

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

JUN 0 5 2017

MEMORANDUM FOR:

Patricia A. Montanio Director, Office of Habitat Restoration

FROM:

Christopher D. Doley

SUBJECT:

Finding of No Significant Impact for Cameron Meadows Marsh Creation and Terracing, a Coastal Wetlands Planning, Protection, and Restoration Act Project

The attached Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) for Cameron Meadows Marsh Creation and Terracing Project, Cameron Parish, Louisiana have been prepared to document the NEPA decision process related to the Project.

In the EA, the Restoration Center proposes to support the objectives of the Coastal Wetlands Planning, Protection, and Restoration Act by the creation of 357 areas of marsh by dredging offshore sediments, and reducing erosion through construction of marsh terraces. The project is needed to reestablish the structural integrity and value of the marsh as habitat. Altered hydrology, drought, and hurricanes have contributed to the marsh loss at the location, which is at sea level and frequently inundated with several feet of gulf water during tropical storms. Hydrologic modeling and surveys of the area and existing water control structures informed the decision that the area would benefit from increased elevation. Where only 2 acres of marsh remain, sediments from the Gulf of Mexico will create 294 acres via confined disposal. Additional acres of marsh will be created from unconfined disposal, and terracing. All methods have shown to improve fisheries habitat by recreating marsh habitat, and are similar to and synergistic with other actions in the area.

For questions, please contact Jessica Berrio at 301-427-8654

Attachments: EA and FONSI

FINDING OF NO SIGNIFICANT IMPACT for the Cameron Meadows Marsh Creation and Terracing Project (CS-66) in Cameron Parish, Louisiana

National Oceanic and Atmospheric Administration's (NOAA) Administrative Order 216-6A contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at Title 40 Code of Federal Regulations (CFR) Section 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion is listed below, and the responses provided are relevant to making a finding of no significant impact (FONSI), and have been considered individually as well as in combination with the others:

(1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats or essential fish habitat as defined under the Magnuson-Stevens Act and identified in Fishery Management Plans (FMPs)?

<u>Response</u>: No, the proposed action would not cause substantial damage to ocean and coastal habitats and essential fish habitat (EFH) as defined under the Magnuson-Stevens Act and identified in FMPs. Although some temporary adverse impacts may occur during construction, they would be localized and not substantial. The NOAA Fisheries Habitat Conservation Division Southeast Regional Office has concurred with the project sponsors that the preferred alternative would enhance existing habitat. Some types of EFH that are abundant in the northern Gulf of Mexico (such as open water) would be converted to less common types of EFH (for example, emergent marsh habitat) of critical importance to juveniles of some estuarine-dependent managed species, including brown shrimp, white shrimp, red drum, gray snapper, lane snapper, and greater amberjack. Short-term, unavoidable, adverse impacts to habitats supportive of early life stages of brown shrimp, white shrimp, and red drum would occur during the construction phase of the proposed project as marsh is filled and created.

More productive marsh would be sustained over a 20-year period after construction than with no action, similar to other alternatives. With no action there are 2 existing acres of marsh that will be lost without action, and the alternative not selected would have unknown benefits with potential risks of altering area hydrology.

Short-term adverse minor impacts to EFH would result from dredging. Potential impacts to EFH include movement of prey species away from the construction areas, smothering of benthos, interruption of feeding or spawning by some species, and other effects on behavioral patterns. However, no significant adverse impacts on EFH are expected. Post-construction long-term benefits of increased quality and quantity of marsh EFH would be greater than the short-term adverse impacts to the open-water EFH that is plentiful.

(2) Can the proposed action be expected to have a substantial impact on biodiversity or ecosystem function within the affected area (for example, benthic productivity, predator-prey relationships, and similar factors)?

<u>Response</u>: No, the project would not have a substantial impact on ecosystem function or species biodiversity within the affected area. The project is designed to approximate

naturally occurring marsh conditions along the Louisiana coast. Native plant species would be planted to mimic naturally occurring marshes.

(3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

<u>Response</u>: No, the project would not have a substantial adverse impact on public health or safety. The project location is remote, accessible by boat and used primarily for recreational fishing and birding, and oil and gas activities. Long-term, indirect, minor benefits may result from reducing exposure of oil and gas infrastructure to erosion and storms.

