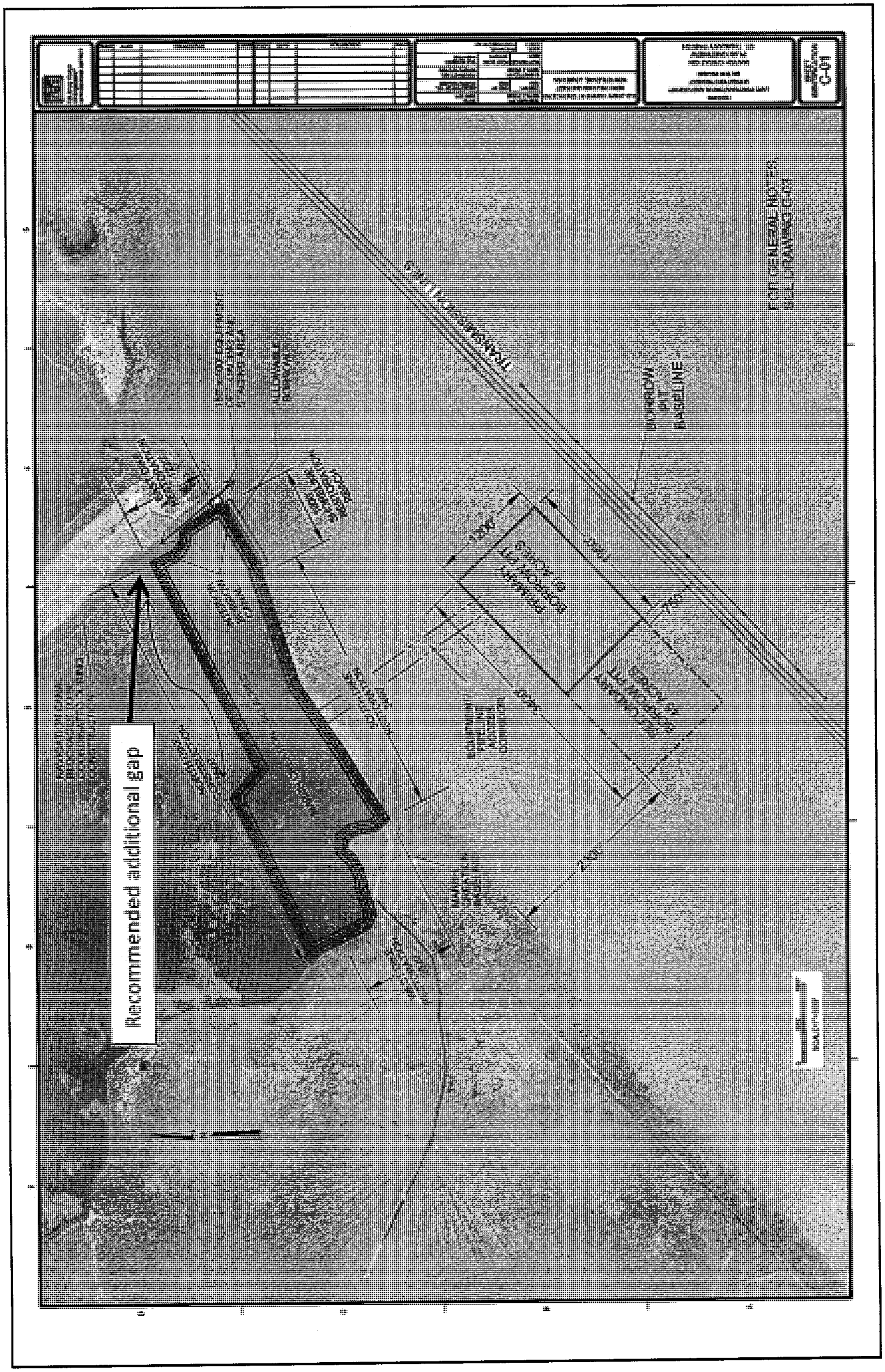
The NMFS appreciates the close and cooperative coordination by the USACE and your staff on HSDRRS mitigation. If you have questions or wish to discuss our comments, please contact Patrick Williams at (225)389-0508, extension 208 or patrick.williams@noaa.gov.

Sincerely,

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

c:
FWS, Lafayette, Trahan, Walther
EPA, Dallas, Ettinger
LA DNR, Consistency, Haydel
LA CPRA, Bennett
F/SER46, Swafford
F/SER4, Rolfes, Dale
F/SER, Keys, Silverman
Files


Recommended additional gap
FOR GENERAL NOTES, SEE DRAWING C-03
BORROW PIT BASELINE
TRANSMISSION LINES
2300'
C-01

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

JUL 17 2014

Regional Planning and
Environment Division South

Ms. Virginia M. Fay
Assistant Regional Director
Habitat Conservation Division
NMFS, Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Ms. Fay:

The US Army Corps of Engineers, New Orleans District (CEMVN) received your agency comments dated May 14, 2014 on the Tiered Individual Environmental Report – Milton Island Marsh Restoration Project (PIER #36, TIER 1) for the Lake Pontchartrain and Vicinity (LPV) Hurricane Storm Damage and Risk Reduction (HSDRRS) Mitigation located in St. Tammany Parish, Louisiana. Enclosed are our responses to your comments.

We appreciate your comments and look forward to coordinating with your agency staff to resolve your concerns. If you have questions or would like additional information, please contact Mr. Howard Ladner at 504-862-2021 or by email at Howard.W.Ladner@usace.army.mil.

Sincerely,

Joan M Exnicios

Joan M. Exnicios
Chief, Environmental Planning Branch

Enclosure

B-41

RESPONSES TO NMFS COMMENTS ON MILTON ISLAND TIER

GENERAL COMMENTS:

Gap in eastern dike: The project plan includes at least one gap to be constructed in the eastern dike once the dredged material has settled and consolidated, which is expected to be approximately one year following initial construction. Since the northern dike will be degraded, it should be unnecessary to provide a gap to the north of the area that will receive dredged material. We intend to involve your agency and others in the decision concerning the number, location, depth, and size of the gap(s).

Overall project impacts: We have added your suggested text to the TIER.

Immediately implement mitigation: Concur. It is our intention to aggressively pursue implementing mitigation and the project schedule calls for construction in 2015.

Fee Ownership: USACE Engineer Regulation 405-1-12, paragraph 12-9, requires acquisition of fee title for fish and wildlife mitigation lands. The regulation allows for a lesser interest to be acquired for project-specific circumstances. However, that would constitute a non-standard estate and would have to be approved by Headquarters USACE. Discussions with our Mississippi Valley Division staff for other projects indicate that it is highly unlikely that such approval would be granted. From a practical standpoint, acquisition of mitigation lands in fee is necessary to avoid conflicts with the landowner about access to or usage of the property and to ensure perpetual protection of the newly created or enhanced habitats.

Monitoring guidelines: Acknowledged. The Regulatory program monitoring guidelines will be reviewed for consistency with the monitoring plan for the Milton Island project and revisions to the project plan will be made as necessary.

Borrow pit water quality: The results of consultation with NMFS on the Mississippi River-Gulf Outlet (MR-GO) Ecosystem Restoration project were used as a basis for design of the borrow pit for this project. The borrow pit would not be excavated more than 10 feet below adjacent lake bottom, thereby minimizing the possibility of anoxia/hypoxia. Since the borrow site is not located in critical habitat for gulf sturgeon, such as in the case of the MR-GO Ecosystem Restoration project where monitoring was required to comply with the Endangered Species Act, and the likelihood of anoxic conditions is low, we do not plan to monitor the oxygen levels within the borrow pit.

SPECIFIC COMMENTS:

Section 1.3 and 1.4:

Section 3.2.4, Page 21: See response to General Comment, Borrow pit water quality.

Section 3.2.4, Page 21, last paragraph: Revised as per comment.

Section 3.2.5, Essential Fish Habitat, Page 23: Revised as per comment.

Section 3.2.5, Essential Fish Habitat, Page 24: Revised as per comment.

Appendix C, Page C-4, Paragraph 2.A to 2.C: Do not concur. The project is designed off of engineering data, not the WVA.

Appendix C, Page C-4, Comment on percentage elevation: Concur. Percentages have been changed.

Appendix C, Page C-5, Paragraph 3.D: Concur. Section has been edited and percentages have been changed.

Appendix C, Page C-5, Paragraph 4: Concur. Percentage has been changed.

Mitigation Monitoring Guidelines: The survey plan is considerably more robust than shown in the figure in the draft report. A new figure has been added to the monitoring appendix showing the anticipated survey grid at 500-foot spacing. The vegetation monitoring lines will be adjusted to coincide with a subset of the survey lines.

Commitment to Reassess Project if the Elevation is Higher than Target: The section on Topography (Appendix C, Section 2) has been edited to add the commitment as requested.

Table 2, Page C-10: The table has been edited as recommended.

Appendix D, Adaptive Management Plan: Additional language has been added to the middle paragraph on page 4 of the appendix, as requested.

END

B43

COASTAL PROTECTION AND RESTORATION AUTHORITY
CPRA

State of Louisiana

BOBBY JINDAL
GOVERNOR

May 14, 2014

Colonel Richard L. Hansen
District Commander
U.S. Army Corps of Engineers, New Orleans District
Executive Office
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Colonel Hansen:

CPRA was asked to comment on the DRAFT Tiered Individual Environmental Report – Milton Island Marsh Restoration Project (PIER 36, TIER 1, Milton Island) in St. Tammany Parish, Louisiana, released on April 14, 2014. Based on CPRA's review, the report does not appear to be complete with respect to comprehensive description the proposed action and clarification of the cost share between the federal and non-federal sponsor on the various components of the proposed action. Consequently, CPRA offers the following comments and questions in order to clarify the TIER 1 document.

SPECIFIC QUESTIONS AND COMMENTS:

1. Page 2, Section 1.1: The report only indicates that mitigation projects are being implemented "to compensate for habitat losses to non-refuge, fresh and intermediate marsh." The report does not clearly indicate which mitigation project is being used for which LPV construction project. A table should be created showing which mitigation project is for which levee construction project including the amount and type of habitat being impacted, the required mitigation (amount and type of habitat), and further identifying these acreage categories based on their respective 100% Federal or cost-shared funding and their associated parish (if crossing parish lines).
2. Page 8, Section 2.3, 2nd and 3rd paragraph: The proposed action includes purchasing a 152-acre site; however, 7 acres are existing dikes and 2 acres are a proposed shoreline feature, which leaves 143 acres. Of the 143 acres, 10.5 acres of excavated borrow ditches will remain un-vegetated; therefore, only 132.5 acres are created marsh. As the proposed action appears to involve restoration of 132.5 acres of marsh, that is the area that should be monitored. To add to the confusion, the document states the project is restoring 45.7 AAHUs (or 129 acres), but then states the project is overdesigned and will provide 48.2 AAHUs but does not provide a final acreage amount.
   - What is the final proposed action in terms of acres created and AAHUs? The document should be checked for accuracy when describing impacts in the environmental section and in the appendices. The change in acres created may change the results in the appendices.
   - The Conclusion (Section 5) should state the number of acres of marsh created within the 152-acre site.
3. Page 8, Section 2.3: This section should include a description of known conditions at the existing northern dike. Page B-6, Land Use, and Page B-7, Hydrology, describe the information that should be included.
4. Page 19, 3rd paragraph: Were state protected species considered in Section 3.2.3? If so, state this in the document.

5. Page 25, Section 3.2.6, Cultural Resources:
   - "A draft report documenting the findings of the cultural resources surveys will be provided to CEMVN in April 2014." Does this mean cultural resources surveys have been conducted in the vicinity of the project area in addition to the reports mentioned on Page 24?
   - "Any cultural resources surveys determined to be required would be completed prior to the start of construction activities for the proposed action..." This appears to contradict the previously provided sentence from the document.
6. Page 26, Section 3.2.7, Recreational Resources: Change this heading from 3.2.6 to 3.2.7. Has the USACE considered having a permanent easement rather than purchasing the property in fee? If so, why was an easement excluded?
7. Page B-11, Figure 4: Figure 4 does not include a settlement curve based on the targeted elevation of 2.25 ft. Have all state and federal agencies received and incorporated the new settlement curve data into the calculation of benefits and other analyses?
8. Page C-1, 2nd paragraph: What is the cost share for monitoring of this project?
   - The document states that any "remedial work" (i.e., repairs after the initial construction, such as structural changes) to ensure success of the project would require a cost-share match. What is the cost share for such remedial work?
9. Page C-2, Number 5 at the top of the page: What is the length of the monitoring period for the project? The report alternately lists monitoring periods of 20 years and 50 years in various sections. Are certain variables being monitored for only 20 years during a 50 year period of analysis? Specifically what parameters will be monitored after Year 5? The table provided on page C-12 should be updated to include specific variables being monitored at the years indicated in the table.
10. Page C-2, Number 7 at the top of the page: The document states "USACE will implement Adaptive Management according to the applicable cost-sharing and subject to availability of funds." What is the cost share for Adaptive Management? What happens if the USACE does not have funds to implement Adaptive Management? What are the start and end years for the Adaptive Management period?
11. Page C-4, 2.A: What methodology will be used to measure 80% target elevation?
12. Page C-7, E: Please include the surface elevation in the Baseline Monitoring Report (First Monitoring Report). Why is the surface elevation not being monitored after Year 5?
13. Page C-8, D:
    - OMRR&R mitigation project requirements are unclear with respect to maintaining effective elevation or habitat type while experiencing both settlement and relative sea level rise post-construction through the 50 year project life. Is there an expectation that marsh elevation will be maintained after Year 3, and if so, what is that elevation? Year 5 is mentioned; however, a target marsh elevation is not provided. Additionally, no elevation expectations are mentioned beyond Year 5. If such an expectation exists, it should be specified in the report.
    - The document does not state expectations regarding monitoring of water elevation reading, nor any qualitative observations mentioned on Page C-7, F.
14. Page C-13: CPRA should be included in the Interagency Team.
15. Page D-2, Table 1: What specific storm-induced affects are assumed in Table 1?
16. Page D-4: Why is gapping proposed only in the western dike and not also the northern and eastern dikes?
17. Page D-4: Why is the removal of invasive species not included as a potential Adaptive Management Action?
18. Page D-5, Section 3.0: Why is Section 3.0 (i.e., mitigation success) not included as part of the Monitoring Plan instead of as a component of Appendix D? The items listed are not Adaptive

Management techniques according to Page D-4. The items in Table 2 are success criteria from monitoring, not from Adaptive Management.

19. Page D-5, Table 2:
    - Criteria 4A should state the acceptable invasive species eradication percentage.
    - Criteria 2A should state the target elevation at Target Year 1 and years 2 and 3 since the document states that the elevation must be within 0.5 feet of the target elevation.
    - Why does the percentage change from 80% to 90% between Target Year 1 and 3? Why would the criteria increase in strictness over time?
    - What is considered "functional marsh elevation range?" This should be defined.

GENERAL QUESTIONS AND COMMENTS:

20. Will the non-federal Sponsor (NFS) OMRR&R responsibilities and associated costs be factored into the total cost-share of the project over 50 years?
21. Is maintaining a 50-year project realistic given that many restoration projects (e.g., CWPPRA) have a 20-year project lifespan?
22. What is the cost share for repairs (i.e., additional fill, additional plants, invasive species control, etc. after the project achieves the initial success criteria)? Has the USACE set aside funds to pay for its share of the cost for these repairs? If not, how does that impact the NFS?
23. It is unclear why some mitigation projects have 50 years of OMRR&R requirements while others have 100 years.
24. CPRA requests a full explanation of wetland impact calculations accompanied by maps showing impacts to protected side and flood side habitat types by reach. These maps should also include a clear demarcation of fully federally funded vs. cost-shared compensatory wetland mitigation responsibilities by reach.
25. Before the project proceeds to construction, CPRA must approve the final monitoring and Adaptive Management plans.
26. As stated in a letter from Assistant Secretary of the Army Jo Ellen Darcy to Governor Jindal on March 19, 2010, the USACE "will develop HSDRSS mitigation plans in those high-priority areas that are also identified within the state master plan." It is CPRA's opinion that this project is neither large-scale in nature nor within areas identified in the State Master Plan.

In summary, CPRA realizes that the TIER 1 Milton Island document is incomplete with respect to comprehensive description the proposed action and clarification of the cost share between the federal and non-federal sponsor; however, based on the information presented in the document, CPRA offers the above questions and comments. CPRA requests that the above questions and comments be addressed in a revised TIER 1 document. Additionally, CPRA requests a review of the revised TIER 1 document for Milton Island prior to construction, as we will need to approve the revised Monitoring and Adaptive Management Plan prior to construction.

CPRA appreciates the opportunity to comment on the TIER 1 Milton Island documents. If you have any questions regarding any of the above comments, please feel free to contact me at (225) 342-4592.

Respectfully,

Renee Sanders Bennett

Renee Sanders Bennett
Project Manager, CPRA Project Management Division

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

SEP 19 2014

Regional Planning and
Environment Division South

Ms. Renee Sanders Bennett
Project Management Division
Coastal Protection and Restoration Authority
P.O. Box 44027
Baton Rouge, Louisiana 70804-4027

Dear Ms. Bennett:

The U.S. Army Corps of Engineers, New Orleans District (CEMVN) received your agency comments dated May 14, 2014, on the Tiered Individual Environmental Report – Milton Island Marsh Restoration Project for the Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System Mitigation located in St. Tammany Parish, Louisiana. The CEMVN's responses to your comments are enclosed.

The CEMVN appreciates your comments and looks forward to coordinating with your agency to resolve your concerns. If you have questions or would like additional information, you may contact Mr. Troy G. Constance, Acting Deputy District Engineer for Project Management at (504) 862-2204.

Sincerely,

Richard L. Hansen
Colonel, U. S. Army
District Commander

Enclosure

PIER #36, TIER 1; CEMVN RESPONSE MAY 14, 2014 CPRA COMMENTS:

SPECIFIC QUESTIONS AND COMMENTS:

Response to Question 1: The proposed action is mitigation for loss of non-refuge fresh and intermediate marsh. CEMVN views the project to mitigate those losses as a single component of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) Lake Pontchartrain and Vicinity (LPV) mitigation plan. Programmatic level of analysis for this specific component is presented in PIER #36. The TIER is intended to supplement PIER #36 with detailed impact analysis without repeating the information found therein. We do not associate mitigation projects with specific construction contracts, except to the extent that the overall scale of mitigation by habitat type equates to the sum of average annual habitat units (AAHUs) of that habitat type impacted by all HSDRRS LPV construction contracts. The costs of mitigation are apportioned between 100 percent Federal (FCCE) and cost shared (Construction) funds based upon the impacts attributable to construction between the respective funding sources. Attached is a tabulation of the acres and associated AAHUs impacted by habitat type and the source(s) used to fund each construction contract.

Response to Question 2: The acreages quoted in your comment are accurate. The last sentence on Page 8 has been edited to clarify acres and AAHUs. The final proposed action is to pump dredged material into a 143-acre area, as documented in the WVA analysis, consisting of 132.5 acres of expected marsh development and 10.5 acres of open water. Those acreages of marsh and open water are only estimates. It is important to monitor the entire 143-acre area to determine the total amount of marsh that develops. Information has been added to the Conclusion section of the TIER as requested.

Response to Question 3: Section 2.3 is a description of the proposed action. It is not appropriate to discuss existing environmental conditions in that section. Section 3 contains a discussion of the existing environmental setting. The information in Appendix B is intended to supplement information found in the TIER, and is not required to be repeated in the main body of the TIER.

Response to Question 4: The state-listed protected species are the same as the Federally listed species considered in the TIER (with the exception of the bald eagle, which the State continues to list as endangered). CEMVN will clarify that in the Final TIER.

Response to Question 5: No additional cultural resources surveys were carried out in the project area after 2012. The findings of the 2012 surveys were presented in the report titled *Phase I Cultural Resources Survey and Evaluation, Milton's Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana* that was prepared in 2014. In response to the second bullet of the comment, CEMVN concurs. The contradictory

language has been removed. Additionally, the section has been updated to reflect the current status of cultural resources compliance.

Response to Question 6: Section 3.2.7 was labeled incorrectly. CEMVN will correct it for the Final TIER. USACE Engineer Regulation (ER) 405-1-12, paragraph 12-9, requires acquisition of fee title for fish and wildlife mitigation lands. The regulation sometimes allows for a lesser interest to be acquired but only if justified based on project-specific circumstances. However, any lesser interest is likely to require a non-standard estate that would have to be approved by Headquarters USACE. Discussions with Mississippi Valley Division staff for other projects indicate that it is highly unlikely that such approval would be granted. From a practical standpoint, acquisition of mitigation lands in fee is necessary to avoid conflicts with the landowner about access to or usage of the property and to ensure perpetual protection of the newly created or enhanced habitats.

Response to Question 7: All the agencies involved are all aware of the proposed target elevation. All evaluations (including the WVA) incorporated a 2.25-foot initial target elevation.

Response to Question 8: The cost-share for monitoring and for corrective actions performed by USACE is the same as for the parent feature of project that necessitated the mitigation. The costs of monitoring performed by the NFS as part of the NFS' OMRR&R obligations is borne solely by the NFS.

Response to Question 9: The scheduled monitoring period is 50 years. The NFS' OMRR&R responsibility includes periodic monitoring throughout the authorized life of the LPV project. After 5 years of OMRR&R, only vegetation monitoring is required. During the first 20 years of OMRR&R, corrective actions may be necessary as described on Page C-10, paragraph C. As with other LPV HSDRRS project components, the NFS' OMRR&R responsibilities include maintenance, repairs, replacement and rehabilitation as set forth in the Project Partnership Agreement (PPA).