(4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

<u>Response</u>: No, the project would not significantly adversely affect any federal or state listed species. The U.S. Fish and Wildlife Service and NMFS have coordinated on the unlikely occurrence of these species. Dolphin and their prey species may be temporarily displaced to other similar habitat, so short-term, indirect, minor adverse impacts may be associated with the build alternatives. Construction is expected to occur continuously for a period of 12-18 months. These are minor adverse impacts as they are temporary and the borrow area is located in open water where dolphin movements would not be restricted. Should any manatee or dolphin be seen, any workboats in the area would be instructed to cease work until the marine animal is over 500 feet away.

(5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

<u>Response</u>: No. The human environment would benefit minimally from construction-related economic activity and from enhanced opportunities for recreational and commercial fishing, but these effects would not be significant. There are no significant adverse social or economic impacts are interrelated with natural or physical environmental effects brought by the proposed action.

(6) Are the effects on the quality of the human environment likely to be highly controversial?

<u>Response</u>: No, it has been determined that the project would have no substantial adverse effects on the quality of the human environment and thus is not likely to generate high levels of controversy. Restoring the marsh would improve the human environment. The proposed action was selected to be designed by the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force through a publicly vetted process. Federal, state, and local government agencies have had the opportunity to review and comment on the proposed action.

(7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

<u>Response</u>: No, the project cannot be reasonably expected to have a substantial impact on historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, EFH, or ecologically critical areas. The proposed action is assumed to have a beneficial effect on wetland habitat, fish habitat, and ecologically critical areas. The intent of the project is to restore a degraded marsh. The temporary impact to fish and wetlands habitat would be non-significant and is expected to be offset by the restoration of habitat from the proposed project.

NOAA determined that the project would have no effect on cultural or historic resources and consulted with the State Historic Preservation Office (SHPO) under National Historic Preservation Act (NHPA) Section 106. The SHPO concurred with this determination.

(8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

<u>Response</u>: No, the proposed action is similar to other marsh restoration projects completed in Louisiana during the past several years. The project involves risks that are understood and avoidable. Lessons learned on previous projects are propagated throughout the CWPPRA program through meetings of the technical committees and work groups, and the project sponsor participates in these meetings.

(9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant, impacts?

<u>Response</u>: No, the proposed action would not contribute to any cumulatively significant impacts. The proposed action is part of a regional effort to restore and protect wetlands across coastal Louisiana. Every individual project creates temporary, localized adverse effects on existing habitat, but these are not cumulatively significant and result in the long-term beneficial addition of valuable elevation to the wetland system. Collectively, marsh creation projects contribute positively to an ecosystem by providing additional sediment into the system. These sediments then become available to help nourish and sustain adjacent marshes. However, the beneficial additive effect is localized and is not significant at the regional scale.

(10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

<u>Response</u>: No, there are no known terrestrial or submerged cultural resources in this location. Early settlements occurred along natural waterways with navigation access to the Gulf of Mexico. The SHPO was consulted and determined that the project would have no adverse effect on cultural or historic resources. According to the landowner there are numerous tenants in the project area that include petroleum exploration and production companies, recreational sportsman clubs, and others.

(11) Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: No, the action would not result in the introduction or spread of non-indigenous species. Native plant species would be used to stabilize the soil and aide establishment of marsh in the area. The State of Louisiana would administer a contract for plantings, and uses only plantings that are authorized for release, which ensures appropriate (noninvasive) species and cultivars would be provided.

(12) Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: No, the proposed action would not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration. This project is a stand-alone project with no identifiable funding for future action beyond the scope and funding currently allocated for the preferred alternative. Any additional action in this area would need to compete through the CWPPRA or another funding process.

(13) Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?

Response: No, the project has been planned to comply with all applicable environmental protection laws, and no violations are likely or expected. In addition, the project would be implemented in compliance with all permits required by the state and federal regulatory agencies.

(14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: No, the proposed action would not result in a substantial cumulative adverse effect on target species or non-target species. The primary goal of this restoration project is to restore marsh habitat, thereby increasing the functional value of EFH and other habitat in the vicinity. As such, the net effects are incrementally beneficial.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for the Cameron Marsh Restoration and Terracing Project (CS-66) in Cameron Parish, Louisiana, it is hereby determined that implementation of this project would not result in direct, indirect, or cumulative significant impacts on the quality of the human environment as described above and in the EA. In addition, all beneficial and adverse impacts of the proposed action have been fully considered and evaluated to reach the Finding of No Significant Impacts (FONSI). Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.

Patricia A. Montanio Director, Office of Habitat Conservation, NOAA

6/5/2017 Date



UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration NATIONAL MARINE FISHERIES SERVICE Silver Spring, MD 20910

MAY 3 1 2017

MEMORANDUM FOR:

Patricia A. Montanio Director, Office of Habitat Conservation

FROM:

Jeff Shenot OHC NEPA Coordinator

Jeff Showst

SUBJECT:

Finding of No Significant Impact and Cameron Meadows Marsh Creation and Terracing Environmental Assessment, Fed No. CS-66

I have reviewed the subject NEPA documents. My comments on the documents provided to the CWPPRA lead program staff in preparing these documents for your approval. All substantive questions or corrections have been addressed and this memorandum serves to notify you that review by OHC's NEPA Coordinator on these documents is complete, and is in accordance with NMFS' NEPA delegation policy 30-131 and with the OHC's QAP.

cc: Jeff P. Smith





UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration Washington, D.C. 20230

OFFICE OF THE GENERAL COUNSEL

ATTORNEY-CLIENT PRIVILEGED - DO NOT RELEASE - FOIA EXEMPT

CERTIFICATION OF ATTORNEY REVIEW

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Patricia A. Montanio Director, Office of Habitat Conservation

FROM:

Keith A. Hagg Attorney-Advisor

SUBJECT:

Environmental Assessment/Finding of No Significant Impact for Cameron Meadows Marsh Creation and Terracing Project

- [X] I have reviewed the subject document prepared in conformance with the National Environmental Policy Act, and have determined that it is legally sufficient and raises no significant legal issue(s) other than those addressed in any attached legal memorandum. Consultation with an enforcement attorney was not required for this action.
- [] At the written request of the RPM, I waive review of the Environmental Assessment and Finding of No Significant Impact because they meet the criteria for waiver set forth in NMFS Policy Directive 30-131-01.

Additional Comments:

Legal Memorandum Attached:

Keith A. Hagg, Attorney, Advisor

Rodney Vieira, Acting Deputy Section Chief Fisheries and Protected Resources Section

[] yes [x] no

5-<u>23</u>-2017 Date

5/23/7



cc: Adam Issenberg, Section Chief, Fisheries and Protected Resources Section

CAMERON MEADOWS MARSH CREATION AND TERRACING ENVIRONMENTAL ASSESSMENT Fed No. CS-66 Cameron Parish, Louisiana



Prepared by National Marine Fisheries Service

FINAL May 2017

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ACRONYMS

BEM	Balanced Environmental Management Systems
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPRA	Louisiana Coastal Protection and Restoration Authority
CRMS	Coastwide Reference Monitoring System
CWA	Clean Water Act
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
CZMA	Coastal Zone Management Act
DO	Dissolved Oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FIRM	Flood Insurance Rate Maps
GMFMC	Gulf of Mexico Fisheries Management Council
HTRW	Hazardous, Toxic, and Radioactive Waste
LCWCRTF	Louisiana Coastal Wetlands Conservation and Restoration Task Force
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum
NEPA	National Environmental Policy Act

- NOAA National Oceanic and Atmospheric Administration, U.S. Department of Commerce
- NRHP National Register of Historic Places
- SAV Submerged Aquatic Vegetation
- SHPO State Historic Preservation Office
- SWAN Simulated Wave Nearshore (model)
- USACE U.S. Army Corps of Engineers
- USDA U.S. Department of Agriculture
- U.S.C. United States Code
- WCRA Wetlands Conservation and Restoration Authority
- WVA Wetland Value Assessment

EXECUTIVE SUMMARY

Project: Cameron Meadows Marsh Creation and Terracing (CS-66)

Sponsor: National Marine Fisheries Service and Louisiana Coastal Protection and Restoration Authority

Contact: Cecelia Linder; 1315 East-West Hwy, Silver Spring MD 20910; ph 301-427-8675

Project Size: Approximately 400 acres of shallow open water within a 12,000-acre marsh area.