Response to Question 10: The cost-share for adaptive management is the same as for the parent feature of the project that necessitated the mitigation. (For LPV HSDRRS cost-shared efforts, the project costs would be allocated using either a 65 percent Federal to 35 percent non-Federal or a 70 percent Federal to 30 percent non-Federal cost share ratio, depending on the funding source of the parent feature that necessitated the mitigation.) Adaptive management is only required when the mitigation project is not meeting its performance criteria as set forth in the mitigation plan. Once long-term ecological success has been achieved, adaptive management would no longer be needed. The time necessary to achieve long-term ecological success will vary from habitat to habitat and project to project. However, if the mitigation project fails after ecological success is achieved, corrective actions may be necessary pursuant to the NFS' OMRR&R obligations. These actions would not be "adaptive management," although they may be similar in nature. CEMVN has budgeted funds for the design, construction, and construction management that is required to execute the

environmental mitigation contracts. These budgets include reserved funds for 'contingencies,' which will be available in the event additional funds are needed during and post-construction using the same budgeting principles that were used for the entirety of the HSDRRS. At this time, CEMVN believes that it has reserved adequate funds for the successful execution of the HSDRRS mitigation project features.

Response to Question 11: A topographic survey of the project site will be conducted to determine the percentage of the project area that is within the target elevation. The percentage of the area that is within the target elevation range has been changed to reflect the assumption made during the Wetland Value Assessment. Approximately 93 percent of the project area should be within the tolerances allowed for the target elevation.

Response to Question 12: The surface elevation at the time of the baseline monitoring report should be +1.9 feet NAVD88 (Page C-4, Para 2.B). The topographic survey will determine how much of the project area is between the initial target elevation of +2.25 NAVD88 and the target settled elevation at target year 5 of +1.6 feet NAVD88. Most of the settling will occur by target year five (Target elevation for year five is +1.6-feet NAVD88). CEMVN sees no advantage to requiring additional surveys in the monitoring plan. Nevertheless, a provision is included within the monitoring plan that would require additional surveys if the project fails to meet the success criteria. Page C-9 and C-10 discuss the instances that may trigger the need for additional monitoring events not currently specified in the monitoring plan. If CPRA wants to routinely monitor the surface elevation past five years at its own expense, CEMVN has no objection.

Response to Question 13: The initial target elevation is +2.25 feet NAVD88 with a +/-0.5-foot tolerance. The ultimate target elevation for the marsh is between +1.0 feet NAVD88 and +1.5 feet NAVD88 which is the elevation range of nearby marsh. Page C-4 indicates a target elevation for year 2 at +1.9 feet NAVD88 and a target elevation for year 5 at +1.6 feet NAVD88. Since the elevation at year 5 is very close to the final target elevation in the design specification no additional topographic surveys were proposed. If the monitoring reports in the future indicate the need to reassess the elevation this could trigger the need to add additional monitoring events.

In addition to the monitoring procedures proposed to measure project performance against the stated success criteria, the monitoring plan also proposes the collection of water level data and documentation of qualitative observations during the monitoring events. This additional information will be used to support the assessments of the mitigation project.

Response to Question 14: The CPRA has been added as requested.

Response to Question 15: Appendix D will be revised to remove storm impacts from Table D-1. "Storm induced impacts" are already captured in other lines of the table.

Response to Question 16: This Appendix deals specifically with Adaptive Management. The only gaps potentially requiring adaptive management are the western gaps. The size of the western gaps is more sensitive as they are designed to exchange water into an existing wetland system. Gaps are proposed in the eastern dike, but are less sensitive to sizing. The northern dike will be degraded as specified in the project description.

Response to Question 17: There is no need to include removal of invasive species in the adaptive management plan as it is already a maintenance requirement (See Page C-5).

Response to Question 18: Page D-5, Section 3 is a summary of the monitoring plan that is described in Appendix C. Section 3.0 is a relic from when the adaptive management plan was a stand-alone document; it will be deleted to remove redundancy.

Response to Question 19: As discussed in the response to comment #18, Table 2 is a summary of the information provided in Appendix C. This section and table will be deleted to reduce redundancy. To address your questions about the items within Table 2, the following clarification is provided:

1st bullet – Page C-5 indicates that invasive species will be removed at year 2 around the time of the initial planting. After the initial planting, invasive species would have to be maintained at less than 5 percent of total plant cover.
2nd bullet - The target elevations are specified on Page C-4.
3rd bullet - The percent change was a typographical error. It should have been 80 percent for all target years as indicated on Page C-4.
4th bullet – Functional marsh elevation is also defined on Page C-4.

GENERAL QUESTIONS AND COMMENTS

Response to Question 20: In accordance with the PPA, the NFS is required to conduct OMRR&R of the project at its full expense, including project features required for environmental mitigation. The NFS's OMRR&R expenses are not creditable towards the NFS' cost-share.

Response to Question 21: The period of analysis is defined by ER 1105-2-100 as follows: "The period of analysis shall be the time required for implementation plus the lesser of: (1) the period of time over which any alternative plan would have significant beneficial or adverse effects, (2) a period not to exceed 50 years except for major multiple purpose reservoir projects, or, (3) a period not to exceed 100 years for major multiple purpose reservoir projects." Consistent with the parent project that incurred the mitigation requirement, the benefits of the mitigation project are assessed over a 50 period of analysis. The WVA model computes the difference in AAHUs over the period

of analysis between the future with and future without project conditions. ER 1105-2-100, Section 2-4 b (1) states: "Forecasts of future without-project conditions shall consider all other actions, plans and programs that would be implemented in the future to address the problems and opportunities in the study area in the absence of a Corps project. Forecasts should extend from the base year (the year when the proposed project is expected to be operational) to the end of the period of analysis."

The WVA analysis included effects on the project from relative sea level rise (subsidence and sea level rise) without the benefit of additional lifts. There was no requirement that a project alternative have a habitat suitability index value greater than 0 at the end of the analysis period in order for the project alternative to be considered. It was only necessary for each project alternative to generate the total net gain in AAHUs needed to fully compensate for the impacts, and all of the project alternatives for a given habitat equally met this requirement.

The project delivery team did recognize that a project alternative that was capable of sustaining habitat functions/values for a long period of time was preferable to a project alternative that maintained its habitat functions/values for a shorter period of time. A quantitative means of assessing this was included in the Risk & Reliability matrix via the "long-term sustainability" parameter. Under this parameter, the percentage of marsh (land) that would remain at the end of the analysis period was used to gage sustainability of proposed marsh habitats. These values were derived from the WVA models, and one project alternative was considered preferable to another if it had more marsh land remaining.

Response to Question 22: If it is determined, after CEMVN issues a Notice of Construction Complete but before Initial Success Criteria are achieved, that the project needs additional construction, invasive species control, and/or planting, CEMVN will perform these items, subject to applicable cost-sharing and availability of funds. If, after Initial Success Criteria are achieved, there is a problem that requires structural changes, CEMVN will implement adaptive management. according to applicable cost-sharing and subject to availability of funds. CEMVN has budgeted funds for the design, construction, and construction management that is required to execute the environmental mitigation contracts. These budgets include reserved funds for 'contingencies,' which will be available in the event additional funds are needed during and post-construction using the same budgeting principles that were used for the entirety of the HSDRRS. At this time, CEMVN believes that it has reserved adequate funds for the successful execution of the HSDRRS mitigation project features.

Response to Question 23: ER 1105-2-100 requires that the period of analysis for most USACE projects not exceed 50 years (see response to question 21). All HSDRRS project components were analyzed based on a 50-year period of analysis. Before this regulation was issued, all benefits and impacts assessed for construction of the original LPV and WBV hurricane protection system and modifications to that system used a 100-year period of analysis.

Response to Question 24: All of the unavoidable impacts resulting from the construction of the LPV and the WBV Projects will be mitigated either through mitigation feature construction or mitigation bank credit acquisition as part of the HSDRRS Program. CEMVN allocates the costs of mitigation by habitat type based upon the cost-share applicable to the construction of the feature that caused the impacts, but CEMVN does not otherwise correlate specific portions of mitigation projects to specific construction contracts. No such correlation is needed to fulfill CEMVN's mitigation responsibilities for the construction impacts of the HSDRRS. Attached is a tabulation of the acres and associated AAHUs impacted by habitat type and the source(s) used to fund each construction contract.

Response to Question 25: Consistent with the LPV PPA, CPRA has opportunities during the planning process to review and make recommendations to the proposed project plans. However, the PPA contains no requirement for approval by CPRA of the final monitoring and/or adaptive management plans.

Response to Question 26: The March 19, 2010, letter from Assistant Secretary of the Army for Civil Works, Jo Ellen Darcy, to Governor Jindal states, "Moreover, the Corps will develop HSDRRS mitigation plans in those high priority areas that also are identified within the state master plan, specifically the West Bank and Lake Pontchartrain areas." Since the recommended plan for the LPV HSDRRS mitigation is in the Lake Pontchartrain area as specified in the March 19, 2010 letter, the projects in the Tentatively Selected Mitigation Plan Alternative are consistent with the ASA's direction. In addition, since all of the LPV HSDRRS mitigation projects were required to meet 100 percent of the mitigation requirement, CEMVN has planned and designed large scale projects that will provide greater ecological benefit within the basin.

Summary Comments: Appropriate changes will be incorporated into the Final TIER 1 document. CPRA will be provided a copy of the Final TIER as well, which will include the final Monitoring and Adaptive Management Plans.

Contract	Description	PS / FS Impact	Impact Type	Approp	Cost Share % Split	Env Mit Contract Number	BLH-Dry Impacted Area Acres	BLH-Dry Impacted Area AAHU's	Env Mit Contract Number	BLH-Wet Impacted Area Acres	BLH-Wet Impacted Area AAHU's	Env Mit Contract Number	Brackish Marsh Impacted Area Acres	Brackish Marsh Impacted Area AAHU's	Env Mit Contract Number	Fresh/Intermediate Marsh Impacted Area Acres	Fresh/Intermediate Marsh Impacted Area AAHU's	Env Mit Contract Number	Swamp Impacted Area Acres	Swamp Impacted Area AAHU's
IHNC-02	IHNC Flood Protection- GIWW/MRGO	Flood	General	FCCE		04	9.48	1.59				09	80.74	34.70						
LPV-03.2A	West Return Floodwall (Southern Segment) - Phase 2	Flood	General	FCCE								09	4.68	1.93				05	10.65	5.36
LPV-03.2B	West Return Floodwall (Northern Segment) - Phase 2	Flood	General	FCCE								09	14.73	6.56						
LPV-03c.1		Flood	General	FCCE								09	0.19	0.09						
LPV-03d.2	Airport Runway10 Levee - Phase 2	Protected	General	CG														05	1.04	0.25
LPV-03d.2	Airport Runway10 Levee - Phase 2	Flood	General	CG														05	2.51	1.93
LPV-04.1	Levee - Reach 1A, 1B & 2A - Phase 1	Protected	General	FCCE														05	13.24	6.00
LPV-04.1	Levee - Reach 1A, 1B & 2A - Phase 1	Flood	General	FCCE														05	11.75	7.51
LPV-04.2A	Levee - Reach 1A from Cross Bayou to St. Rose and Gulf South Floodwall - Phase 2	Protected	General	CG														05	9.89	3.94
LPV-04.2A	Levee - Reach 1A from Cross Bayou to St. Rose and Gulf South Floodwall - Phase 2	Flood	General	CG														05	9.54	5.26
LPV-04.2B	Levee - Reach 1B from I-310 to Walker Drainage Structure - Phase 2	Protected	General	CG														05	29.89	16.68
LPV-04.2B	Levee - Reach 1B from I-310 to Walker Drainage Structure - Phase 2	Flood	General	CG														05	18.46	13.30
LPV-05.2A	Levee - Reach 2A Shell Pipeline to Goodhope and Shell Pipeline Floodwall Replacement - Phase 2	Protected	General	CG														05	12.59	5.83
LPV-05.2A	Levee - Reach 2A Shell Pipeline to Goodhope and Shell Pipeline Floodwall Replacement - Phase 2	Flood	General	CG														05	11.66	6.45
LPV-05.2B	Levee - Reach 2B-from Good Hope to Cross Bayou - Phase 2	Protected	General	CG														05	16.44	8.82
LPV-05.2B	Levee - Reach 2B-from Good Hope to Cross Bayou - Phase 2	Flood	General	CG														05	19.49	13.35
LPV-06a.2	Bayou Trepagnier Complex Floodwall - Phase 2	Protected	General	FCCE														05	0.10	0.06
LPV-06b.2	Shell Pipeline Floodwall - Phase 2	Protected	General	FCCE														05	0.42	0.12
LPV-06b.2	Shell Pipeline Floodwall - Phase 2	Flood	General	FCCE														05	0.41	0.19
LPV-06c.2	Goodhope Floodwall - Phase 2	Protected	General	FCCE														05	0.69	0.21
LPV-06c.2	Goodhope Floodwall - Phase 2	Flood	General	FCCE														05	1.18	0.67
LPV-06e.2	Floodwall Under I-310 - Phase 2	Protected	General	FCCE														05	7.90	3.43
LPV-06e.2	Floodwall Under I-310 - Phase 2	Flood	General	FCCE														05	2.52	1.15
LPV-06f.2	Illinois Central Railroad Gate - Phase 2	Protected	General	FCCE														05	1.75	0.65
LPV-06f.2	Illinois Central Railroad Gate - Phase 2	Flood	General	FCCE														05	1.02	0.55
LPV-07b.2	Cross Bayou Drainage Structure - Phase 2	Protected	General	FCCE														05	0.68	0.28
LPV-07b.2	Cross Bayou Drainage Structure - Phase 2	Flood	General	FCCE														05	0.36	0.16
LPV-07c.2	St. Rose Drainage Structure & Levee - Phase 2	Protected	General	CG	80%													05	9.11	3.58
LPV-07c.2	St. Rose Drainage Structure & Levee - Phase 2	Flood	General	FCCE	20%													05	3.26	1.91
LPV-07d.2	Almedia / Walker Drainage Structures - Phase 2	Protected	General	FCCE														05	0.29	0.14
LPV-07d.2	Almedia / Walker Drainage Structures - Phase 2	Flood	General	FCCE														05	0.53	0.23

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Enclosure

Contract	Description	PS / FS Impact	Impact Type	Appro	Cost Share % Split	Contract Number	BLH-Dry Impacted Area Acres	BLH-Dry Impacted Area AAHU's	Contract Number	BLH-Wet Impacted Area Acres	BLH-Wet Impacted Area AAHU's	Contract Number	Brackish Marsh Impacted Area Acres	Brackish Marsh Impacted Area AAHU's	Contract Number	Fresh/Intermediate Marsh Impacted Area Acres	Fresh/Intermediate Marsh Impacted Area AAHU's	Contract Number	Swamp Impacted Area Acres	Swamp Impacted Area AAHU's
LPV-109.02a	New Orleans East Levee - South Point to CSX RR (100 YR)	Protected	Refuge	FCCE	80%				11	129.31	65.16				10	74.69	37.30			
LPV-109.02a	New Orleans East Levee - South Point to CSX RR (100 YR)	Flood	Refuge	CG	20%				11	9.30	2.96	09	4.05	1.39						
LPV-109.02b	I-10 Floodwall & Crossing	Protected	Refuge	FCCE					11	2.56	1.38									
LPV-109.02b	I-10 Floodwall & Crossing	Flood	Refuge	FCCE					11	0.43	0.20									
LPV-109.02c	US11 & US90 Gates & Crossings	Protected	Refuge	FCCE					11	0.82	0.28									
LPV-109.02c	US11 & US90 Gates & Crossings	Flood	Refuge	FCCE					11	0.20	0.01									
LPV-110	New Orleans East Levee - Modify CSX Railroad Gate	Protected	Refuge	FCCE					11	0.04	0.02									
LPV-110	New Orleans East Levee - Modify CSX Railroad Gate	Flood	Refuge	FCCE					11	0.06	0.03									
LPV-111.01	New Orleans East Back Levee - CSX RR to Michoud Canal	Protected	Refuge	FCCE	6%				11	15.16	8.12				10	11.66	3.99			
LPV-111.01	New Orleans East Back Levee - CSX RR to Michoud Canal	Flood	Refuge	FCCE	10%				11	12.86	5.71	09	20.54	7.40						
LPV-111.01	New Orleans East Back Levee - CSX RR to Michoud Canal	Protected	General	CG		04	2.46	0.41	04	17.46	9.39				08	3.08	1.19			
LPV-111.01	New Orleans East Back Levee - CSX RR to Michoud Canal	Flood	General	CG	84%				04	9.79	4.44	09	15.83	6.84						
LPV-111.02	New Orleans East Back Levee - CSX RR to Michoud Canal	Protected	General	CG					04	2.09	0.82				08	0.07	0.02			
LPV-111.02	New Orleans East Back Levee - CSX RR to Michoud Canal	Flood	General	CG								09	1.59	0.65						
LPV-111.03	New Orleans East Back Levee - CSX RR to Michoud Canal	Flood	General	CG								09	10.25	2.67						
LPV-145	Chalmette Loop Levee - Bayou Bienvenue to Bayou Dupre	Protected	General	CG																
LPV-145	Chalmette Loop Levee - Bayou Bienvenue to Bayou Dupre	Flood	General	CG								09	32.26	21.19						
LPV-146	Chalmette Loop Levee - Bayou Dupre to Hwy 46 Floodwall	Protected	General	CG					04	1.52	0.66				08	52.46	29.79			
LPV-146	Chalmette Loop Levee - Bayou Dupre to Hwy 46 Floodwall	Flood	General	CG					04	3.69	1.63	09	66.19	43.43						
LPV-147	Chalmette Loop Levee - Highway 46 Floodgates	Protected	General	FCCE											08	0.00	0.00			
LPV-147	Chalmette Loop Levee - Highway 46 Floodgates	Flood	General	FCCE					04	0.68	0.29									
LPV-148	Chalmette Loop Levee Hwy 46 to River (Verret to Caernarvon)	Protected	General	FCCE					04	0.80	0.34				08	1.10	0.51			
LPV-148	Chalmette Loop Levee Hwy 46 to River (Verret to Caernarvon)	Flood	General	FCCE					04	19.07	8.37				08	5.93	3.24			
LPV-148.02	Chalmette Loop Levee - Hwy 46 to River (Verret to Caernarvon)	Protected	General	CG					04	30.44	13.06				08	35.46	10.62			
LPV-148.02	Chalmette Loop Levee - Hwy 46 to River (Verret to Caernarvon)	Flood	General	CG					04	3.12	1.37									
LPV-149	Caernarvon Canal at LA 39/Railroad Replace Floodgates	Flood	General	FCCE		04	8.75	2.30	04	1.21	0.69				08	2.05	0.33			
LPV-108 (Maynard Borrow Pit Impacts)	LPV-Maynard Borrow Pit	Protected	General	FCCE		04	44.74	14.65												
TFG	Raise Levee - Paris Rd. to South Point	Protected	Refuge	FCCE		11	16.65	8.96												
TFG	Chalmette Loop Levee - Bayou Bienvenue to Bayou Dupre	Protected	General	FCCE		04	121.94	30.85												
TFG	Chalmette Loop Levee - Bayou Dupre to Hwy 46 Floodwall	Protected	General	FCCE		04	79.91	2.98												
NOTE: ROWS IN YELLOW INDICATE SPLIT FUNDING							283.93	61.74		260.60	124.92		251.06	126.85		186.50	86.99		197.35	108.01

B-53b

BOBBY JINDAL
GOVERNOR

State of Louisiana

ROBERT J. BARHAM
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

JIMMY L. ANTHONY
ASSISTANT SECRETARY

May 7, 2014

Attn: Joan M. Exnicios
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: *Application Number: TIER Milton Island*
Applicant: U.S. Army Corps of Engineers-New Orleans District
Notice Date: April 11, 2014

Dear Ms. Exnicios:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced Public Notice for the Tiered Individual Environmental Report (TIER) for the Milton Island Restoration project in St. Tammany Parish, Louisiana. Based upon this review, the following has been determined:

It is anticipated that the proposed Milton Island Restoration project will benefit wildlife resources; therefore, Ecological Studies has no objection.

Manatee (*Trichechus manatus*) may occur in the surrounding water bodies of your site location. Manatees are large mammals inhabiting both fresh and salt water. Although most manatees are year round residents of Florida or Central America, they have been known to migrate to areas along the Atlantic and Gulf coast during the summer months. Manatee is an endangered species protected under the Endangered Species Act of 1973 and the Federal Marine Mammal Protection Act of 1972. In Louisiana, taking or harassment of a manatee is in violation of state and federal law. Critical habitat for manatee includes marine submergent vascular vegetation (sea-grass beds). Areas with sea-grass beds should be avoided during project activities if possible. Report all manatee sightings to the Louisiana Department of Wildlife and Fisheries at 225-765-2809 or 1-800-442-2511.

Our database indicates the presence of bird nesting colonies within one mile of this proposed project. **Please be aware that entry into or disturbance of active breeding colonies is prohibited by the Louisiana Department of Wildlife and Fisheries (LDWF). In addition, LDWF prohibits work within a certain radius of an active nesting colony.**

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be

necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

1. qualifications of survey personnel;
2. survey methodology including dates, site characteristics, and size of survey area;
3. species of birds present, activity, estimates of number of nests present, and general vegetation type including digital photographs representing the site; and
4. topographic maps and ArcView shapefiles projected in UTM NAD83 Zone 15 to illustrate the location and extent of the colony.