Location: Cameron Parish, Louisiana, 18 miles west of the town of Cameron and south of the Sabine National Wildlife Refuge (SNWR).

Need: Significant marsh loss has resulted from subsidence, and recent physical removal of marsh from hurricanes (Rita, Gustav, and Ike).

Purpose: Support the objectives of the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) by creating marsh and nourishing existing marsh.

Proposal: Fund the restoration of coastal marsh habitat by hydraulically dredging sediments from the Gulf of Mexico to create approximately 400 acres of marsh. Reduce erosion by constructing 12,150 linear feet (4 acres) of marsh terraces.

Public Participation: State resource agencies, federal resource agencies, and local government coordinated throughout project development as described in section 1.2. The draft Environmental Assessment (EA) was available for public review at the Cameron Parish Public Library in Cameron, Louisiana, and online (http://www.habitat.noaa.gov/pdf/cameron_CS_66_draft_ea.pdf). We published a notice of the draft EA in the Advocate (State newspaper) and the Cameron Parish Pilot (local newspaper) as shown in Appendix C. No comments were received.

Summary of statement and conclusions: Construction-related adverse impacts are considered minor and insubstantial because they are temporary or reversible. Benefits are moderate and sustained.

Potential adverse impacts: None

Issues to be resolved: None

1 INTRODUCTION

The proposed project (**Cameron Meadows Marsh Creation and Terracing, CS-66, hereafter referred to as Cameron Meadows**) is authorized under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) of 1990 (16 United States Code [U.S.C.] §777c, 3951-3956), which stipulates that five federal agencies and the State of Louisiana jointly develop and implement a plan to reduce the loss of coastal wetlands in Louisiana (16 U.S.C. §3952 (b) (2)). The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (Fisheries Service), Department of Commerce is the federal sponsor responsible for project oversight, including National Environmental Policy Act (NEPA) compliance. The Louisiana Coastal Protection and Restoration Authority (CPRA) is the non-federal local project sponsor. Other federal agencies that make up the CWPPRA Task Force selected this project through a publicly vetted process for engineering and design (Louisiana Coastal Wetlands Conservation and Restoration Task Force [LCWCRTF] 2011).

For NOAA and CPRA to request funds and authorization for construction of this project, the CWPPRA standard operating procedures require an Environmental Assessment (EA). The EA provides information for the decision of whether or not to fund and authorize this project, and analyzes the environmental impacts of the proposed action and provides evidence to determine the level of significance of impacts to the human environment. Specifically, this EA discloses information on and analyzes the direct, indirect, and cumulative impacts on the human environment likely to result from funding and authorizing Cameron Meadows. It was prepared in compliance with the NEPA of 1969 and Council on Environmental Quality (CEQ) regulations for implementation of NEPA (Title 40 *Code of Federal Regulations* [CFR] Parts 1500 through 1508 [CEQ 1992]). The following are some sources used to analyze the environmental impacts of the proposed action:

- Environmental Impact Statement (EIS) for the CWPPRA program (LCWCRTF 1993)
- Louisiana Coastal Area Ecosystem Restoration Study (LCA) EIS (U.S. Army Corps of Engineers (USACE) 2004)
- Wetland Value Assessment (WVA, NOAA Fisheries Service 2013 and 2016 pending revisions)
- Engineering design analyses (Wall and others 2015 and 2016)
- Hydrologic modeling and associated data and surveys (Water Institute of the Gulf (WIG) Miller and others 2016)
- Borrow area survey (CB&I 2015)
- Geotechnical Investigation (GeoEngineers 2016)
- Southwest Coastal Louisiana draft Feasibility Study and EIS (SWCL) (USACE 2015).
- Coast 2050 Plan (LCWCRTF and Wetlands Conservation and Restoration Authority (WCRA) 1998)
- and other restoration efforts in coastal Louisiana (LCWCRTF 2011 and OCPR 2012)

The CWPPRA EIS, LCA EIS, and SWCL provide general information on the need for the proposed project, the affected environment, and the environmental consequences.

The CWPPRA WVA evaluates wetland impacts through a quantitative, habitat-based assessment model developed to estimate anticipated environmental benefits. The WVA compares conditions over a 20-year period to determine the net difference in "future without project" and "future with project" scenarios. Initial and future conditions are set based on historical land loss, aerial imagery, and on-site visits to the proposed project area. Expected benefits are based on a combination of experience with previous projects, construction plans, models, and biological and engineering experience of the assessment team.

The engineering design analyses evaluate the cost efficiency and feasibility of components to achieve project goals. The design process includes surveying the proposed project area, testing soils for type and strength, determining options for access and staging of work, and proposed feature longevity. The CWPPRA program operating principles stipulate that, during engineering and design, reports are required at 30% and 95% completion. The reports are circulated, and meetings are held at which the CWPPRA participating agencies, landowners, and other interested parties are presented with the design process to-date, and provided opportunity to comment. The 30% design meeting occurred the summer of 2015 and a 95% design meeting occurred October 25, 2016.

1.1 Purpose and Need

1.1.1 Purpose

The purpose of the proposed project is to support the coastal restoration objectives of CWPPRA by reestablishing marsh in the project area using offshore sediment. After construction, native marsh would be planted to help stabilize the rebuilt marsh habitat. Specific objectives are:

- #1 create ~400 acres of marsh with dredge material and terraces
- #2 restore coastal marsh habitat

1.1.2 Need

The proposed project is needed to re-establish the structural integrity and value of the marsh as habitat. In addition to improving water quality, a healthy coastal marsh has value as habitat for multiple life stages of a variety of living resources: shellfish, finfish, waterfowl, wading birds, small mammals, amphibians, and reptiles. Louisiana's coastal wetlands, such as the proposed project area, are essential to sustain renewable fishery resources integral to the local, state, and national economies. Of the 1.7 billion pounds of fisheries landings reported for the Gulf Coast in 2011, more than 73% were caught in Louisiana (NOAA 2012). Marshes provide nursery, foraging, and spawning habitat for numerous marine and estuarine species of commercial and recreational importance.

1.2 Project Location

The proposed project is located in Cameron Parish, Louisiana west of the Calcasieu Ship Channel approximately 18 miles west of Cameron, 5 miles north of Gulf of Mexico shoreline, northeast of Johnsons Bayou, immediately south of Cameron Meadows Gas Field (Figure 1). The borrow area proposed for this project is located offshore in the Gulf of Mexico. The proposed project area is in Calcasieu/Sabin Basin Region 4 of the Coast 2050 Restoration Plan (East Johnson's Bayou mapping unit; LCWCRTF and Wetlands Conservation and Restoration Authority [WCRA] 1998, 1999) and the Louisiana Coastal Area Restoration Plan (USACE 2004). The East Johnson's Bayou mapping unit is a 27,064-acre area within southwest Louisiana (Appendix B, Mapping Unit Location).

FIGURE 1. PROPOSED PROJECT LOCATION



Source: Joy Merino, NOAA Fisheries

1.3 CWPPRA Process

The annual CWPPRA project selection process takes several months to complete and starts with public involvement where any entity may propose projects. The process is described in detail online www.lacoast.gov, where people sign up to get notices of meetings, process information, and publications made especially for the public to guide them in understanding restoration. Federal, state, and parish representatives review the potential projects which are narrowed down to approximately four a year that are approved to fund the formal engineering and design. As a result of this process, the field of available alternatives under consideration for a project generally includes those alternatives that would meet project goals developed during the engineering and design process and that take place within the general proposed project area.

During the engineering and design process, a CWPPRA project is subjected to layers of public, academic, and interagency review to ensure that effective projects move forward for design and ultimate construction. The project selection process begins around February of each year when Regional Planning Teams across the coast convene to solicit project nominations from the public, State, and federal agencies, as well as members of industry and academia. The meetings are publicized via public notices, and all members of the public are invited to attend. Every nominated project contains conceptual project features, approximate construction costs, and anticipated benefits to wetland resources. The nominated projects are screened down to 20 nominees via electronic voting by each federal agency represented in the CWPPRA program, the State, and each coastal parish representative.