Please mail survey reports on CD to: Louisiana Natural Heritage Program
La. Dept. of Wildlife & Fisheries
P.O. Box 98000
Baton Rouge, LA 70898-9000

To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).

- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1).

No other impacts to rare, threatened or endangered species or critical habitats are anticipated from the proposed project. No state or federal parks, wildlife refuges, wildlife management areas or scenic rivers are known at the specified site or within ¼ mile of the proposed project.

The Louisiana Natural Heritage Program (LNHP) reports summarize the existing information known at the time of the request regarding the location in question. LNHP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. If at any time LNHP tracked species are encountered within the project area, please contact our biologist at 225-765-2643.

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

zc

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

JUL 17 2014

Regional Planning and
Environment Division South

Kyle F. Balkum
Biologist Program Manager
Louisiana Natural Heritage Program
Louisiana Dept of Wildlife and Fisheries
P.O. Box 98000
Baton Rouge, Louisiana 70898-9000

Dear Mr. Balkum:

The US Army Corps of Engineers, New Orleans District received your comments dated May 17, 2014 on the Tiered Individual Environmental Report – Milton Island Marsh Restoration Project (PIER #36, TIER 1) for the Lake Pontchartrain and Vicinity (LPV) Hurricane Storm Damage and Risk Reduction (HSDRRS) Mitigation located in St. Tammany Parish, Louisiana. We appreciate you taking time to comment.

CEMVN staff employees are aware of the possible presence of manatees in the proposed project area. We have standard language that is included in our contract plans and specifications to advise contractors of their responsibility to instruct their employees about the possible presence of manatees, the posting of signage on contractor vessels, and specific requirements if a manatee is observed within 100 yards of any active work zone. Additionally, for this project, the US Fish and Wildlife Service recommended that a survey for manatees be conducted within the proposed area to be filled with dredged material prior to closing off the area to tidal influence. We commit to conduct such a survey. In the event that a manatee is observed within the area that will be filled, your office and the US Fish and Wildlife Service will be contacted to coordinate actions, if any, that could be taken to encourage the manatee to leave the area.

You requested a bird nesting survey of the project area and the area within 400 meters if construction is anticipated during the nesting season. At this time we are not certain when construction would begin, but if construction is anticipated during the nesting season a survey will be conducted as requested prior to construction. Any findings of colonial nesting birds will be reported to your office to determine the appropriate course of action.

If you have questions or would like additional information, please contact Mr. Howard Ladner at 504-862-2021 or by email at Howard.W.Ladner@usace.army.mil.

Sincerely,

/S/

Joan M. Exnicios
Chief, Environmental Planning Branch

B-93

BOBBY JINDAL
GOVERNOR

PEGGY M. HATCH
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES
June 4, 2014

Mr. Howard Ladner
US Army Corps of Engineers – New Orleans District
Post Office Box 60267
New Orleans, Louisiana 70160-0267

AI Number: 191701
Activity Number: CER 20140001

RE: Milton Island
Water Quality Certification WQC 140422-03
St. Tammany Parish

Dear Mr. Ladner:

The Louisiana Department of Environmental Quality, Water Permits Division (LDEQ), has reviewed the application for a 401 Water Quality Certification to excavate and place fill material at Milton Island for the Hurricane and Storm Damage Risk Reduction (HSDRR) Project located on the north shore of Lake Pontchartrain near Madisonville, St. Tammany Parish.

Based on the information provided in the application and the additional information received May 20, 2014, LDEQ has determined that the requirements for a Water Quality Certification have been met. LDEQ concludes placement of fill 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 Water Quality Certification, WQC 140422-03.

Should you have any questions concerning any part of this certification, please contact Elizabeth Johnson at (225) 219-3225, or by email at elizabeth.johnson@la.gov. To ensure all correspondence regarding this certification is properly filed into the Department's Electronic Document Management System, please reference your Agency Interest (AI) number 191701 on all future correspondence to this Department.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

c: IO-W
Corps of Engineers – New Orleans District

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

BOBBY JINDAL
GOVERNOR

STEPHEN CHUSTZ
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

May 29, 2014

Joan M. Exnicios
Chief, New Orleans Environmental Branch
Corps of Engineers- New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

RE: **C20120046 Mod 3,** Coastal Zone Consistency
New Orleans District, Corps of Engineers
Direct Federal Action
PIER 36 Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System (HSDRRS) Mitigation Project; modification to construct the Milton Island mash restoration project, **St. Tammany Parish, Louisiana**

Dear Ms. Exnicios:

The above referenced project modification, as revised by your letter of May 1, 2014, 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. The modification of this Programmatic IER, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Jeff Harris of the Consistency Section at (225) 342-7949.

Sincerely,

Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

DH/jdh
cc: Elizabeth Behrens, COE-NOD
David Butler, LDWF
Dan Bond, St. Tammany Parish
Frank Cole, OCM FC

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • http://www.dnr.louisiana.gov
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DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

MAY 09 2014

REPLY TO
ATTENTION OF

Regional Planning and
Environment Division, South
ATTN: CEMVN-PDN-NCR

Ms. Pam Breaux
State Historic Preservation Officer
Office of Historic Preservation
Capitol Annex Building
1051 North Third Street
Baton Rouge, Louisiana 70802

The proposed undertaking will have no adverse effect on historic properties. This effect determination could change should new information come to our attention.

Pam Breaux 5-21-14
Pam Breaux Date
State Historic Preservation Officer

RE: Request to Continue Consultation in accordance with Section 106 of the National Historic Preservation Act and the Programmatic Agreement as Executed on June 18, 2013 for the Lake Pontchartrain and Vicinity and West Bank and Vicinity Mitigation Projects – Milton's Island Intermediate Marsh Restoration, St. Tammany Parish, Louisiana.

Dear Ms. Breaux:

The U.S. Army Corps of Engineers, New Orleans District (CEMVN) in our letter dated April 16, 2014 (enclosure 1) submitted two copies of the draft report *Phase I Cultural Resources Survey and Evaluation, Miltons Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana* for your review and comment. The draft report presented the findings of a Phase I cultural resources investigation and remote sensing survey of areas on the north shore of Lake Pontchartrain that are part of a proposed intermediate marsh restoration project. The assessment and draft report were prepared at the request of CEMVN in accordance in order to fulfill requirements of Section 106 of the National Historic Preservation Act and the Programmatic Agreement for the Hurricane Storm Damage Risk Reduction System (HSDRRS) Lake Pontchartrain & Vicinity and West Bank & Vicinity Mitigation Projects, executed on June 18, 2013.

Based on the information presented in the draft report, the CEMVN has shifted the primary borrow source 200 meters to the east in order to avoid the identified buried surface of Milton's Island. The re-positioned borrow areas would still be within the original 204 acres that were surveyed, so no additional surveys are recommended. The proposed project access corridor/floatation channel for barging of equipment and materials to the shoreline stabilization area has been removed from consideration as part of the proposed project in order to prevent impact to the shell reef that was identified during the investigations (enclosure 2). Access for equipment and personnel to the shoreline stabilization area will be through existing canals (enclosure 3). The CEMVN recommends a finding of "no adverse effect" to historic properties. In order to ensure that no historic properties are adversely affected by the proposed action, an

unanticipated discovery plan will be developed and archaeological monitoring will be provided.

We request that your office review our finding of "no adverse effect" based on the conditions stated and provide any comments that you may have. Due to project schedule requirements, the CEMVN requests an expedited review of 15 days. If you are unable to provide and expedited review, we look forward to receiving your comments in 30 days as per standard procedures. Please contact CEMVN staff archaeologist, Eric M. Williams at 504-862-2862 or email to eric.m.williams@usace.army.mil, with any immediate questions or concerns you may have regarding this project.

Sincerely,

Joan M. Exnicios
Chief, New Orleans Environmental
Planning Branch

Enclosure(s)

REFERENCES CITED:

Pearson, Charles E., Richard A. Weinstein, Douglas C. Wells, Anne-Marie M. Blank, and Maegan A. Smith

2014 *Phase I Cultural Resources Survey and Evaluation, Miltons Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana (Draft Report enclosed for you review).*

JAY DARDENNE
LIEUTENANT GOVERNOR

State of Louisiana

OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT

CHARLES R. DAVIS
DEPUTY SECRETARY

PAM BREAUX
ASSISTANT SECRETARY

13 May 2014

Joan Exnicios
Chief, Environmental Planning Branch
New Orleans District, Corps of Engineers
PO Box 60627
New Orleans, LA 70160-0267

Re: Draft Report
La Division of Archaeology Report No. 22-4606
Phase I Cultural Resources Survey and Evaluation, Miltons Island Marsh Restoration Project Area, St. Tammany Parish, Louisiana

Dear Ms. Exnicios:

We acknowledge receipt of your letter dated 16 April 2014 and two copies of the above-referenced report. We have completed our review of this report and offer the following comments.

We appreciate the extensive efforts by Coastal Environments, Inc., to examine the various elements of this project over several years. We do note however, that an updated site form for 16ST97 has not yet been submitted to our office.

We concur that the portion of 16ST97 present along the modern shoreline of the project area contains no intact deposits and is not eligible for nomination to the National Register of Historic Places. The portion of 16ST97 identified offshore as an extensive shell ridge or reef remains undetermined for its eligibility for nomination to the National Register. The submission letter dated 16 April 2014 accompanying the report states that additional field investigations are recommended to address the extent and integrity of the offshore deposits. However, a revised letter to the SHPO dated 9 May 2014 indicates that the project has been redesigned to avoid the area of the offshore component of 16ST97. With this redesign, our office concurs that no historic properties will be affected by this project.

We look forward to receiving two bound copies of the final report, along with a pdf of the report. If you have any questions, please contact Chip McGimsey in the Division of Archaeology by email at cmcgimsey@crt.la.gov or by phone at 225-219-4598.

Sincerely,

Pam Breaux

Pam Breaux
State Historic Preservation Officer

PB:crm

APPENDIX C

GENERAL MITIGATION GUIDELINES: PLANTINGS, SUCCESS CRITERIA, MONITORING, AND OTHER GENERAL GUIDANCE

TIERED INDIVIDUAL ENVIRONMENTAL REPORT 36
MILTON ISLAND

INTRODUCTION

This document follows the general mitigation guidelines developed for both the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Storm Damage and Risk Reduction System (HSDRRS) Mitigation Program. They were developed by the U.S. Army Corps of Engineers (USACE) in coordination with an Interagency Team and the non-Federal project sponsor (NFS). The original guidelines were included as Appendix J in PIER 36. This Appendix makes project specific adjustments and outlines the project specific guidelines and success criteria.

The proposed mitigation actions include construction, with the NFS responsible for operation and maintenance of functional portions of work as they are completed. On a cost shared basis, USACE will monitor completed mitigation to determine whether additional construction, invasive species control and/or planting are necessary to achieve mitigation success. USACE will undertake additional actions necessary to achieve mitigation success in accordance with cost sharing applicable to the project and subject to the availability of funds. Once USACE determines that the mitigation has achieved initial success criteria, monitoring will be performed by the NFS as part of its OMRR&R obligations. If, after meeting initial success criteria, the mitigation fails to meet its intermediate and/or long-term ecological success criteria, USACE will consult with other agencies and the NFS to determine whether operational changes would be sufficient to achieve ecological success criteria. If, instead, structural changes are deemed necessary to achieve ecological success, USACE will implement appropriate adaptive management measures in accordance with the contingency plan and subject to cost sharing requirements, availability of funding, and current budgetary and other guidance.

The respective responsibilities for the construction, monitoring and maintenance of this project are as follows:

1. Construction and planting (the “construction phase”) - performed by USACE per applicable cost-sharing;

2. After construction and planting, USACE issues Notice of Construction Complete (NCC) and provides the Operation, Maintenance, Repair, Replacement, and Rehabilitation manual to the NFS (the “O&M phase”);

3. Notwithstanding NCC, USACE will monitor the project on a cost-shared basis until it reaches its Initial Success Criteria;

4. If, after NCC but before Initial Success Criteria are achieved, the project needs additional construction, invasive species control or planting, USACE will perform these items subject to applicable cost-sharing and availability of funds;

5. After Initial Success Criteria are achieved, NFS will monitor project;

6. If, after Initial Success Criteria are achieved, there is a problem that can be corrected through a change in operation, NFS will be responsible to change its operation of the project; and

7. If, after Initial Success Criteria are achieved, there is a problem that requires structural changes, USACE will implement adaptive management according to applicable cost-sharing and subject to availability of funds.

For the Milton Island project, "construction" is defined as:

1. Mobilization and de-mobilization of required construction equipment to the site.

2. Construction of temporary retention/perimeter dikes and associated spill boxes to contain dredged material.

3. Construction of the shoreline restoration feature along the eroded shoreline of Lake Pontchartrain, including planting of the feature with specified vegetation, dredging the access channel to the site, and filling the access channel once the feature has been constructed.

4. Dredging material from the bottom of Lake Pontchartrain and pumping the material via hydraulic pipeline along a defined access corridor to the designated fill site to establish a marsh platform at design elevation.

5. Surveying to determine fill height during and at the end of the dredging operation.

6. Degrading the northern perimeter dike and gapping the eastern and western dikes to allow water exchange.

7. Initial (during first year after establishment of marsh platform) invasive and nuisance plant species control.

8. Surveying 1 year after fill event and before planting to determine fill elevation.

9. One year after establishment of marsh platform, planting native, herbaceous, wetland vegetation throughout the fill area.

MITIGATION PLANTING GUIDELINES

Herbaceous species would be planted on 7-foot centers (average) to achieve a density of approximately 890 plants per acre. Stock would typically be either 4-inch container size or bare-root or liner stock, depending on the species involved. Plants would be obtained from a registered licensed regional nursery/grower and of a regional eco-type species properly stored and handled to ensure viability. Planting should be conducted during the period from March 15 through June 15. Planting should not be undertaken later than approximately July 15, although planting during the early fall may be deemed acceptable on a case-by-case basis.

Species installed in the proposed intermediate marsh habitat would be selected from the species list provided in Table 1. Plantings would consist of at least 2 different species. The species used and the proportion of the total plantings represented by each species would be dependent on various factors including site conditions and planting stock availability and would be documented for the project.

Table 1: Preliminary Planting List for Intermediate Marsh Habitats

Common Name	Scientific Name
California bulrush	*Schoenoplectus californicus*
Black needle rush	*Juncus roemerianus*
Giant cutgrass	*Zizaniopsis miliacea*
Marsh-hay cordgrass	*Spartina patens*
Maidencane	*Panicum hemitomon*
Common threesquare	*Schoenoplectus americanus*
Big cordgrass	*Spartina cynosuroides*
Seashore paspalum	*Paspalum vaginatum*

MITIGATION SUCCESS CRITERIA AND MITIGATION MONITORING

1. General Construction

A. Within approximately 4 months following the start of construction all initial mitigation construction activities (e.g. construction of temporary retention/perimeter dikes, shoreline restoration feature, placement of fill/borrow material into mitigation site, etc.) would be completed as outlined in the project description found in the TIER and in accordance with the final contract plans and specifications. This would be accomplished by the USACE and would be cost-shared with the NFS in accordance with all relevant agreements. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

B. Approximately 1 year following completion of all initial mitigation construction activities (Target Year 2) all final mitigation construction activities would be completed as specified in the TIER project description and in accordance with the final contract plans and specifications. Such activities could include, but are not limited to degrading and gapping temporary retention dikes, and planting appropriate vegetation as specified above. Finishing the construction components

would be considered as the "completion of final mitigation construction activities". This would be accomplished by the USACE and would be cost-shared with the NFS in accordance with all relevant agreements. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

2. Topography

General: The target elevations for the project at various target years are within a range of 0.5 feet. It is important to note that elevations higher than the targeted range would require a reassessment of the project's benefits since the benefits are based on establishing intertidal wetlands.

A. At the end of the initial mitigation construction activities (Target Year 1) the USACE would demonstrate that at least 93% of the mitigation area (132.5 acres out of 143 acres) has a surface elevation that is within 0.5 feet of the designed initial target surface elevation, which is +2.25 feet NAVD88. The shoreline restoration feature of the south dike would be maintained to design specifications. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

B. At or near the time that final mitigation construction activities are being implemented (Target Year 2), USACE would demonstrate that at least 93% of the mitigation area (132.5 acres out of 143 acres) has a surface elevation that is within 0.5 feet of the expected surface elevation at this time. At Target Year 2, when vegetation plantings and dike gapping are conducted, the elevation of the dredged fill is expected to be +1.9 feet NAVD88, plus or minus 0.5 feet. Note that this elevation was derived from settlement data provided by the USACE, New Orleans District, Geotechnical Branch. The shoreline restoration feature of the south dike would be maintained to design specifications. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

C. Three years following completion of final mitigation construction activities (Target Year 5) at least 93% of the mitigation area (132.5 acres out of 143 acres) should have a surface elevation of 1.6 feet NAVD88, plus or minus 0.5 feet. The shoreline restoration feature of the south dike would be maintained to design specifications. This requirement classifies as an intermediate success criterion.

3. Native Vegetation

A. Complete initial marsh planting (Target Year 2) in accordance with initial marsh planting guidelines within the 143 acre mitigation area. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

B. Monitor vegetation one year following completion of initial plantings (Target Year 3). The monitoring should demonstrate at least 80% survival of planted species, or achieve a minimum average cover of 25%, within the area filled with dredged material (143 acres), comprised of native herbaceous species (includes planted species and volunteer species). The vegetation should meet USACE hydrophytic vegetation criteria (see definition of terms at end of this Appendix). This requirement classifies as an initial success criteria, with the exception that the requirement to

demonstrate vegetation satisfies USACE hydrophytic vegetation criteria throughout the duration of the overall monitoring period classifies as a long-term success criterion.

C. Three years following completion of initial plantings (Target Year 5) native plant species, including planted species and volunteer species, should cover 131.5 acres the area filled with dredged material, or approximately 92% of the area. (Note that the WVA analysis shows 91% because the 131.5 acres was divided into 145 acres which includes 143 acres of fill area plus 2 acres for the footprint of the shoreline protection feature.) . This requirement classifies as an intermediate success criterion.

D. For the period beginning 4 years following completion of final mitigation construction activities (Target Year 6) and continuing through 50 years following completion of final mitigation construction activities, maintain the average cover of native herbaceous species as calculated in the WVA analysis. This requirement classifies as a long-term success criterion. The key target years and corresponding vegetated acreage are as follows:

Target Year 6: 131 acres
Target Year 10: 130 acres
Target Year 15: 129 acres
Target Year 20: 127 acres
Target Year 25: 125 acres
Target Year 30: 123 acres
Target Year 35: 120 acres
Target Year 40: 118 acres
Target Year 45: 114 acres
Target Year 50: 110 acres

4. Invasive and Nuisance Vegetation

A. Complete the initial eradication of invasive and nuisance plant species within 1 year of completion of initial mitigation construction activities (Target Year 2). The eradication would occur during or around the same time as the initial vegetation plantings occur. This requirement is part of the construction phase of the project and classifies as an initial success criterion.

B. Maintain all areas such that they are essentially free from invasive and nuisance plant species immediately following a given maintenance event and such that the total average vegetative cover accounted for by invasive and nuisance species each constitute less than 3% of the total average plant cover during periods between maintenance events. These criteria must be satisfied throughout the duration of the overall monitoring period. Until such time that monitoring responsibilities are transferred from the USACE to the NFS, this requirement classifies as an initial success criterion. Following the transfer of monitoring responsibilities, this requirement classifies as a long-term success criterion.

MITIGATION MONITORING GUIDELINES

Reference Document for Monitoring

All project monitoring would generally follow the procedures detailed in the following document: A Standard Operating Procedures Manual for the Coast-wide Reference Monitoring System – Wetlands: Methods for Site Establishment, Data Collection, and Quality Assurance/Quality Control, prepared by the Louisiana Coastal Protection and Restoration Authority, January 27, 2012. This referenced document is specific to coastal Louisiana wetlands and provides very detailed instructions for conducting field monitoring that is applicable to the proposed project. Those detailed methods are not repeated in this document.

Baseline Monitoring Report (First Monitoring Report)

The mitigation site would be monitored and a baseline monitoring report prepared after final construction is complete (Target Year 2). Information provided would typically include the following items:

A. A detailed discussion of all mitigation activities completed.

B. A plan view drawing of the mitigation site showing the approximate boundaries of the restored marsh features, monitoring transect locations, sampling quadrat locations, photo station locations, and staff gauge locations is provided as Figure 1. The exact locations of the photo stations, transects, quadrats and the staff gauges would be determined during the initial site visit and the baseline monitoring event. An as-built survey of surface elevations (topographic survey) of the project area would be conducted, along with an as-built survey of any dikes constructed as part of the marsh restoration features. The layout of the as-built survey is shown on Figure 2. Transects and quadrats for vegetation monitoring would be adjusted to duplicate topographic survey lines and shot points as much as feasible. If a particular marsh feature is immediately adjacent to existing marsh habitat, the topographic survey would include spot elevations collected within the existing marsh habitat near the restored marsh feature. In addition to the survey data, an analysis of the data would be provided addressing attainment of topographic success criteria.

Figure 1. Project Area Showing Monitoring Details

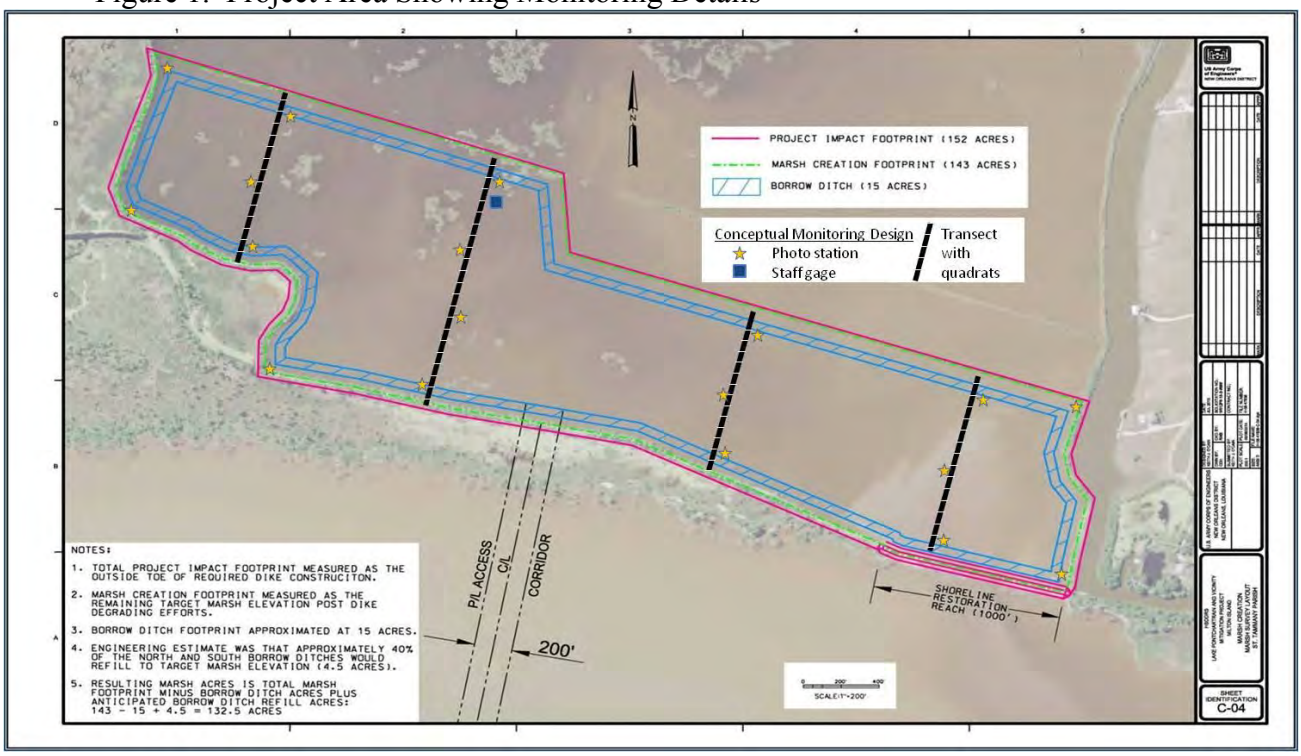
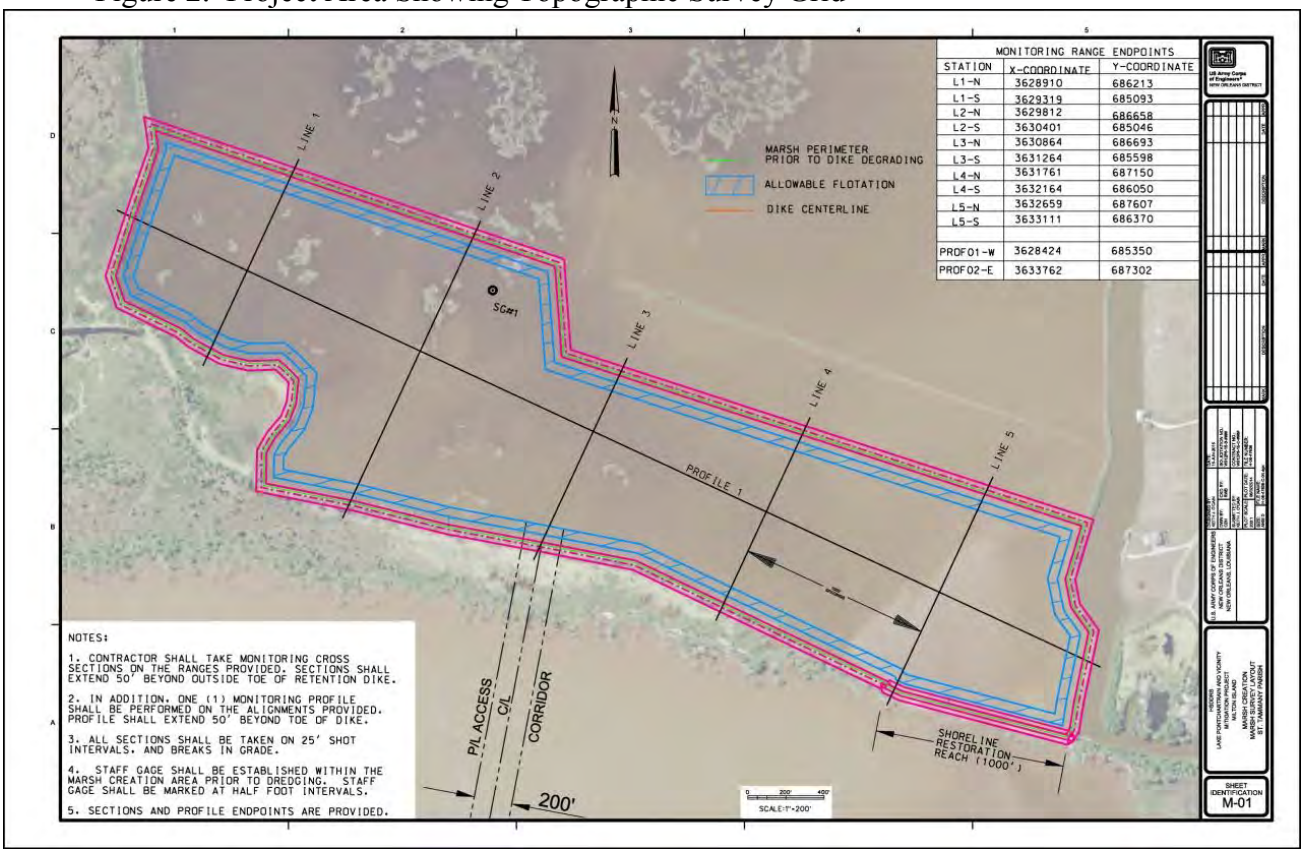


Figure 2. Project Area Showing Topographic Survey Grid



C. Photographs documenting conditions in the restored marsh feature at the time of monitoring would be included. Photos would be taken at approximately 18 permanent photo stations (preliminarily at least three photo stations are planned along each of the four permanent transects) within the marsh feature. At least two photos would be taken at each station with the view of each photo always oriented in the same general direction from one monitoring event to the next.

D. A detailed inventory of all species planted, including the number of each species planted, the stock size planted, along with the general locations, would be provided. This includes providing an itemization indicating the number of each species planted depicted on the plan view drawing of the mitigation site.

E. Water level elevation readings would be collected at the time of monitoring from a single staff gauge. The monitoring report would provide the staff gauge data along with mean high and mean low water elevation data as gathered from a tidal elevation recording station in the general vicinity of the mitigation site. The report would further address estimated mean high and mean low water elevations at the mitigation site based on field indicators. It is proposed that the staff gauge be installed along the northern limit of the project area close to the mid-point between the eastern and western limits. The exact location of the proposed staff gauge would be determined during the initial site visit and the baseline monitoring event.

F. Various qualitative observations would be made in the mitigation site to help assess the status and success of mitigation and maintenance activities. These observations would include: General estimate of the average percent cover by native plant species; general estimates of the average percent cover by invasive and nuisance plant species; general observations concerning colonization of the mitigation site by volunteer native plant species; general condition of native vegetation; trends in the composition of the plant community; wildlife utilization as observed during monitoring (including fish species and other aquatic organisms); the natural formation of interspersion features within restored marshes; observations regarding general surface water flow characteristics within marsh interspersion features; and the general condition of permanent dikes. General observations made during the course of monitoring would also address potential problem zones and other factors deemed pertinent to the success of the mitigation program.

G. A summary assessment of all data and observations along with recommendations as to actions necessary to help meet mitigation and management/maintenance goals and mitigation success criteria.

H. A brief description of anticipated maintenance/management work to be conducted during the period from the current monitoring report to the next monitoring report.

Additional Monitoring Reports

All monitoring reports generated after the initial baseline report would provide the following information unless otherwise noted:

A. All items listed for the baseline monitoring report with the exception of: (a) the topographic/as-built survey, although additional topographic/as-built surveys are required for specific monitoring reports (see below); (b) the inventory of planted species; although such an inventory must be provided in any monitoring report generated for a year in which a restored intermediate marsh feature is re-planted to meet applicable success criteria.

B. Quantitative data concerning plants in the ground cover stratum. Data would be collected from approximately 60 permanent sampling quadrats established at approximately equal intervals along four permanent monitoring transects established within the marsh mitigation area. It is proposed that at least four permanent transect lines would be established perpendicular to the Lake Pontchartrain shoreline and the north and south dike construction. Each transect would include approximately 15 equally spaced sampling quadrats. The number of quadrats per transect would depend on the length of the transect. The sampling quadrats would be approximately 2 meters by 2 meters in size. Data recorded from the sampling quadrats would include: Average percent cover by native plant species; average percent cover by invasive plant species; average percent cover by nuisance plant species; composition of plant species and the wetland indicator status of each species. The average percent survival of planted species (i.e. number of living planted species as a percentage of total number of plants installed) would also be recorded. However, data for percent survival of planted species would only be recorded until such time as it is demonstrated that success criteria for plant survivorship has been achieved or until planted species are undetectable from volunteered species. The exact placement of the transect lines and quadrats plots would be determined during the initial site visit and the baseline monitoring event.

C. A brief description of maintenance and/or management work performed since the previous monitoring report along with a discussion of any other significant occurrences would be included.

D. In addition to the above items, the monitoring report prepared upon completion of the final mitigation construction activities in Target Year 2 and the monitoring report prepared for 3 years following completion of final mitigation construction activities (estimated TY5) would include a topographic survey of each marsh restoration feature. These surveys would cover the same components as described for the topographic survey conducted for the baseline monitoring report. In addition to the surveys themselves, each of the two monitoring reports involving topographic surveys would include an analysis of the data as regards attainment of applicable topographic success criteria. If the second survey indicates topographic success criteria have not been achieved and supplemental topographic alterations are necessary, then another topographic survey may be required following completion of the supplemental alterations. This determination would be made by USACE in coordination with the Interagency Team and NFS.

MITIGATION MONITORING SCHEDULE AND RESPONSIBILITIES

Monitoring would typically take place in mid to late summer of the year of monitoring, but may be delayed until later in the growing season due to site conditions or other unforeseen circumstances. Monitoring reports would be submitted by December 31 of each year of monitoring. Monitoring reports would be prepared by the USACE or provided to the USACE by the NFS, depending on whether or not all of the initial success criteria have been achieved, for coordination with the agencies comprising the Interagency Team and the NFS. The various monitoring and reporting responsibilities addressed in this section are all subject to the provisions set forth in the Introduction section.

The USACE would be responsible for conducting the monitoring events and preparing the associated monitoring reports until such time that the following initial mitigation success criteria are achieved (criteria follow numbering system used in success criteria section):

1. General Construction – Criteria 1.A and 1.B.
2. Topography – Criteria 2.A and 2.B.
3. Native Vegetation – Criteria 3.A and 3.B.
4. Invasive and Nuisance Vegetation – Criterion 4.A, plus criterion 4.B until such time as monitoring responsibilities are transferred to the NFS.

Monitoring events associated with the above would include the baseline monitoring event in Target Year 2 and a second monitoring event 1 year after the baseline monitoring event (Target Year 3). The USACE would be responsible for conducting these monitoring activities and preparing the associated monitoring reports.

The NFS would be responsible for conducting the required monitoring events and preparing the associated monitoring reports after the USACE has demonstrated the initial mitigation success criteria listed above have been achieved. Once monitoring responsibilities have been transferred to the NFS, the next monitoring event should take place in TY5 in order to demonstrate attainment of success criteria 2.C and 3.C. Thereafter, monitoring would be conducted every 5 years throughout the remaining 50-year period of analysis (based on 50-year period of analysis beginning in TY0 and ending in TY50.

If certain success criteria are not achieved, failure to attain these criteria would trigger the need for additional monitoring events not addressed in the preceding paragraphs. The USACE and/or the NFS would be responsible for conducting such additional monitoring and preparing the associated monitoring reports. The following lists instances requiring additional monitoring that would be the responsibility of the USACE:

A. If the initial survival criterion for planted species or the initial vegetative cover criterion are not achieved (i.e. the criteria specified in success criteria 3.B), a monitoring report would be required for each consecutive year until two sequential annual reports indicate that the applicable survival criterion or vegetative cover criteria have been satisfied (i.e. that corrective actions were successful). The USACE would also be responsible for the purchase and installation of supplemental plants needed to attain the success criteria subject to

availability of funds, but the overall cost would be shared with the NFS according to the project cost-sharing agreement.

B. If topographic success criteria 2.A or 2.B are not achieved, a monitoring report would be required for each consecutive year until two sequential annual reports indicate the applicable criteria have been satisfied. Since failure to meet topographic success criteria would mandate corrective actions such as addition of fill, removal of fill, or other actions to change grades within the subject marsh feature, the USACE would also be responsible for performing the necessary corrective actions subject to availability of funds, but the overall cost would be shared with the NFS according to the project cost-sharing agreement.

There could also be cases where failure to attain intermediate or long-term success criteria (after meeting initial success criteria) would trigger the need for additional monitoring events for which the NFS would be responsible:

A. If the vegetative cover criterion specified for 3 years after the initial planting of the marsh feature is not achieved (i.e. success criterion 3.C), a monitoring report would be required for each consecutive year until two sequential annual reports indicate that the vegetative cover criterion has been satisfied. The USACE and the NFS would consult and coordinate regarding the purchase and installation of supplemental plants needed to attain the success criterion, which would be cost-shared.

B. If the topographic success criterion 2.C is not achieved, a monitoring report would be required for each consecutive year until two sequential annual reports indicate success criteria have been satisfied. Since failure to meet this topographic success criteria would mandate corrective actions such as addition of fill, removal of fill, or other actions to change grades within the marsh feature, the USACE and the NFS would consult and coordinate regarding the necessary corrective actions, which would be cost-shared.

C. Native vegetation success criterion 3.D is applicable to the period extending from 5 years through 20 years following completion of mitigation construction activities. If this criterion is not satisfied at the time of monitoring, the USACE and the NFS would consult and coordinate regarding corrective actions, which would be cost-shared. Such actions could include installing additional plants in the subject marsh (probable course of action), adding sediment to the subject marsh in problem zones (marsh nourishment), or a combination of these activities. Under this scenario, a monitoring report would be required for each consecutive year following completion of the corrective actions until two sequential annual reports indicate that the vegetative cover criterion has been attained. The NFS would be responsible for conducting these additional monitoring events and preparing the associated monitoring reports, at their cost.

The following table indicates the currently anticipated monitoring report schedule and the party responsible for conducting the monitoring and preparing the report.

Table 2. Standard mitigation monitoring report schedule and monitoring responsibility.

Target Year	Monitoring Report Number	Party Responsible for Monitoring and Reporting
1 Complete initial construction activities (Includes topographic survey)	N/A	N/A
2 Complete final construction activities (Includes topographic survey)	1 (Baseline Report)	USACE
3 Monitor vegetation cover, re-plant as necessary	2	USACE
4 Monitor vegetation cover, re-plant as necessary	3	NFS
5 Monitor vegetation cover, re-plant as necessary (Includes topographic survey)	4	NFS
10-50 (every 5 years)	5-13	NFS

Re-planting of certain areas within the restored marsh habitat may be necessary to ensure attainment of applicable native vegetation success criteria. Any monitoring report submitted following completion of a re-planting event must include an inventory of the number of each species planted and the stock size used. It must also include a depiction of the areas re-planted or those planted, as applicable, cross-referenced to a listing of the species and number of each species planted in each area.

Although the USACE would be responsible for conducting the first and second monitoring efforts and would be responsible for preparing the reports, the cost for these activities would be cost-shared with the NFS. Once initial success criteria are achieved, the NFS will be responsible for the costs associated with conducting the monitoring and preparing all monitoring reports.

Once monitoring responsibilities have been transferred to the NFS, the NFS would retain the ability to modify the monitoring plan and the monitoring schedule should this become necessary due to unforeseen events or to improve the information provided through monitoring. Twenty years following completion of mitigation construction activities, the number of monitoring transects and/or quadrats that must be sampled during monitoring events may be reduced substantially if it is clear that mitigation success is proceeding as anticipated. Any significant modifications to the monitoring plan or the monitoring schedule must first be approved by the USACE in coordination with the Interagency Team.

MITIGATION MONITORING COSTS

The total estimated cost of monitoring the proposed project is approximately $393,000. The estimated costs are provided in Table 3.

MILTON ISLAND MARSH MITIGATION PROJECT - MONITORING COSTS

Target Year	Calendar Year	Work Item	Work Item Description	Cost
1	2016	Initial Construction	Mob and Demob, Dredge, Dike & Weir Construction	0.00
		Topographic Survey	Perform as-built topographic survey of restored marsh areas. Results documented in mitigation monitoring report	40,000.00
		Monitoring	Perform field mitigation monitoring	13,828.00
		Monitoring Report	Prepare and submit report	20,742.00
2	2017	Final Construction	Initial planting of restored marsh features. Install herbaceous species	0.00
		Topographic Survey	Perform as-built topographic survey of restored marsh areas. Results documented in mitigation monitoring report	40,000.00
		Monitoring	Perform field mitigation monitoring	6,562.50
		Monitoring Report	Prepare and submit report	13,125.00
3	2018	Analysis for Notice of Construction Complete	Review monitoring report from prior year and other data to make determination that Non-Federal Sponsor (NFS) is responsible for operation and maintenance	2,800.00
		NFS Responsible	NFS is responsible for operation and maintenance, unless topographic corrections and/or marsh planting required in Target Year 5.	0.00
		Begin OMRR&R		
5	2020	Topographic Survey	Perform topographic survey of restored marsh areas. Results documented in mitigation monitoring report.	50,000.00
		Monitoring	Perform field mitigation monitoring (Aug-Sept).	10,500.00
		Monitoring Report	Submit report Oct-Dec. Includes aerial photography.	15,750.00
7	2022	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
10	2025	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
15	2030	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
20	2035	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
25	2040	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
30	2045	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
35	2050	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
40	2055	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
45	2060	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
50	2065	Monitoring	Perform field mitigation monitoring (Aug-Sept).	7,200.00
		Monitoring Report	Submit report Oct-Dec.	10,800.00
			Total Project Monitoring Cost	**$393,307.50**

NOTES:

The costs for aerial photography needed for monitoring ARE included in the cost for the "monitoring and report" event that occurs in the same year that the photography is required.

The costs for topographic/as-built surveys needed for monitoring are NOT included in the cost for the "monitoring and report" events.

Assume marsh features will require 1 re-planting event to meet vegetation success criteria. For cost, assume that 20% of the total quantity of plants used in the initial planting will be the quantity needed for re-planting.

Assume invasive/nuisance plant eradication activities will not be required for intermediate and brackish marshes.

During the time mitigation monitoring is the responsibility of CEMVN, additional work required by CEMVN will include coordinating with the Interagency Review Team and NFS concerning the monitoring results and the necessary management/maintenance activities to insure mitigation success.

Once the non-Federal sponsor assumes monitoring responsibility, additional work required by CEMVN will include reviewing the sponsor's mitigation monitoring reports, plus coordinating with the Interagency Review Team and NFS concerning the monitoring results and the necessary management/maintenance activities the NFS must take to help insure mitigation success. CEMVN will further need to enter mitigation data into the USACE mitigation reporting database. These actions will occur in the early part of each year following the year in which the NFS's monitoring report is submitted.

COST ITEMS: $50,000 included for cost of topographic survey

DEFINITION OF TERMS

Growing Season
As used herein, the growing season is considered to be the period from April through October of any given year, although some deviation from this typical range is allowed.

Interagency Team
The "Interagency Team" consists of representatives from the following resource agencies; US Fish and Wildlife Service, National Marine Fisheries Service, US Environmental Protection Agency, Louisiana Department of Wildlife and Fisheries, State of Louisiana Office of Coastal Protection and Restoration, Louisiana Coastal Protection and Restoration Authority, and Louisiana Department of Natural Resources.

Interspersion Features
This term refers to shallow open water features situated within marsh habitats. Examples include tidal channels, creeks, trenasses, and relatively small, isolated ponds. Emergent vegetation is typically absent in such features although they may contain submerged aquatic vegetation. They provide areas of foraging and nursery habitat for fish and shellfish along with associated predators, and provide loafing areas for waterfowl and other waterbirds. The marsh/open water interface forms an ecotone where post-larval and juvenile organisms can find cover and where prey species frequently concentrate.