Interagency and academic working groups then evaluate the conceptual project features for cost and project-associated wetland benefits for feasibility and appropriateness to addressing the local land loss. The 20 nominee projects are then voted on by the program's federal agencies and the State to obtain a list of the 10 top-ranking projects to continue through the process. These candidate projects undergo several months of further design and interagency evaluation to determine whether the proposed project features are feasible, the anticipated benefits are likely, and the project costs are within the funding constraints of the program. Certain project features are typically discounted during this preliminary design phase based on concerns about inferior performance, adverse impacts, technical infeasibility, or unreasonable costs. In the first months of each calendar year, the candidate projects are publicly presented and voted on by the program agencies to be funded for Phase 1 analysis, which includes the activities necessary to complete engineering and design, permitting, land rights, and environmental compliance before the project moves to construction.

1.4 Environmental Setting

The proposed project is part of the Chenier Plain of the southwest Louisiana coast, which developed 3,000 years ago (Gould and McFarlan, 1959). Water flow at the area is likely influenced by the geologic setting north and east of local cheniers (ridges; Figure 2). The geologically unique development of the Chenier Plain was recently described by McBride and others (2007) and Owen (2008). Marsh elevation in the project area averages 0.61 feet, and water elevations average 0.55 feet (Hydraulic analysis, WIG 2015). Relative sea level rise for the project area is 0.73 feet in 20 years based on a subsidence rate of 0.014 feet per year (Hydraulic analysis, WIG 2015).

Altered hydrology coupled with drought and hurricanes have contributed to marsh loss in the project area (Figure 3). The low marshes in the project area (near or below sea level) are frequently inundated with several feet of gulf water during hurricanes and tropical storms. The project area has 9 water control structure locations that allow flow to/from the project area (Figure 4).

Project modeling documents provide a description of the environmental setting that is summarized here (WIG 2015 draft report of 2015 and final Miller and others 2016). The area covered by the hydrologic

model and average water depths are provided in Appendix B. The private property was formerly used for oil and gas extraction that in recent years has been maintained by the landowner to minimize salinity intrusion and promote the wetland habitat functions for private recreation (primarily hunting and fishing). As a result of previous hurricane events in the area (Rita and Ike), the marsh has deteriorated significantly along an existing fault line that lies through the proposed project. Hydrology of the area is a south-to-north flow which contributes to the water depths and introduction of salinity in the system. Water tends to flow from east to west at the northern end of the proposed project area.

In preparation of this assessment, previous studies of the area were consulted, which contain information on the environmental setting of the proposed project and referenced elsewhere in this analysis.

- The Hydrologic Investigation of the Chenier Plain (LDNR 2002) contains an overview of the chenier plain ecosystem; a general description of previous basin-scale characterizations, studies, and restoration plans; and specific characteristics and management issues of the Calcasieu-Sabine basin.
- Geology of the Chenier Plain of Cameron Parish, Southwestern Louisiana (Owen 2008) contains the geologic history.
- The Southwest Coastal Louisiana Feasibility Study and EIS (USACE 2015) evaluates flood protection options for the chenier plain.
- The Calcasieu-Sabine River Basin (USDA 1994) report describes a cooperative resource planning effort developed among landowners, land users, volunteers, local units of government and local, state and federal agencies that includes the proposed project area within a 42,650 acre "South Unit 1" where the goal was defined as reducing excessive water exchange by installing structures.

FIGURE 2. GEOLOGIC SETTING OF PROPOSED PROJECT AREA



Source: Penland and Suter 1989



FIGURE 3. AREA LAND LOSS (RED) AND GAIN (GREEN) FROM 2004 TO 2008

Source: USGS



FIGURE 4. WATER CONTROL STRUCTURE LOCATIONS AND CANALS IN THE AREA

Source: CPRA

2 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternatives Considered but Eliminated

Through the CWPPRA process, it was determined that re-establishment of the marsh was the appropriate approach to restoration. When a proposed project is approved to proceed to formal engineering and design (Phase 1) by the CWPPRA Task Force, evaluation of project performance often includes the use of modeling to determine what project features are likely to be the most cost effective. Project features are refined based on results of field investigations and quantitative modeling, where applicable. Comprehensive engineering and design efforts focus on project alternatives that are considered technically feasible and cost effective while still meeting the project purpose and need. Project features are typically vetted to landowners and the public before the project moves into Phase 1, so that untenable features are eliminated from the evaluation process prior to investment of significant resources in data collection and detailed design.