Invasive Plant Species
All plant species identified as invasive or as non-indigenous (exotic) in the following two sources:

> Louisiana Aquatic Invasive Species Task Force. 2005. State Management Plan for Aquatic Invasive Species in Louisiana, Appendix B. Invasive Species in Louisiana (plants). Center for Bioenvironmental Research, Tulane & Xavier Universities, New Orleans, LA. (Website - http://is.cbr.tulane.edu/docs_IS/LAISMP7.pdf)
>
> Barataria-Terrebonne National Estuary Program (BTNEP). 2012. Exotic Invasive Species of the Barataria-Terrebonne, Invasive Species in Louisiana. BTNEP, Thibodaux, LA.
> (Website – http://invasive.btnep.org/invasivesvsnatives/invasivesinla2list.aspx)

In addition, invasive plant species include; Japanese climbing fern (*Lygodium japonicum*), tall fescue (*Festuca arundinacea*), chinaberry (*Miscanthus sinensis*), Brazilian vervain (*Verbena litoralis* var. *brevibrateata*), coral ardisia (*Ardisia crenata*), Japanese ardisia (*Ardisia japonica*), cogon grass (*Imperata cylindrical*), golden bamboo (*Phyllostachys aurea),* and rescuegrass (*Bromus catharticus*).

Native Plant Species
This category includes all plant species that are not classified as invasive plant species and are not considered to be nuisance plant species.

Non-Federal Sponsor (NFS)
This term refers to the Non-Federal Sponsor for the mitigation projects. In this case, the NFS is the Louisiana Coastal Protection & Restoration Authority Board (CPRAB).

Nuisance Plant Species
Nuisance plant species will include native species deemed detrimental due to their potential adverse competition with desirable native species. Nuisance plant species identified for the mitigation project include; dog-fennel (*Eupatorium* spp.), ragweed (*Ambrosia* spp.), cattail (*Typha* spp.), grapevine (*Vitis* spp.), wild balsam apple (*Momordica charantia*), climbing hempvine (*Mikania scandens, M. micrantha*), pepper vine (*Ampelopsis arborea*), common reed (*Phragmites australis*), catbrier (*Smilax* spp.), blackberry (*Rubus* spp.), black willow (*Salix nigra*), and box elder (*Acer negundo*). Following completion of the initial mitigation activities (e.g. placement of fill, initial plantings), the preceding list may be expanded to include other nuisance plant species. Any such addition to the list would be based on the results of the standard monitoring reports. The determination of whether a particular new plant species should be considered as a nuisance species and therefore eradicated or controlled would be determined by the USACE in coordination with the NFS and Interagency Team.

Planting Season
This is generally considered to be the period from approximately December 15 through March 15, although some deviation from this typical range is allowed.

Target Year
This document often refers to a "Target Year". Target Years are the years in which construction or monitoring activities are expected to occur, based on Target Year 1 as the year in which the initial mitigation construction activities are anticipated to be completed, which is presently estimated to occur in calendar year 2016. Target Year 2 (2017) is the year in which the final construction contract is expected to be completed. Target years increase from this time forward in concert with the corresponding calendar year.

USACE Hydrophytic Vegetation Criteria
Reference to satisfaction of USACE hydrophytic vegetation criteria (i.e. plant community is dominated by hydrophytic vegetation) shall mean that sampling of the plant community demonstrates that one or more of the hydrophytic vegetation indicators set forth in the following reference is achieved:

> USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0); ERDC/EL TR-10-20. USACE Engineer Research and Development Center, Vicksburg, MS.

Wetland Indicator Status of Plant Species
The wetland indicator status of plants is a means of classifying the estimated probability of a species occurring in wetlands versus non-wetlands. Indicator categories include; obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and obligate upland (UPL). The wetland indicator status of a particular plant species shall the current National Wetland Plant List, available at http://wetland_plants.usace.army.mil/, using the Region 2 listing contained therein.

APPENDIX D

ADAPTIVE MANAGEMENT PLAN

TIERED INDIVIDUAL ENVIRONMENTAL REPORT 36
MILTON ISLAND

1.0. Introduction

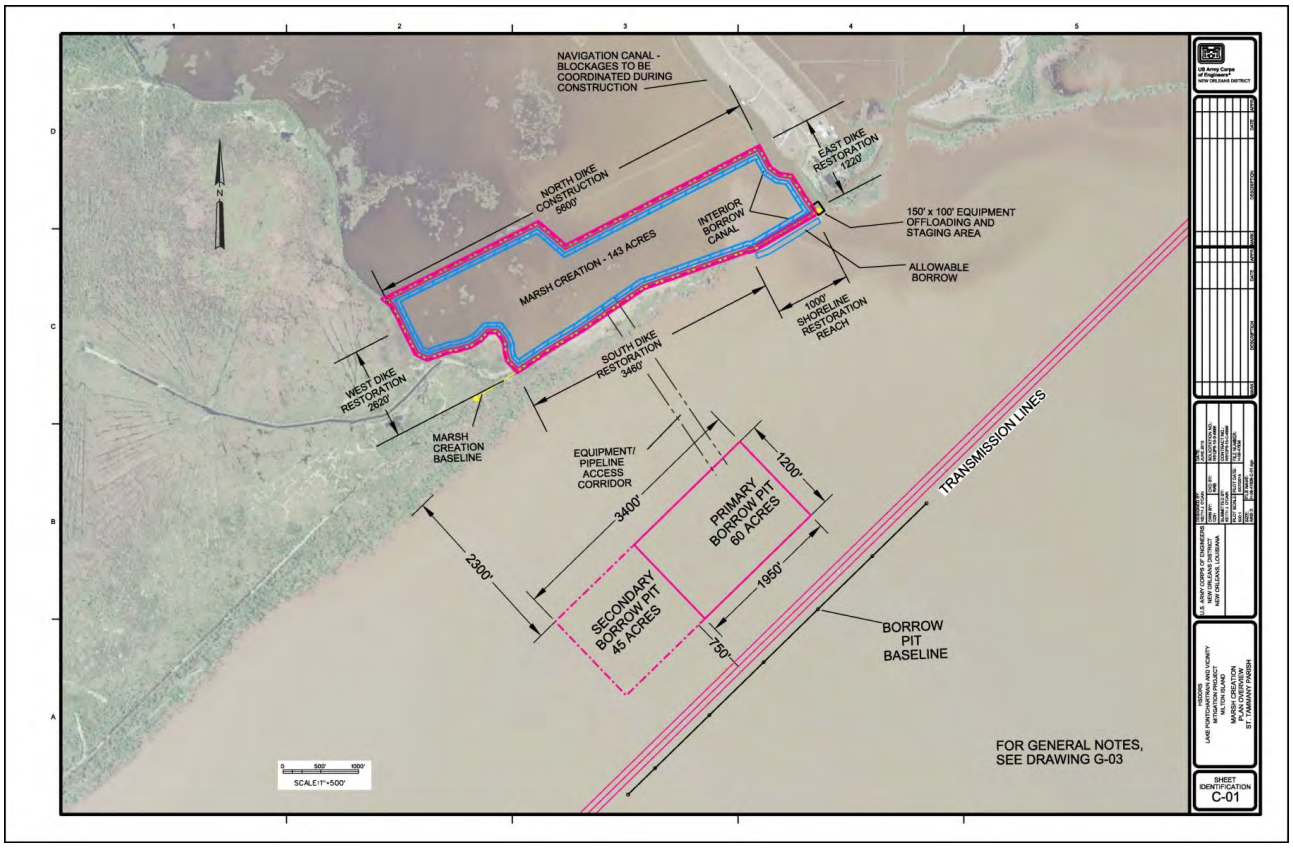
This Adaptive Management (AM) Plan is for the Milton Island mitigation project. The project is designed to mitigate for impacts to non-refuge fresh and intermediate marsh resulting from construction of the Lake Pontchartrain and Vicinity (LPV) component of the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The Water Resources Development Act (WRDA) of 2007, Section 2036(a) and U.S Army Corps of Engineers (USACE) implementation guidance for Section 2036(a) (CECW-PC Memorandum dated August 31, 2009: "*Implementation Guidance for Section 2036 (a) of the Water Resources Development Act of 2007 (WRDA 2007) – Mitigation for Fish and Wildlife and Wetland Losses*") requires adaptive management and monitoring plans be included in all mitigation plans for fish and wildlife habitat and wetland losses.

2.0. Adaptive Management Planning

Initial adaptive management planning was conducted during the planning process for the Programmatic Individual Environmental Report (PIER) 36 and was reviewed and revised for the Milton Island Tiered Individual Environmental Report (TIER). Adaptive management planning elements included: 1) development of a Conceptual Ecological Model (CEM), 2) identification of key project uncertainties and associated risks, 3) evaluation of the Milton Island mitigation project as a candidate for adaptive management and 4) the identification of potential adaptive management actions (contingency plan) to better ensure the mitigation project meets identified success criteria. The adaptive management Plan is a living document and will be refined as necessary.

The Milton Island mitigation project would consist of intermediate marsh restoration located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge. The intermediate marsh would be created in open water areas using borrow from Lake Pontchartrain. Existing permanent retention features (dikes) exist along the east, west, and south perimeters of the project footprint and a new dike on the northern edge would be used to retain fill material. The dike along the north side of the marsh creation area would be degraded approximately 1 year after project construction, upon settlement and dewatering of the created marsh platform. The existing western and eastern dikes would be gapped approximately 1 year after project construction to allow interaction with the existing marsh platform. The gaps would be spaced with care being taken to locate gaps at all existing natural bayous or openings. The southern dike would remain, to provide protection from Lake Pontchartrain's waves and water intrusion. Aerial photography confirmed by a site visit shows that the southern shoreline has breached at the southeast corner of the project footprint, and lake waters are free to enter and exit the area where marsh mitigation would occur. Shoreline restoration is proposed to close off the approximately 1,000-foot long opening. The shoreline restoration feature and the marsh mitigation area are shown in Figure 1 below. Vegetation planting would be accomplished upon dewatering and consolidation of the fill material, approximately 1 year after project construction.

Figure 1. Milton Island Mitigation Project Area



2.1. Conceptual Ecological Model

A CEM was developed to identify the major stressors and drivers affecting the proposed mitigation project (see Table 1). The CEM does not attempt to explain all possible relationships of potential factors influencing the Milton Island mitigation site; rather, the CEM presents only those relationships and factors deemed most relevant to obtaining the required acres/average annual habitat units (AAHUs). Furthermore this CEM represents the current understanding of these factors and will be updated and modified, as necessary, as new information becomes available. Stressors and Drivers identified in the CEM were identified during the PIER Alternative Evaluation Process (AEP) process to evaluate relative risks associated with each mitigation alternative.

Table 1. Conceptual Ecological Model

Alternatives/Issues/Drivers	Flood Side Intermediate Marsh
Subsidence	-
Sea Level Rise	-
Runoff	-
Salinity Impacts	+/-

Alternatives/Issues/Drivers	Flood Side Intermediate Marsh
Wave Action	-
Storm Surge	-
Vegetative Invasive Species	-
Herbivory	-
Hydrology (water table; wet/dry days; soil inundation)	+/-
Topography (elevation)	+/-

Key to Cell Codes: - = Negative Impact/Decrease
+ = Positive Impact/Increase
+/- = Duration Dependent

2.2. Sources of Uncertainty and Associated Risks

A fundamental tenet underlying adaptive management is decision making and achieving desired project outcomes in the face of uncertainties. There are many uncertainties associated with restoration of the coastal systems. The project delivery team (PDT) identified the following uncertainties during the planning process.

- Climate change, such as relative sea level rise, drought conditions, and variability of tropical storm frequency, intensity, and timing
- Subsidence and water level trends
- Uncertainty relative to achieving ecological success
- Long-term sustainability of project benefits
- Adaptability

2.3. Adaptive Management Evaluation

As part of PIER 36, the Milton Island project site was evaluated and planned through the AEP to develop a project with minimal risk and uncertainty. The items listed below were incorporated into the mitigation project implementation plan and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) plans to minimize project risks.

- Detailed planting guidelines for intermediate marsh
- General monitoring guidelines for project success
- Specified success criteria (i.e., mitigation targets)
- Invasive species control
- Supplementary plantings as necessary (contingency)
- Corrective actions to meet topographic success as required (contingency)

Subsequently, as part of the adaptive management planning effort the Milton Island project features were re-evaluated against the CEM and sources of uncertainty and risk were identified to determine if there was any need for additional adaptive management actions.

Based on the uncertainties and risks associated with the project implementation the following contingency/adaptive management actions have been identified to be implemented if needed to ensure the required AAHUs are met:

Potential Action #1. Additional vegetative plantings as needed to meet identified success criteria.
Potential Action #2. Marsh renourishment by adding sediment to obtain elevations necessary for marsh establishment and maintenance.
Potential Action #3. Repair or modification of the shoreline restoration feature as necessary to reduce Lake Pontchartrain wave and salinity influences on the marsh restoration feature.
Potential Action #4. Potential need to adjust the gapping in the western permanent dike in the future to maintain sufficient marsh hydrology and connectivity.

Actions 1-3 are not recommended as separate adaptive management actions since they are already built into the mitigation plan and success criteria identified in Appendix C. In the event that monitoring reveals the project does not meet the identified vegetation or topographic success criteria, additional plantings or construction activities would be conducted under the mitigation project. Specific measures to implement Action 2, if determined necessary to achieve project benefits, would be coordinated with the NFS and other agencies to determine the appropriate course of action. If it is determined that the project benefits are significantly compromised because of improper elevation, additional fill material may need to be pumped into the project area. Action 2 is obviously a potentially very costly action. Before implementing such an action, the Corps would coordinate with the NFS and other agencies to determine if other actions, such as purchasing of credits in a mitigation bank or building additional marsh mitigation elsewhere, would be more cost-effective options to fulfill any shortfalls in the overall project success. The USACE would be responsible for performing any necessary corrective actions, but the overall cost would be shared with the NFS according to the project cost-share agreement. Action 4 has not been addressed in the implementation or OMRR&R plan and should be considered as a separate potential adaptive management action in the future. The estimated adaptive management cost for the Milton Island mitigation project is approximately $200,000.

The USACE would be responsible for the proposed mitigation construction and monitoring until the initial success criteria are met. Initial construction and monitoring would be funded in accordance with all applicable cost-share agreements with the NFS. The USACE would monitor (on a cost-shared basis) the completed mitigation to determine whether additional construction, invasive/nuisance plant species control, and/or plantings are necessary to achieve initial mitigation success criteria. Once the USACE determines that the mitigation has met the initial success criteria, monitoring would be performed by the NFS as part of its OMRR&R obligations. If after meeting initial success criteria, the mitigation fails to meet its intermediate and/or long-term ecological success criteria, the USACE would consult with other agencies and the NFS to determine the appropriate management or remedial actions required to achieve ecological success. The USACE would retain the final decision on whether or not the project's required mitigation benefits are being achieved and whether or not remedial actions are required. If structural changes are deemed necessary to achieve ecological success, the USACE would implement appropriate adaptive management measures in accordance with the contingency plan and subject to cost-sharing requirements, availability of funding, and current budgetary and other guidance.

APPENDIX E

January 2012
Version 1.1

Wetland Value Assessment Methodology
Coastal Marsh Community Model

The Wetland Value Assessment (WVA) methodology is a quantitative habitat-based assessment methodology developed for use in determining wetland benefits of project proposals submitted for funding under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). The WVA quantifies changes in fish and wildlife habitat quality and quantity that are expected to result from a proposed wetland restoration project. The WVA operates under the assumption that optimal conditions for fish and wildlife habitat within a given coastal wetland habitat 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 community models developed specifically for each habitat type. The results of the WVA, measured in Average Annual Habitat Units (AAHUs), can be combined with cost data to provide a measure of the effectiveness of a proposed project in terms of annualized cost per AAHU gained. In addition, the WVA methodology provides an estimate of the number of acres benefited or enhanced by the project and the net acres of habitat protected/restored.

The WVA was developed by the CWPPRA Environmental Work Group (EnvWG) after the passage of CWPPRA in 1990. The EnvWG includes members from each agency represented on the CWPPRA Task Force and members of the Academic Advisory Group (AAG). The WVA is a modification of the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 1980). HEP has been widely used by the Fish and Wildlife Service (FWS) and other Federal and State agencies in evaluating the impacts of development projects on fish and wildlife resources. A notable difference exists between the two methodologies, however, in that HEP generally uses a species-oriented approach, whereas the WVA utilizes a community approach.

The WVA has been developed for application to several habitat types along the Louisiana coast and community models have been developed for fresh marsh, intermediate marsh, brackish marsh, saline marsh, swamp, barrier islands, and barrier headlands. Habitat assessment models for bottomland hardwoods and coastal chenier/ridge habitat were developed outside of CWPPRA and are periodically used by the EnvWG. The WVA models have been developed for determining the suitability of Louisiana coastal wetlands in providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. The models have been designed to function at a community level and therefore attempt to define an optimum combination of habitat conditions for <u>all</u> fish and wildlife species utilizing a given habitat type. Each model consists of 1) a list of variables that are considered important in characterizing fish and wildlife habitat, 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 Suitability Index for each variable into a single value for habitat quality; that single value is referred to as the Habitat Suitability Index, or HSI.

The output of each model (the HSI) is assumed to have a linear relationship with the suitability of a coastal wetland system in providing fish and wildlife habitat.

Note: This document has been primarily developed to guide the application of the coastal marsh community models for CWPPRA. However, the guidance it provides may be used by other restoration programs (e.g., Louisiana Coastal Area, U.S. Army Corps of Engineers Civil Works) recognizing the distinction between projects that result in net habitat gain (i.e., restoration), net loss (i.e., development), or no net loss (i.e., mitigation). Furthermore, for development and mitigation projects, it should be recognized that the role and jurisdiction of specific groups may vary from program to program. In addition, these models may be used to calculate the number of average annual habitat units lost to determine the potential impacts and adequately compensate (i.e., mitigation) for those impacts.

The above information is the introduction to the WVA methodology as detailed in the WVA application document. The Point of Contact is:

Kevin J. Roy
U.S. Fish and Wildlife Service
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506
(337) 291-3120
kevin_roy@fws.gov

Wetland Value Assessment Project Information Sheet

April 30, 2014

Prepared for:
U.S. Army Corps of Engineers

Prepared by
U.S. Fish and Wildlife Service

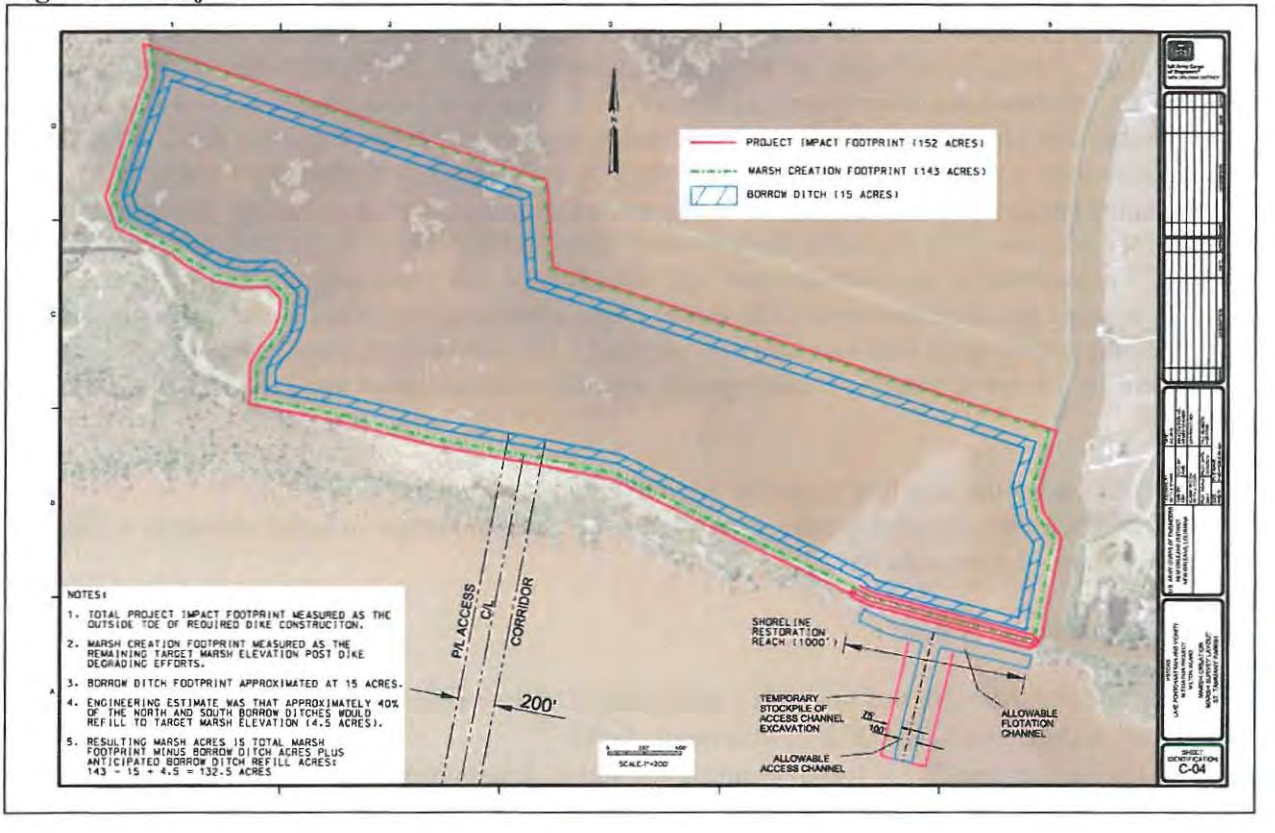
Project Name: LPV HSDRRS Mitigation- Milton Island Marsh Creation

Mitigation Potential: 95% = 0.33 AAHUs/acre; 35% = 0.41 AAHUs/ acre

Project Type(s): Intermediate marsh restoration project

Project Area: The Milton Island marsh is located along the north shore of Lake Pontchartrain, west of the Tchefuncta River, in St. Tammany Parish.

Figure 1. Project Area



Project Goal: Restore a sufficient amount of intermediate marsh habitat within the Milton Island Marsh project area to mitigate for the 45.7 AAHUs of non-refuge, fresh and intermediate marsh habitat impacted by the LPV HSDRRS. The proposed marsh site initial target elevation for dredge fill would be elevation +2.0' to +2.5' NAVD88, to ultimately hit a target marsh elevation of +1.0 within the project life.

The proposed marsh layout results in an open water area immediately north and adjacent to the marsh footprint. The entire northern retention dike will be degraded to marsh elevation in year two (2), allowing immediate access for fish and wildlife between the open water and marsh platforms. The created marsh will provide an additional expanse of shoreline buffer for other interior swamp and marsh habitats. As such, construction of trenasses will not be proposed within the marsh platform. It is anticipated that natural sloughs and/or access corridors will develop over the project life.

A final element of the project construction will be the restoration of a 1,000 foot reach of the lake shoreline which has breached, allowing lake waters to freely enter the project footprint. An earthen berm, with a 25 foot crown width, 1:4 foot (rise to run) side slope, at elevation +5.0' NAVD88 is proposed. An earthen-filled bag system, which will accommodate planting of shoreline vegetation, will be considered as a viable shoreline protection alternative, and included in the construction cost estimate. It is estimated that the footprint of the shoreline restoration would result in 2 acres (rounded up from 1.7 acres) of impacted water bottoms.

The total project area is 152 acres which includes the containment dike footprint and the shoreline berm feature. Of that area 7 acres are existing containment dikes, leaving 145 acres within the area of analysis. Within that 145-acre area, as much as 15 acres would be excavated to construct a new containment dike along the northern perimeter and strengthen and enlarge existing dikes along the other three sides. Corps Engineering Division estimated that approximately 40 percent of the northern and southern borrow ditches, or 4.5 acres, would refill to marsh elevation. This is assuming some of the material from degrading the perimeter dikes would settle to target elevation. Two (2) acres (1.7 acres rounded up) of open water will be converted to a vegetated shoreline berm and tie into the existing lakefront shoreline. These acres were subtracted from the 145-acre area of analysis for the future with project land loss analysis, yielding a 143 acre potential benefit area (132.5 acres of marsh and 10.5 acres of water). The mitigation potential was calculated using the 145-acre area of analysis.

The calculation for the area that would be filled to target elevation is:
143 acres of benefit – 15 acres borrow excavated + 4.5 acres of borrow at target elevation = 132.5 acres of marsh (10.5 acres of water)

Project Construction Schedule:

TY0 – Dec 2015-Mar 2016: Physical Construction: Dredge, Dikework, etc. (120 days)
TY1 – 2016 (Mar 2016-Mar 2017: Settlement (1-yr))
TY2 – 2017 (Mar-Apr 2017: Initial Planting (60 days) & gapping)
May-Aug 2017: NCC Project after Initial Planting complete (per MVD guidance); process takes 4 months per LPV/WBV project teams experience with NFS

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 WVA models assess the suitability of each habitat type for providing resting, foraging, breeding, and nursery habitat to a diverse assemblage of fish and wildlife species. This standardized, multi-species, habitat-based methodology facilitates the assessment of project-induced impacts on fish and wildlife resources. The coastal marsh WVA model consists of six variables: 1) percent of wetland area covered by emergent vegetation; 2) percent of open water area covered by aquatic vegetation; 3) marsh edge and interspersion; 4) percent of open water area $\leq$ 1.5 feet deep in relation to marsh surface; 5) salinity; and 6) aquatic organism access.

Values for those 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 habitat suitability index (HSI) 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).

V1 - Emergent Vegetation

Existing – The project area is classified as open water as determined by FWS analysis of 2012 and 2013 aerial photography. Chabreck and Linscombe (1997) identified fresh marsh as occurring within the project area, while Sasser et al. (2007) classified the area as intermediate marsh.

The two major soil types in the project area are classified by Trahan (1987) as Allemands muck and Maurepas muck. Both soil types are very poorly drained, occurring within former freshwater marshes and swamps.

Land Loss Data

To calculate loss rates USGS evaluated a 9,848 acre extended boundary (Figure 2). USGS determined the 1985-2010 rate from a linear regression that is depicted in Figure 3. The loss rate

(-0.28%/yr) was calculated from percent land values (acres) from that 1984-2010 timeframe. USGS excluded some data points from the regression analysis due to low and high water events.

USGS's percent is percent of the total area (marsh + water). The FWS percent loss rate was determined as a percent of the 1985 land area and also included all data points provided. Typically, in WVAs and other such evaluations, we have used the FWS method as there might in some cases be non-wetlands within the polygon and then use of the total polygon area would result in obvious errors. Therefore, the FWS method has been the standard method used in the past. Based on the data provided by USGS, the FWS determined a loss rate of -0.28% per year. For FWP it is assumed that the loss rate would be reduced by 50% until a point when post-construction accretion exceeds 10 inches above the created marsh platform; and therefore, a loss rate of -0.19 acres per year (0.28%/2*132.5) was applied under the FWP scenario.

Figure: 2. USGS Extended Boundary for Milton Island Marsh - polygon 05

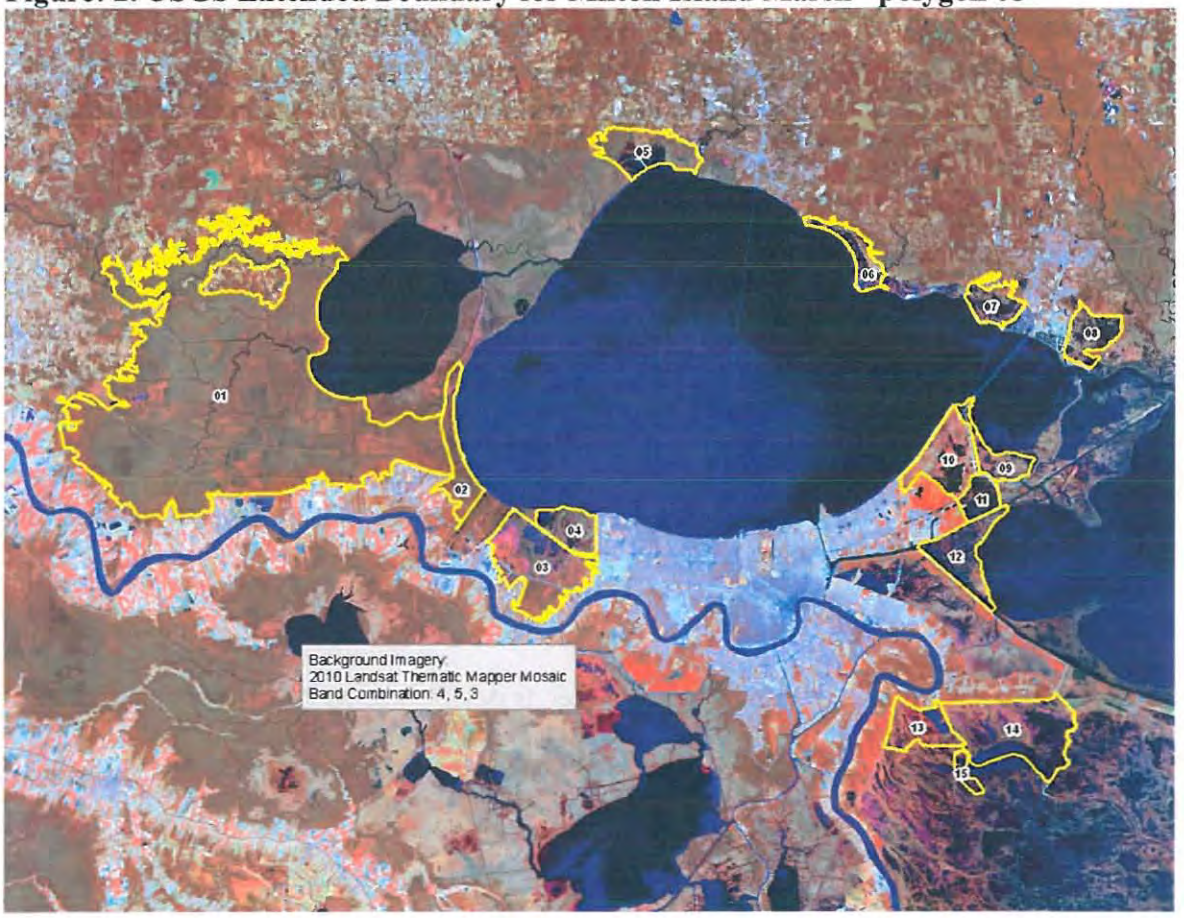
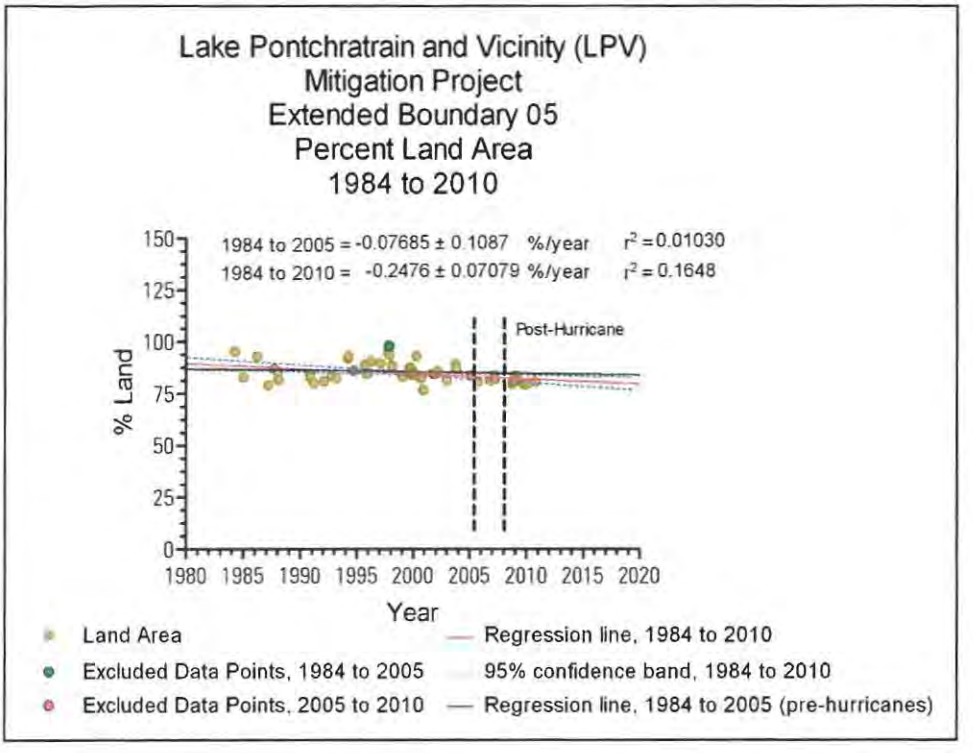


Figure3. Land loss rate determined by USGS



FWOP

Loss Rate: -0.28% /year (FWS LLR, 0 acres/yr due to no land being in the PA polygon)

TY0-50	Marsh	0 acres (0%)	TY0 = 2015
	Water	145 acres (100%)	

FWP

For use in the WVA models, projected Relative Sea Level Rise (RSLR) estimates were developed according to EC 1165-2-211, using a nearby reference gage (Mandeville gage) in the Lake Pontchartrain and Vicinity mitigation watershed. The reference gage was used to develop low, intermediate and high RSLR estimates. Based on MVD planning guidance, the Intermediate RSLR scenario was used for the purpose of WVA modeling for alternative comparison. Analysis of USGS landloss data indicates that land change is still occurring under the low SLR scenario. Therefore, the FWS applied the intermediate RSLR scenario starting from the last year of USGS landloss data, 2010 (Table 1, Figure 4).

Created marsh platform has limited marsh function until settlement, breaching of retention dikes, and vegetation occurs. Land loss is applied at the time of marsh creation. The rate is 50% of the background loss rate until TY40 when at least 10 inches of water is assumed to cover the marsh and, therefore, 10 inches of post-construction accretion is assumed to occur. At that time background loss rate is resumed. A settlement period of 5 years was also applied based on the

Corps settlement analysis that indicates 75% of settlement occurs in the first 5 years. This assumption will delay when the loss rate changes back to 100% (YR, Settlement curves). Percent loss rate is of the entire project area acreage.

Table 1: Future-With-Project Elevations (TY0-5) Based on Settlement and FWS' RSLR Analysis.

	Year	Fill +1 Elevation	Fill +1.5 Elevation	Fill +2 Elevation	Fill +2.5 Elevation
2016.00	0.0000	1	1.5	2	2.5
2016.25	0.2500	0.86	1.37	1.84	2.32
2016.50	0.5000	0.82	1.32	1.79	2.26
2017.00	1.0000	0.77	1.26	1.72	2.17
2018.00	2.0000	0.67	1.13	1.55	2.01
2021.00	5.0000	0.52	0.92	1.29	1.73

Research by Nyman et al. (1993) suggests that coastal marshes may undergo rapid degradation and conversion to open water beyond a critical rate of submergence/inundation. Louisiana Coastal Protection and Restoration Authority (CPRA) personnel working to model marsh loss for the 2012 Louisiana Coastal Master Plan have used statewide Coastal Reference Monitoring System data to develop plant productivity vs inundation (i.e., accretion deficit) relationships. From those relationships, they identified inundation ranges at the primary production low-end points to predicting onset of abrupt marsh collapse (Coastal Protection and Restoration Authority of Louisiana 2012). In this study, the median value for intermediate marsh (34.4 cm) was considered to predict onset of abrupt marsh collapse; however, marsh collapse does not occur under the intermediate RSLR scenario.

Loss Rate: -0.19 acres/year (FWS LLR)

TY0	Marsh	0 acres (0%)
	Water	145 acres (100%)
TY1	Marsh	0 acres (assume 0% credit of the remaining 132.5-ac marsh platform)
	Water	12.7 acres (7.5%)
TY2	Marsh	13.2 acres (9%) (assume 10% credit of the remaining marsh platform for gapping/planting)
	Water	12.9 acres (9%, borrow & marsh loss)
TY3	Marsh	33.0 acres (23%) (assume 25% credit of remaining marsh platform)
	Water	13.1 acres (9%)
TY5	Marsh	131.5 acres (91% - assume full credit of remaining marsh platform)
	Water	13.5 acres (9%)
TY6	Marsh	131.2 acres (92%)
	Water	13.8 acres (9.5%)
TY40	Marsh	117.7 acres (82%)
	Water	27.3 acres (19%)
TY50	Marsh	110.1 acres (76%)

Water	34.9 acres (24%)

V2 – Submerged Aquatic Vegetation (SAV)

The project area is primarily open water with depths ranging from approximately 0.5 to 3 feet (see Milton Island Marsh Raw WVA Data.xlsx). During a May 17, 2011, HSDRRS WVA field trip it was estimated that approximately 55% of the open water had SAV cover. It is assumed that this value will decrease over the 50 year project life as open water areas continue to deepen over time. Also the shoreline has breached opening the area to the lake. Increased turbidity is expected under the FWOP. The Corps RSLR data was applied to FWOP conditions.

FWOP

TY0	55%	
TY1	55%	
TY3	55%	
TY5	55%	
TY6	55%	
TY40	35%	Assume decrease due to subsidence and continued deepening of open Water. Water level increases 0.34 ft by TY 40.
TY50	15%	Assume 70% decrease due to subsidence and continued deepening of open Water. Water level increases 0.44 ft by TY 50.

FWP

For the HSDRRS Mitigation alternatives analysis the interagency team developed the following assumptions for a 50 year project life:

TY0	55%
TY1	0%
TY3	0%
TY5	55% (baseline)
TY6	63% (increase baseline X 15%)
TY40	50% (assume decrease as open water areas deepen)
TY50	28% (decrease baseline X 50%)

V3 – Interspersion

The marsh creation cell is 100% open water. For the HSDRRS Mitigation alternatives analysis it is assumed that marsh creation would occur within the entire cell and, therefore, no marsh nourishment would be credited. Therefore, the site will be classified as Class 5 for FWOP.

FWOP

TY0-50	100% Class 5

FWP

The created marsh will be considered a "carpet marsh" at TY3 (i.e., 100% Class 3) transitioning to a Class 1 by TY6.

TY0	100% Class 5	
TY1	100% Class 5	
TY2	100% Class 3	
TY3	100% Class 3 ("carpet marsh")	
TY5	90% Class 3/10% Class 1 (accounting for north dike degradation & portions of the borrow canal)	
TY6	90% Class 3/10% Class 1	
TY40	100% Class 1	TY 40 = 81% marsh/19% water (boarder line class 1*)
TY50	100% Class 2	Assume would drop to a class 2 with 76% marsh/24% water

* USGS Interspersion tool assumes marsh areas >82% marsh = Class 1

V4 – Shallow Open Water Habitat

Water depths were taken throughout the project site during a May 17, 2011 field investigation. Refer to Milton Island Marsh Raw WVA Data.xlsx for existing water depth and adjusted water depth information.

CRMS6209-H01 Average Water Elevation (ft NAVD88) - 1/2010-1/2011 = 0.74

Lake Pontchartrain at Mandeville (85575) 13:00 hours 4/14/2011 0.9 NAVD88

0.16 ft above average, therefore, subtract 0.16 to measured water depths to bring to average water depths

19% of the project area is currently ≤ 1.5 ft depth.

FWOP

Table 2: FWOP Increases in Water Levels Under Intermediate SLR Scenario.

Med RSLR WL increase (ft)	TY	Year	FWOP Percent OW </= 1.5 ft
0.03	0	2015	18.8
0.03	1	2016	18.8
0.04	2	2017	18.8
0.05	3	2018	18.8
0.05	4	2019	18.8
0.06	5	2020	18.8
0.07	6	2021	18.8
0.34	40	2055	14.5
0.44	50	2065	14.0

FWP

TY0	19%	
TY1	100%	including borrow area
TY2	100%	
TY3	100%	
TY5	100%	assume the 1% marsh lost would become shallow open water
TY6	100%	
TY40	90%	assume that marsh lost would convert to shallow open water and that shallow open water (i.e., $\leq$ 1.5 feet) would deepen over time (i.e., to > 1.5 feet)
TY50	83%	assume 1/6 of shallow open water (marsh loss) becomes deep based on 0.44 feet of water level rise

V5 – Salinity

Average salinity during the growing season information was obtained from the Guste Island Mitigation Bank (located east of Milton Island Marsh) project. It is not expected that the project will affect salinity because of the tidal exchange with adjacent Lake Pontchartrain.

FWOP & FWP

TY0-50	3.0 ppt

V6 – Fish Access

All of the study area is accessible and the access points are open and unobstructed.

FWOP

TY0-50	1.0	open system

FWP

TY0	1.0	open system
TY1	0.0001	solid plug
TY2	0.8	open system resulting from gapping and degrading dikes, but applied some reduced suitability due to settlement curves projecting fill elevations being +2.0, trenasses are not proposed
TY3	0.8	open system, limited access due to elevations
TY5	0.9	open system, 75 % settlement has occurred at TY 5
TY6	1.0	open system
TY40	1.0	open system
TY50	1.0	open system

Literature Cited

Chabreck, R. H. and G. Linscombe. 1997. Vegetation type map of the Louisiana coastal marshes. Baton Rouge, LA. Louisiana Department of Wildlife and Fisheries.

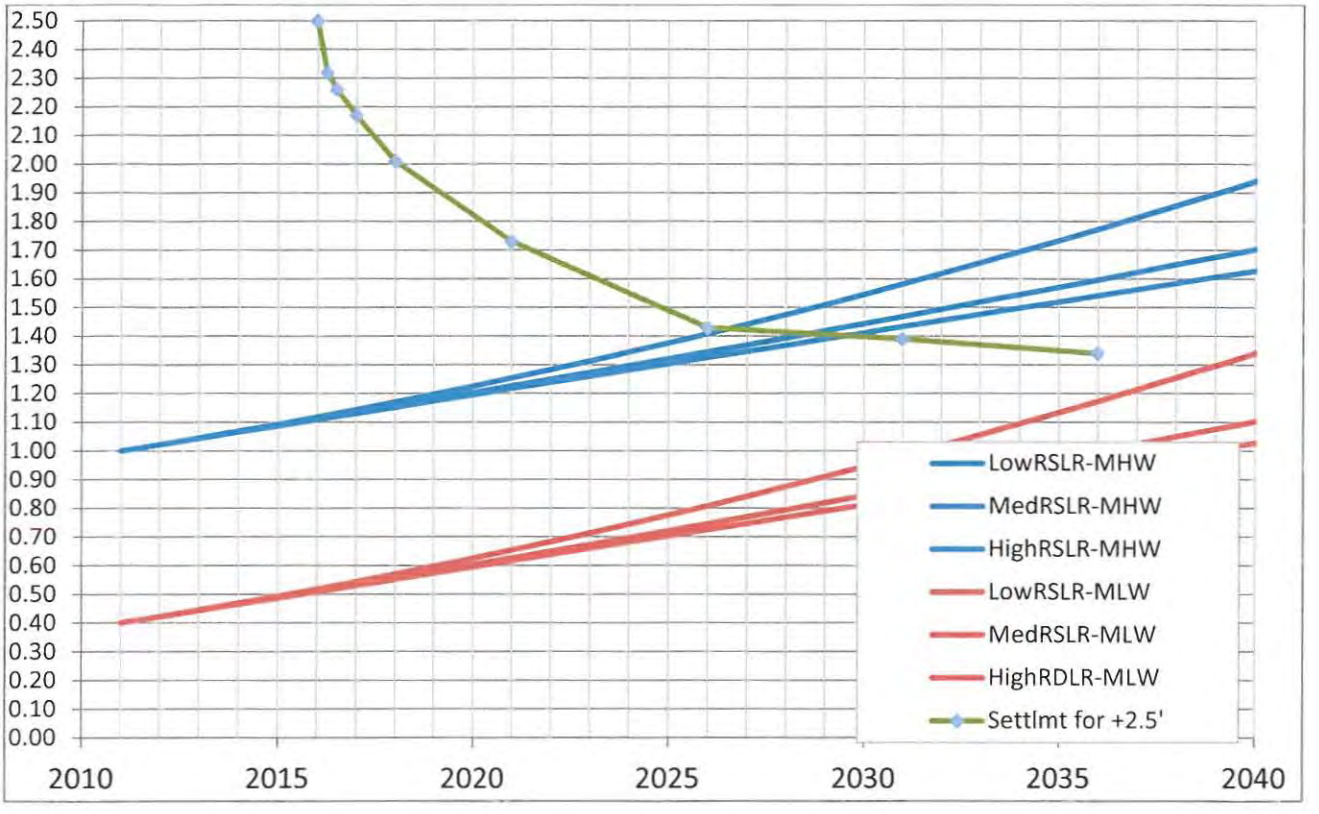
Nyman, J.A., R.D. Delaune, H.H. Roberts, and W.H. Patrick Jr. 1993. Relationship between vegetation and soil formation in a rapidly submerging coastal marsh. Marine Ecology Progress Series 96:269-279.

O'Neil, T. 1949. The muskrat in Louisiana coastal marshes: New Orleans, Louisiana Wildlife and Fisheries Commission, 28 p.

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

Trahan, Larry. 1990. Soil Conservation Service Soil Survey of St. Tammany Parish, Louisiana. United States Department of Agriculture, Soil Survey Service. March 1990.

Appendix: Figure of Corps' Settlement Data Compared to FWS RSLR Analysis



WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Fresh/Intermediate Marsh

Project: **Milton Island IM Med SLR**

Project Area:	145
% Fresh	
% Intermediate	100

Condition: Future Without Project

Variable		TY	0	TY	1	TY	6
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	0	0.10	0	0.10
V2	% Aquatic	55	0.60	55	0.60	55	0.60
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.10
	Class 2	0		0		0	
	Class 3	0		0		0	
	Class 4	0		0		0	
	Class 5	100		100		100	
V4	%OW <= 1.5ft	19	0.31	19	0.31	19	0.31
V5	Salinity (ppt)						
	fresh	0	0.90	0	0.90	0	0.90
	intermediate	3		3		3	
V6	Access Value						
	fresh	0.0000	1.00	0.0000	1.00	0.0000	1.00
	intermediate	1.0000		1.0000		1.0000	
	Emergent Marsh HSI =		**0.23**	**EM HSI =**	**0.23**	**EM HSI =**	**0.23**
	Open Water HSI =		**0.62**	**OW HSI =**	**0.62**	**OW HSI =**	**0.62**

Project: Milton Island IM Med SLR

FWOP

Variable		TY	50	TY		TY	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10				
V2	% Aquatic	15	0.24				
V3	Interspersion	%		%		%	
	Class 1	0	0.10				
	Class 2	0					
	Class 3	0					
	Class 4	0					
	Class 5	100					
V4	%OW <= 1.5ft	14	0.26				
V5	Salinity (ppt)						
	fresh	0	0.90				
	intermediate	3					
V6	Access Value						
	fresh	0.0000	1.00				
	intermediate	1.0000					
	EM HSI =		**0.23**	**EM HSI =**		**EM HSI =**	
	OW HSI =		**0.36**	**OW HSI =**		**OW HSI =**	

Project: Milton Island IM Med SLR

FWOP

Variable		TY		TY		TY	
		Value	SI	Value	SI	Value	SI
V1	% Emergent						
V2	% Aquatic						
V3	Interspersion	%		%		%	
	Class 1						
	Class 2						
	Class 3						
	Class 4						
	Class 5						
V4	%OW <= 1.5ft						
V5	Salinity (ppt)						
	fresh						
	intermediate						
V6	Access Value						
	fresh						
	intermediate						
		EM HSI =		EM HSI =		EM HSI =	
		OW HSI =		OW HSI =		OW HSI =	

WETLAND VALUE ASSESSMENT COMMUNITY MODEL

Fresh/Intermediate Marsh

Project: Milton Island IM Med SLR

Project Area:	145
% Fresh	
% Intermediate	100

Condition: Future With Project

Variable		TY	0	TY	1	TY	2
		Value	SI	Value	SI	Value	SI
V1	% Emergent	0	0.10	0	0.10	9	0.18
V2	% Aquatic	55	0.60	0	0.10	0	0.10
V3	Interspersion	%		%		%	
	Class 1	0	0.10	0	0.10	0	0.40
	Class 2	0		0		0	
	Class 3	0		0		100	
	Class 4	0		0		0	
	Class 5	100		100		0	
V4	%OW <= 1.5ft	19	0.31	100	0.60	100	0.60
V5	Salinity (ppt)						
	fresh	0	0.90	0	0.90	0	0.90
	intermediate	3		3		3	
V6	Access Value						
	fresh	0.0000	1.00	0.0000	0.20	0.0000	0.84
	intermediate	1.0000		0.0001		0.8000	
	Emergent Marsh HSI =		0.23	EM HSI =	0.20	EM HSI =	0.33
	Open Water HSI =		0.62	OW HSI =	0.21	OW HSI =	0.27

Project: Milton Island IM Med SLR

FWP

Variable		TY	3	TY	5	TY	6
		Value	SI	Value	SI	Value	SI
V1	% Emergent	23	0.31	91	0.92	91	0.92
V2	% Aquatic	0	0.10	55	0.60	63	0.67
V3	Interspersion	%		%		%	
	Class 1	0	0.40	10	0.46	10	0.46
	Class 2	0		0		0	
	Class 3	100		90		90	
	Class 4	0		0		0	
	Class 5	0		0		0	
V4	%OW <= 1.5ft	100	0.60	100	0.60	100	0.60
V5	Salinity (ppt)						
	fresh	0	0.90	0	0.90	0	0.90
	intermediate	3		3		3	
V6	Access Value						
	fresh	0.0000	0.84	0.0000	0.92	0.0000	1.00
	intermediate	0.8000		0.9000		1.0000	
		EM HSI =	0.43	EM HSI =	0.87	EM HSI =	0.88
		OW HSI =	0.27	OW HSI =	0.66	OW HSI =	0.72

Project: Milton Island IM Med SLR

FWP

Variable		TY	40	TY	50	TY	
		Value	SI	Value	SI	Value	SI
V1	% Emergent	81	0.83	76	0.78		
V2	% Aquatic	63	0.67	28	0.35		
V3	Interspersion	%		%		%	
	Class 1	100	1.00	0	0.60		
	Class 2	0		100			
	Class 3	0		0			
	Class 4	0		0			
	Class 5	0		0			
V4	%OW <= 1.5ft	90	1.00	83	1.00		
V5	Salinity (ppt)						
	fresh	0	0.90	0	0.90		
	intermediate	3		3			
V6	Access Value						
	fresh	0.0000	1.00	0.0000	1.00		
	intermediate	1.0000		1.0000			
		EM HSI =	0.88	EM HSI =	0.80	EM HSI =	
		OW HSI =	0.79	OW HSI =	0.54	OW HSI =	

AAHU CALCULATION - EMERGENT MARSH

Project: Milton Island IM Med SLR

Future Without Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0.0001	0.23	0.00	
1	0.0001	0.23	0.00	0.00
6	0.0001	0.23	0.00	0.00
50	0.0001	0.23	0.00	0.00
Max=	50		AAHUs =	0.00

Future With Project			Total	Cummulative
TY	Marsh Acres	x HSI	HUs	HUs
0	0.0001	0.23	0.00	
1	0.0001	0.20	0.00	0.00
2	13.2	0.33	4.31	1.87
3	33	0.43	14.09	8.86
5	131.5	0.87	113.88	113.55
6	131.2	0.88	114.93	114.41
40	117.7	0.88	103.15	3707.42
50	110.1	0.80	88.27	956.12
Max=	50		AAHUs	98.04

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Emergent Marsh AAHUs	=	98.04
B. Future Without Project Emergent Marsh AAHUs	=	0.00
Net Change (FWP - FWOP)	=	**98.04**

AAHU CALCULATION - OPEN WATER

Project: Milton Island IM Med SLR

Future Without Project			Total	Cummulative
TY	Water Acres	x HSI	HUs	HUs
0	145	0.62	90.51	
1	145	0.62	90.51	90.51
6	145	0.62	90.51	452.57
50	145	0.36	51.57	3125.87
Max=	50		AAHUs =	73.38

Future With Project			Total	Cummulative	
TY	Water Acres	x HSI	HUs	HUs	ck
0	145	0.62	90.51		
1	12.7	0.21	2.68	37.49	
2	12.9	0.27	3.52	3.10	
3	13.1	0.27	3.58	3.55	
5	13.5	0.66	8.93	12.45	145
6	13.8	0.72	9.93	9.42	145
40	27.3	0.79	21.54	529.52	145
50	34.9	0.54	18.87	205.16	145
Max=	50		AAHUs	16.01	

NET CHANGE IN AAHUs DUE TO PROJECT		
A. Future With Project Open Water AAHUs	=	16.01
B. Future Without Project Open Water AAHUs	=	73.38
Net Change (FWP - FWOP)	=	-57.37

TOTAL BENEFITS IN AAHUs DUE TO PROJECT		
A. Emergent Marsh Habitat Net AAHUs	=	98.04
B. Open Water Habitat Net AAHUs	=	-57.37
Net Benefits=(2.1xEMAAHUs+OWAAHUs)/3.1		47.91

APPENDIX F

CLEAN WATER ACT

SECTION 404(b)(1) PUBLIC NOTICE AND EVALUATION

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

April 14, 2014

Regional Planning and
Environment Division South
Environmental Compliance Branch

CLEAN WATER ACT, SECTION 404
PUBLIC NOTICE

DRAFT TIERED INDIVIDUAL ENVIRONMENTAL REPORT

PREPARED TO COMPLEMENT:
PROGRAMMATIC INDIVIDUAL ENVIRONMENTAL REPORT 36

MILTON ISLAND MARSH RESTORATION PROJECT
SAINT TAMMANY PARISH, LOUISIANA

PIER 36, TIER 1, MILTON ISLAND

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District, is evaluating the potential impacts associated with the proposed restoration of intermediate marsh at Milton Island. The marsh restoration project is located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge in Saint Tammany Parish as shown in the attached figure. The proposed intermediate marsh restoration has been designed to partially compensate for unavoidable fresh and intermediate marsh impacts resulting from the Lake Pontchartrain and Vicinity component of the Hurricane Storm Damage Risk Reduction System (HSDRRS).

PROJECT AUTHORITY: The authority for the HSDRRS and its associated compensatory mitigation was provided as part of a number of hurricane and storm damage risk reduction supplemental appropriations. These authorizations and appropriations included funding for modifications and improvements to several existing USACE projects in southeastern Louisiana, including the Lake Pontchartrain and Vicinity project, which is located on the east bank of the Mississippi River in Saint Charles, Jefferson, Orleans, and Saint Bernard Parishes.

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the Lake Pontchartrain and Vicinity project and restoration of project features to design elevations at 100 percent Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies)

authorizes construction of authorized a 100-year level of protection; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations.

PROJECT PURPOSE: The purpose of the proposed action is to compensate for habitat losses to non-refuge, fresh and intermediate marsh incurred during construction of the Lake Pontchartrain and Vicinity component of the HSDRRS. The proposed mitigation would replace the lost functions and services of the impacted habitat through restoration activities designed to create, increase, and improve the habitat functions or services at the specific mitigation site.

DESCRIPTION OF ACTION: The proposed action (Milton Island Marsh Restoration project) is to restore an intermediate marsh designed to partially compensate for unavoidable fresh and intermediate marsh impacts resulting from the Lake Pontchartrain and Vicinity component of the Hurricane Storm Damage Risk Reduction System (HSDRRS). The HSDRRS provides hurricane storm surge risk reduction to heavily populated areas of Greater New Orleans. This would involve the restoration of an intermediate marsh located in a shallow lake immediately adjacent to Lake Pontchartrain that was historically separated from Lake Pontchartrain. The shallow lake recently became connected to Lake Pontchartrain when the land separating the two water bodies breached. The approximate 1,000-foot wide breach would be closed by construction of a berm protected by an earthen-filled bag system which would accommodate planting of shoreline vegetation. The proposed intermediate marsh restoration area north of the breach would encompass 152 acres, not including the 115-acre borrow source for fill material in Lake Pontchartrain. Within the 152-acre project area, 7 acres are existing dikes partially surrounding the perimeter and 2 acres where the southern shoreline protection feature is proposed. The remaining 143 acres are currently shallow open water that would be filled with dredged material to develop into marsh. Up to approximately 15 acres of interior borrow ditches would be excavated to provide material to build and improve dikes to contain the dredged material. Only about 4.5 acres of the 15 acres of borrow ditches are expected to become marsh, leaving about 10.5 acres un-vegetated. Therefore, the calculated amount of marsh that would be developed is 132.5 acres.

A hydraulic cutterhead dredge would be used to remove approximately 1,000,000 cubic yards of dredged material to the proposed marsh creation site. A primary borrow site of 60 acres should accommodate this requirement. However, to assure adequate borrow material is available, a 55-acre secondary borrow pit adjacent to the primary area is proposed. Borrow excavation would not be allowed greater than 10 feet below the existing lake bottom, which currently ranges from 9 to 10 feet in depth, except that a tolerance of 1-feet below target elevation would be allowed to account for inaccuracies in the dredging process. A pipeline corridor has been designated from the borrow area to the shoreline, with no allowances for excavation. The dredge pipeline would be floated and/or submerged within this corridor. A second access corridor with allowable flotation excavation would be used to offload and on-load equipment as necessary, and transport personnel to and from the worksite.

The initial elevation for dredge fill would be to approximate elevation +2.25 feet NAVD88, to ultimately result in a target marsh elevation of between +1.5 and +1.0 feet NAVD88. Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. Existing retention features (old dikes) exist along the east, west, and south perimeters

of the project footprint, except for the 1,000 foot reach described above. Rehabilitation of these existing dikes would be accomplished as necessary to retain the dredge material slurry. Approximately 5,600 linear feet of new retention dike would be required along the northern limit of the project footprint. The dike would be built with borrow material obtained within the marsh creation footprint to an elevation +4.5 feet NAVD88 and with a 5-foot crown width. Spill boxes and/or weirs would be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the marsh creation area for approximately one year after construction, when the perimeter dikes are breached and degraded. The dike along the north side of the marsh creation area would be degraded approximately one year after project construction, upon settlement and dewatering of the created marsh platform. The existing western dike would be gapped approximately one year after project construction to allow interaction with the existing marsh and scrub/shrub wetlands to the west of the project area. The gaps would be spaced with care being taken to locate gaps at existing natural bayous, canals, or other openings. Two to three gaps would be placed in the eastern dike to allow water exchange with the existing canal located to the east of the project area. The southern dike would remain to provide protection from Lake Pontchartrain waves and water intrusion. The marsh footprint would be planted upon satisfactory settlement and dewatering of the dredged material, approximately 1 year after initial construction. A detailed monitoring and adaptive management plan has been developed to insure project success.

NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTATION: The draft TIER has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR §1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2, Procedures for Implementing NEPA. These regulations allow Federal agencies, in consultation with the Council on Environmental Quality, to implement alternative arrangements for complying with NEPA in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS). The CEMVN implemented alternative arrangements on March 13, 2007, under the provisions of the applicable regulations. This process was implemented in order to expeditiously complete the environmental analyses for the HSDRRS. The alternative arrangements can be found at www.nolaenvironmental.gov.

The general impacts of the proposed action and alternatives to the proposed action were analyzed and disclosed in Programmatic Individual Environmental Report # 36 which can be found at www.nolaenvironmental.gov. The draft TIER analyzed the specific impacts resulting from the action described above.

STATE WATER QUALITY CERTIFICATION: The proposed action would impact Waters of the U.S. thus requiring a Section 401 Water Quality Certification from the Louisiana Department of Environmental. An application has been prepared for submission to the Louisiana Department of Environmental Quality. The proposed action would not be initiated until coordination has been completed.

SECTION 404(b)(1) GUIDELINES: The above project is being reviewed though preparation of a Section 404 (b)(1) evaluation. The evaluation includes application of the Section 404(b)(1)

guidelines promulgated by the Administrator of the U.S. Environmental Protection Agency (EPA), through 40 CFR 230 in conjunction with the Secretary of the Army.

COASTAL ZONE CONSISTENCY DETERMINATION: The proposed action is located within the Louisiana Coastal Zone, and has been determined to be consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program. Our determination has been forwarded to LADNR for their concurrence. The proposed action would not be initiated until all coordination has been completed.

ENDANGERED SPECIES: The US Fish and Wildlife Service and National Marine Fisheries Service are currently reviewing the New Orleans District's determination that the proposed action would have no effect to any threatened or endangered species or critical habitat.

HISTORIC AND CULTURAL RESOURCES: Consultation pursuant to Section 106 of the National Historic Preservation Act with the Louisiana State Historic Preservation Officer (SHPO) and federally recognized Tribes is on-going. Investigations to identify historic and cultural resources in the vicinity of the proposed action have been completed and a draft report is expected by April 11, 2014. The results of the investigations will be coordinated with the SHPO and federally recognized Tribes. It is not expected that historic properties would be adversely affected by the proposed action. The proposed action would not be initiated until all coordination has been completed.

COORDINATION: The following is a partial list of agencies to which a copy of this notice is being sent:

U.S. Environmental Protection Agency, Region VI
Regional Director, U.S. Fish and Wildlife Service
Regional Director, NOAA Fisheries Service
U.S. Coast Guard, Eighth District
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Transportation and Development
Louisiana State Historic Preservation Officer

PROJECT PLANS: Plans for the proposed work will be on file in the Regional Planning Division South Office, Environmental Compliance Branch, Coastal Environmental Compliance Section, US Army Corps of Engineer District, New Orleans, 7400 Leake Avenue, New Orleans, Louisiana 70118, and may be seen by anyone having an interest in them.

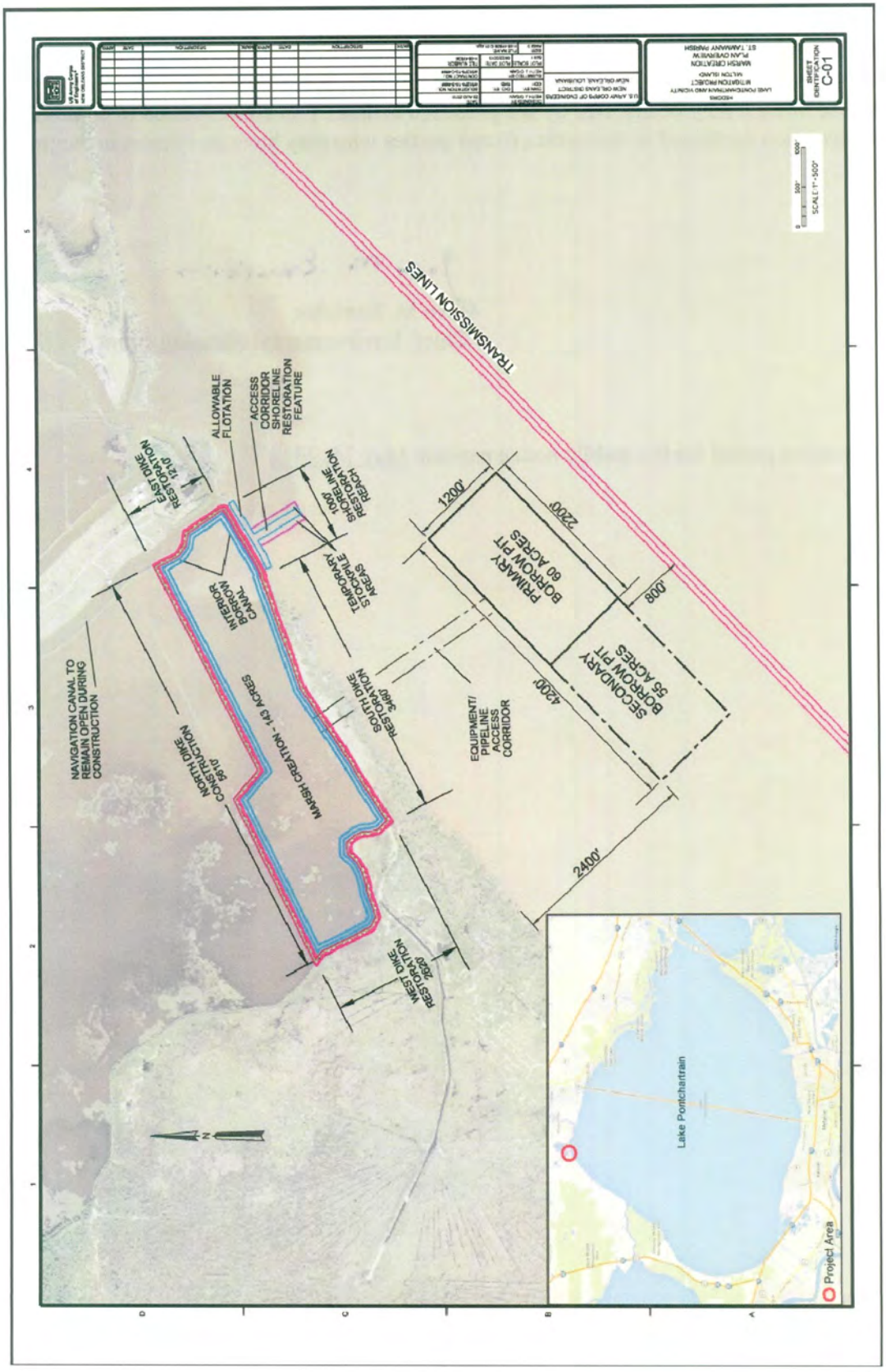
PUBLIC INVOLVEMENT: Interested parties may submit comments or suggest modifications regarding the proposed work in writing to Mr. Howard Ladner, PDC-CEC, P.O. Box 60267, New Orleans, Louisiana 70160-0267. Mr. Ladner can also be reached at (504) 862-2021 or at howard.w.ladner@usace.army.mil.

Any person who has an interest that may be affected by proposed project action may request a public hearing. The request must be submitted in writing to Mr. Ladner within the comment period of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by the proposed action. You are requested to communicate the information contained in this notice to any parties who may have an interest in the proposed action.

Joan M. Exnicios

Joan M. Exnicios
Chief, Environmental Planning Branch

The comment period for this public notice expires: May 14, 2014


TRANSMISSION LINES
ALLOWABLE FLOTATION
ACCESS CORRIDOR SHORELINE RESTORATION FEATURE
EAST DIKE RESTORATION 1210'
1000' SHORELINE RESTORATION REACH
TEMPORARY STOCKPILE AREAS
INTERIOR BORROW CANAL
NAVIGATION CANAL TO REMAIN OPEN DURING CONSTRUCTION
NORTH DIKE CONSTRUCTION 3910'
MARSH CREATION - 143 ACRES
SOUTH DIKE RESTORATION 3460'
EQUIPMENT/ PIPELINE ACCESS CORRIDOR
PRIMARY BORROW PIT 60 ACRES
SECONDARY BORROW PIT 55 ACRES
1200'
2200'
800'
4200'
2400'
WEST DIKE RESTORATION 2620'
Lake Pontchartrain
Project Area
SCALE: 1" = 500'
SHEET IDENTIFICATION C-01

MILTON ISLAND MITIGATION PROJECT
Section 404(b)(1) Evaluation

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

PROJECT DESCRIPTION. This intermediate marsh restoration project is located near Madisonville, Louisiana on the north shore of Lake Pontchartrain, west of the Causeway Bridge. The proposed marsh creation site is located in a shallow lake immediately adjacent to Lake Pontchartrain that was previously separated from Lake Pontchartrain. Approximately 1,000 feet of the eastern lakeshore-marsh boundary has been breached into the lake, and a shoreline restoration feature is proposed to provide future protection of the proposed marsh feature.

The proposed intermediate marsh restoration project would encompass 152 acres, not including the 115-acre borrow source for fill material in Lake Pontchartrain. Within the 152-acre project area, 7 acres are existing dikes partially surrounding the perimeter and 2 acres are where a shoreline protection feature is proposed. The remaining 143 acres are currently shallow open water that would be filled with dredged material to develop into marsh. Up to approximately 15 acres of interior borrow ditches would be excavated to provide material to build and improve dikes to contain the dredged material. Only about 4.5 acres of the 15 acres of borrow ditches are expected to become marsh, leaving about 10.5 acres un-vegetated. Therefore, the calculated amount of marsh that would be developed is 132.5 acres.

The project consists of dredging material from the bottom of Lake Pontchartrain beginning about 2,000 feet from the shoreline. A hydraulic cutterhead dredge would be used to remove the material and pump the material via a pipeline to the proposed marsh creation site. Initial elevation for dredge fill would be to approximate elevation +2.25 feet NAVD88, to ultimately result in a target marsh elevation of between +1.5 and +1.0 feet NAVD88. Total perimeter retention would be required to retain dredged material and to allow for vertical accretion. Existing retention features exist along the east, west, and south perimeters of the project footprint, except for a 1,000 foot reach of lake shoreline which would require restoration efforts as described at the end of this section. Rehabilitation of these existing dikes would be accomplished as necessary to retain the dredge material slurry. Approximately 5,600 linear feet of new retention dike would be required along the northern limit of the project footprint. The dike would be built with borrow material obtained within the marsh creation footprint to an elevation +4.5 feet NAVD88 and with a 5-foot crown width, to provide two feet of freeboard during the dredged material pumping operation. Plugs would be left in the borrow ditch at 1,000-foot intervals to minimize water flow and material loss during pumping operations. Spill boxes and/or weirs would be constructed at locations along the northern and western retention dikes as necessary to allow for effluent water release from within the marsh creation area for approximately one year after construction, when the perimeter dikes are breached and degraded. If deemed necessary by the construction contractor, a low-level interior weir or baffle dikes would be constructed to assist in vertical stacking of dredged material. The dike along the north side of the marsh creation area would be degraded approximately one year after project construction, upon settlement and dewatering of the created marsh platform. The existing western dike would be gapped approximately one year after project construction to allow interaction with the existing marsh and scrub/shrub wetlands to the west of the project area. The gaps would be spaced with care being taken to locate gaps at existing natural bayous, canals, or other openings. The gaps would require a 25-foot bottom at approximately elevation +0.0 NAVD88 (lower limit of existing nearby marsh platform) to assure water interchange with the existing marsh. Two to three gaps would be placed in the eastern dike to allow water exchange with the existing canal located to the east of the project area. The southern dike would remain to provide protection from Lake Pontchartrain waves and water intrusion.

The proposed marsh restoration layout would result in an open water area immediately north and adjacent to the marsh footprint. The entire northern retention dike would be degraded to marsh elevation, allowing unimpeded access for fish and wildlife between the open water and created marsh platform. The degraded material may be disposed in the original borrow ditch if settlement allows, or cast into open water immediately outside of the project footprint. Construction of trenasses (small ditches) is not proposed within the created marsh footprint. It is anticipated that natural sloughs and/or access corridors would develop over the project life.

The marsh footprint would be planted upon satisfactory settlement and dewatering of the dredged material, approximately 1 year after initial construction. Plugs of appropriate marsh vegetation would be planted over the marsh restoration acreage on 7-foot centers. The planting contractor would access the site from the lake or use the existing canal along the eastern border of the project area. Either way, no dredging would be allowed. The planting contractor would be allowed to use the staging area previously used for initial project construction. That staging area would be planted with appropriate native vegetation under the planting contract. Mixtures of herbaceous and woody plants are envisioned for re-vegetating the staging area. The staging area is not part of the area that would be monitored or adaptively managed.

The southern limit of the proposed marsh creation footprint is bounded by the Lake Pontchartrain shoreline. Aerial photography confirmed by a site visit shows that this shoreline has breached, and lake waters are free to enter and exit the interior shallow water and remnant marsh. Approximately 1,000 feet of shoreline restoration is proposed to reestablish the shoreline. The shoreline restoration feature may need to be longer than 1,000 feet if the shoreline erodes appreciably before the construction contract is awarded. The shoreline repair would be an earthen dike feature, with an approximate crown width of 25 feet to match existing shoreline elevations to the east and west. Material to rebuild the shoreline would be obtained by dredging on both the lake-side and marsh side of the alignment. An earthen-filled bag system, which would accommodate planting of shoreline vegetation, would be constructed on the lake-side of the shoreline dike to minimize erosion.

The borrow plan is to obtain material from Lake Pontchartrain, requiring a buffer of 2,000 feet between the existing shoreline and the borrow area limit. Marsh restoration would require borrow of approximately 1,000,000 cubic yards of material. A primary borrow site of 60 acres would accommodate this requirement. To assure adequate borrow material is available, a 45-acre secondary borrow pit adjacent to the primary area is proposed to account for unsuitable materials, unknown utilities, unidentified anomalies, and/or undocumented cultural resources. Borrow excavation would not be allowed greater than 10 feet below the existing lake bottom, which ranges from 9 to 10 feet in depth, except that a tolerance of 1-feet below this target elevation would be allowed to account for inaccuracies in the dredging process. Existing electrical transmission lines are located in Lake Pontchartrain, south of the proposed borrow site. A minimum buffer of 800 feet would be required between the borrow site footprint and the transmission line alignment. A pipeline corridor has been designated from the borrow source to the shoreline, with no allowances for excavation. The dredge pipeline will be floated and or submerged within this corridor, and then the dredge pipe would be laid across the shoreline and into the marsh creation area. The area of shoreline disturbed by this pipeline access effort will be repaired upon completion of the dredging operation. The pipeline would cross the existing lakeshore approximately at the east/west midpoint of the marsh polygon.

The only dredging in Lake Pontchartrain would be for the borrow source. No access dredging is allowed. The access path for equipment was previously dredged by private interests to provide vessel access to and from residences along the canal system that is located to the east of the proposed project. If the access route requires dredging to construct the action proposed in this document, additional consultation with the State Historic Preservation Officer would be conducted, and supplemental compliance with the Endangered Species Act, Coastal Zone Management Act, and Clean Water Act would be completed.

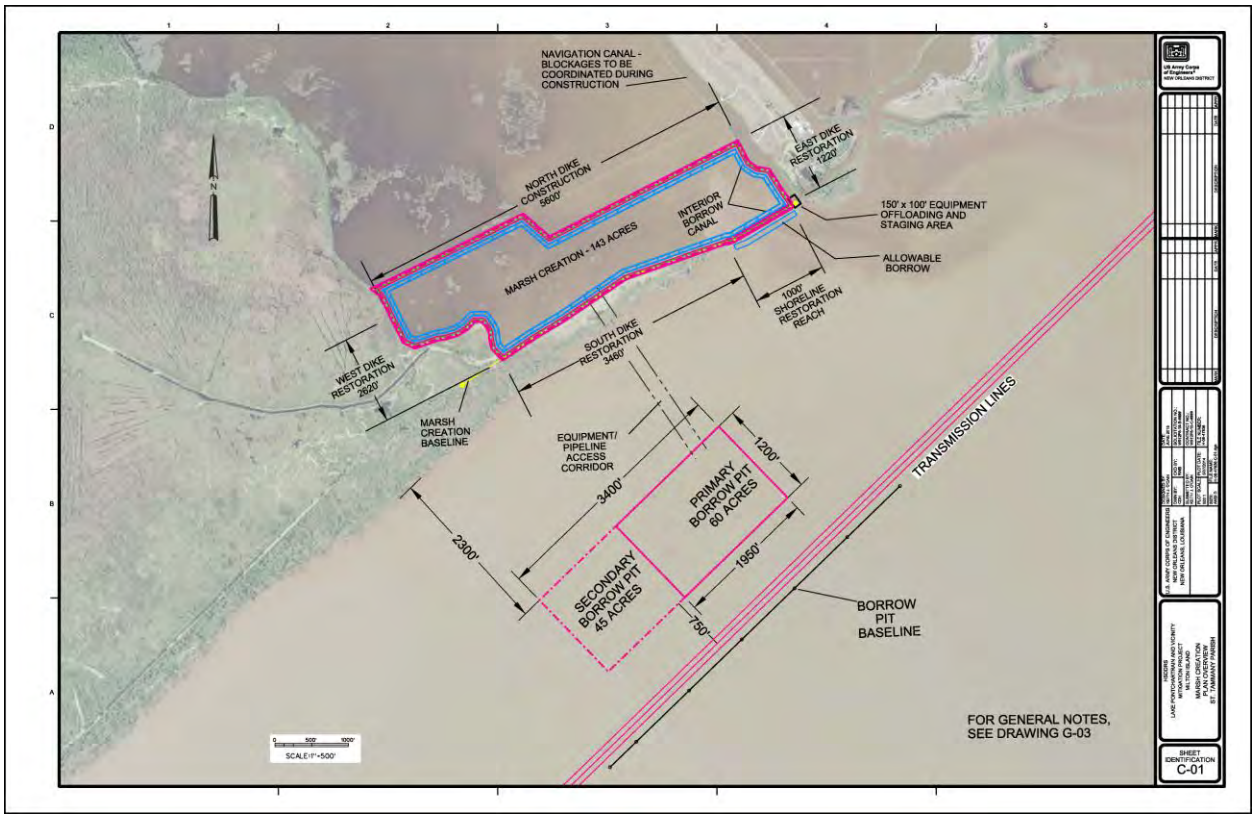


Figure 1 – Plan Layout

	Preliminary[1]		Final[2]	
1. Review of Compliance (§230.10 (a)-(d)).				
A review of this project indicates that:				
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	
(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

Subpart C – Physical and Chemical Characteristics of the Aquatic Ecosystem

a. *Substrate Impacts*: Construction of retention dikes and placement of dredged material in the proposed 115 acre marsh restoration area would alter substrate elevations, converting placement area habitat from shallow open water to intermediate marsh. Retention dikes, which would be constructed and rehabilitated with dredged material from adjacent water bottoms, would be built to a maximum elevation of +4.5 ft NAVD88 with a crown width of 5 ft and approximate side slopes no steeper than 1v:3h, and would completely enclose the proposed marsh restoration area. A new dike would be constructed on the north side of the area, and dikes on the east, west and south borders of the area would require rehabilitation to meet construction requirements. Additionally, approximately 1,000 ft of Lake Pontchartrain shoreline is breached and needs to be restored to an elevation of +5.0 ft NAVD88 with a crown width of 25 ft.

Spill boxes and/or weirs will be constructed as necessary along the retention dikes to allow for effluent water release from the new marsh area until the dikes are breached and degraded. Approximately 1-2 years after construction, the newly constructed dike on the north side of the marsh will be degraded to marsh elevation and gaps will be placed in the eastern and western dikes to allow unimpeded water flow and access for fish and wildlife. The degraded material will be disposed of either in the original borrow canal, if settlement allows or it can be disposed of in open water just outside the project footprint.

Project dredged material discharges would adversely affect immobile organisms, as they would be smothered by dredged material. Following construction of the proposed restoration project, organisms suited for newly constructed marsh and shoreline habitat are expected to gradually reestablish within the project footprint by organisms in adjacent marsh and shoreline habitats not affected by restoration activities.

Dredged material used for the Milton Island restoration project would be derived from a borrow pit in Lake Pontchartrain approximately 2000 ft from the project site. The USEPA Environmental Monitoring and Assessment Program has sampled sediment in the borrow area and found metals in the area, but not at levels that would adversely affect benthic organisms. 10-day benthic toxicity test results, using the amphipod Ampelisca abdita, show relatively high (greater than 93.5-95.7%) overall survival. Sediment chemistry

results in combination with benthic toxicity test results do not suggest borrow area vicinity sediments will have any adverse long-term impacts to benthic organisms, and suggest borrow area material is relatively free of contaminants.

b. *Suspended Particulates/Turbidity Impacts*: The proposed actions are not expected to result in significant, long-term impacts to water column suspended particulate and turbidity levels. Material dredged from Lake Pontchartrain would be hydraulically pumped into the marsh restoration area, where suspended particulates would largely be allowed to deposit within the restoration area prior to discharge of effluent from these areas (restoration area will be designed to maximize retention of solids in dredged material slurry pumped into this area). Effluent turbidity is expected to be elevated compared to ambient surface waters outside of marsh restoration area; following restoration activities, turbidity levels of these waters are expected to return to background conditions. Construction and rehabilitation of retention dikes would cause a temporary increase in suspended particulates and turbidity near the project location, but no significant long-term impacts are anticipated.

c. Water Column Impacts: Existing data from the 2012 305(b) List published by the Louisiana Department of Environmental Quality (LDEQ) indicates that the nearby Tchefuncte River, whose outlet is approximately 3.5 miles from the project site, is impaired for chloride, mercury in fish, total dissolved solids and fecal coliform for its designated use of secondary contact recreation (boating). The 1,000 feet of breached shoreline of Lake Pontchartrain on the southern side of the project site links the project site to the lake, making it susceptible to the same water impairments that currently exist in the lake. The dredging of material from the lake to the project site will temporarily increase the turbidity, but should not introduce new contaminants to the area.

d. *Alteration of Current Patterns and Water Circulation*: Construction of the proposed project is expected to alter the substrate elevation within its footprint, which would subsequently alter water circulation, current pattern, and water level fluctuations within and adjacent to the project. These are considered to be beneficial effects associated with construction of marsh from dredged material.

The northern retention dike will be completely degraded after 1 or 2 years after the marsh is established, thereby reestablishing flow between the new marsh and open water. Similarly, the eastern and western dikes would be gapped to ensure water flow between the newly created marsh and adjacent marsh areas.

e. *Alteration of Normal Water Fluctuations/Hydroperiod:* Retention features are expected to result in localized alterations to water level fluctuations and hydroperiod by hindering water exchange between restoration areas and adjacent waters during construction activities. Following degradation of the northern retention dike and gapping of the eastern and western dikes, project area hydrology would generally resemble that of adjacent existing marsh areas. However, the completion of the shoreline repair along the southern border of Milton Island will drastically reduce the hydrologic influence of Lake Pontchartrain on Milton Island.

f. *Alteration of Salinity Gradients*: Construction of the proposed project would alter the salinity of the project area because it involves restoring the shoreline of Lake Pontchartrain that currently connects the brackish lake to the intermediate marsh. Once the breach is repaired, connection of the project site to the brackish lake water will be minimized.

Subpart D - Biological Characteristics of the Aquatic Ecosystem (Subpart D).

a. *Effect on threatened/endangered species and their habitat:* The proposed action was reviewed and found to not likely adversely affect federally listed threatened or endangered species. The USFWS and NMFS concurred with this determination.

b. *Effect on the aquatic food web:* The project would result in a short-term loss to aquatic productivity until the created marsh becomes fully functional. After this temporal lag, the project would provide additional productivity to the local ecosystem.

c. *Effect on other wildlife (mammals, birds, reptiles, and amphibians):* The project would result in a short-term loss in productivity until the created marsh becomes fully functional. After this temporal lag, the project would provide additional productivity to the local ecosystem. The overall effect to wildlife would be beneficial.

Subpart E – Special Aquatic Sites

a. *Sanctuaries and refuges*: None present within project area.

b. *Wetlands:* The project will result in a net gain of wetlands to satisfy to project purpose.

c. *Mud flats:* Mud flats within the project area will be replaced with vegetated wetlands. A WVA was performed to demonstrate the positive benefits of this action.

d. *Vegetated shallows:* The project will result in an overall increase of vegetated shallows.

e. *Coral reefs*: None present within project area.

f. *Riffle and pool complexes:* None present within project area.

Subpart F – Human Use Characteristics

a. Effects on Municipal and Private Water Supplies: N/A; the nearest surface water intake for drinking water is located over 30 miles away from the project site along the Mississippi River. This water intake would not be affected by the proposed actions.

b. Recreational and commercial fisheries impacts. The proposed action will result is positive benefits to the local ecosystem thus benefiting recreational and commercial fisheries. Minor short-term impacts may result during construction. This may result in an indiscernible effect to local fisheries until the marsh become fully functional.

c. Effects on water-related recreation. The proposed action may reduce near-term access to the project area. Once the marsh is created, the recreational use of the area may change, but would not be eliminated.

d. Esthetic impacts. The proposed action is consistent with the visual characteristics of the surrounding area.

e. Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserve: None are present.

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	
(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	
(4) Known, significant sources of persistent pesticides from land runoff or percolation	
(5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances	
(6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources	
(7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	x
(8) Other sources (specify)	

230.61 – Considerations in Evaluating the Biological Availability of Possible Contaminants in Dredged or Fill Material:

According to the Environmental Atlas of the Lake Pontchartrain Basin, pollutants entering Lake Pontchartrain via rivers and stream emptying into it originate from waste water discharge and runoff from urban and agricultural activities. The Tchefuncte River is the nearest river outlet to the project location and is approximately 3.5 miles away. Fortunately, the Environmental Atlas of the Lake Pontchartrain Basin does not report significant toxic pollutants in water of the Tchefuncte River.

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.

(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	
(6) Rate of discharge	
(7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)	
(8) Number of discharges per unit of time	
(9) Other factors affecting rates and patterns of mixing (specify)	

An evaluation of the appropriate factors in 4(a) above indicates that the disposal site and/or size of mixing zone are acceptable: YES NO

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*

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. Retention dikes will be utilized to minimize the escape of dredged material from the established disposal area.

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.

References considered in preparation of this document:

a. Buchman, M. F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages. Last Accessed May 2014.
b. Environmental Atlas of the Lake Pontchartrain Basin. 2002. USGS Open File Report 02-206. Internet URL: http://pubs.usgs.gov/of/2002/of02-206/intro/preface.html, last modified May, 2002. Last Accessed February 2014
c. U.S. Environmental Protection Agency (USEPA). Environmental Monitoring and Assessment Program. http://watersgeo.epa.gov/mwm/. Last accessed May 2014.

7. Evaluation Responsibility.

a. Water quality input provided by: Sarah Tarcza, Geotechnical Engineer

b. Water quality input reviewed by: Eric Glisch, Environmental Engineer

c. Biological input provided by: Howard Ladner, Biologist

d. Evaluation reviewed by: Richard Boe, Supervisory Environmental Resources Specialist

13 Jun 14
Date

Signature

8. Findings.

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

13 June 14
Date

Joan M Exnicios
Joan M. Exnicios
Chief, Environmental Planning Branch