Modeling by Miller and others (2016), was performed to determine if addition / modification of water control structures would aid area hydrology. Miller and others (2016) recommended an alternative that would restrict fisheries access, so was eliminated. Alternative sediment pipeline routes were considered, and those that were untenable eliminated. Dredging the perimeter canals that had filled in as a result of hurricanes was considered in the initial project development, but hydrologic modeling showed this was not a problem for the area and would increase the potential for salinity intrusion as well (Miller and others 2016), so this feature was eliminated.

2.2 Alternatives Considered in Detail

To meet the immediate need of the area, the build alternatives were designed based on results of topographic, bathymetric, geophysical and magnetometer surveys. All build alternatives consider using a gulf borrow source and have marsh and terrace features (Table 1). Alternatives differ in hydrologic features (*i.e.*, culverts).

Alternatives	No action	Preferred – Terrace and	Terrace and Marsh Creation
		Marsh Creation	Plus Culverts
Marsh Feature	0 (2 acres existing in marsh	357 (294 confined; 59	357 (294 acres confined with
Created (acres) ¹	and terrace creation areas)	unconfined; 4 terrace)	59 acres unconfined; 4
			terraced)
Hydrology	Existing conditions (9	Existing structures	Add 6 culverts
Features ²	culvert,4 control structures,		
	1 fixed-crested weir)		
Inundation (annual	79%	negligible change from	potentially less than existing
average) ³		existing	

TABLE 1. ALTERNATIVES SUMMARY

All numbers determined from data in the 1) wetland value assessments (NOAA Fisheries Service 2013 and 2016), and 2) design draft (Wall and others 2016).

2.2.1 The No-Action Alternative

NEPA refers to the no-action alternative as the continuation of baseline conditions without implementation of the proposed project. Without action, the project area would remain largely shallow open water and as described in the Affected Environment sections, wave fetch across the large open water area would continue, and establishment of marsh habitat would not occur. Evaluation of the no-action alternative is required by CEQ regulations.

2.2.2 Preferred Alternative – Terrace and Marsh Creation

This alternative includes funding marsh terrace and marsh creation (Figure 5). This alternative would increase the outflow through the existing water channels by ~ 12 percent as a result of water displacement (Table 1; Wall and others 2016, page 32).

<u>Marsh</u> Sediment would be mined from offshore and placed to create 294 acres of intermediate marsh within constructed earthen containment dikes. Retaining dikes would be constructed to 3.5-feet elevation and a 5-feet crown width to contain the fill. Retaining dikes would be constructed using material at a distance of 25 feet from placement.

The marsh creation area would avoid existing submerged pipelines that pose a hazard. Earthen containment dikes (262,636 cubic yards over 20,286 linear feet) would be needed to confine and create the marsh. The earthen containment dikes are similar in elevation and size to terraces. Marsh fill (2,264,252 cubic yards) would be at a maximum fill elevation of 2-feet and settle such that a 1-feet elevation would be maintained over the 20-year project life (Wall and others 2016). Unconfined flow of sediments (448,604 cubic yards) would be done to shallow the area to the north from a current depth of 1.5 feet to the existing areas marsh elevation of 0.8 feet, therefore creating 59 acres of marsh.

Given the proximity of the borrow area to the project, hydraulic placement of marsh fill would be done likely with a cutterhead dredge. A booster pump may be used because the maximum pumping distance is greater than 7 miles. Retaining dikes and terraces would require mechanical dredges, the number and equipment type would be determined by the contractor.

Borrow and Conveyance Route The borrow area would be located south of the project area in Gulf waters with water depths of 19 to 24 feet (Figure 6). It is likely that a 30" cutterhead and booster pump would be used to slurry the offshore sediments. An estimated 7.2 miles of pipeline would be placed from the borrow area to the marsh creation areas to convey sediments (Wall and others 2015). Proposed cut depths are 35 to 37 feet depending on the section. The pipeline corridor occurs primarily within waters 4 to 14 feet in depth (CB&I 2015 and project file "Alt 3 cost estimate assumptions"). A permanent pipe (per permit consultation with Louisiana Department of Transportation and Development) would be installed via micro-tunneling underneath highway LA 27/82 to facilitate sediment delivery for this and future projects in the vicinity. After construction, the pipe would be filled with water and capped at both ends. The pipe under the highway is below grade and the remainder of this projects conveyance pipeline is temporary. The permanent section would be installed to prevent future disruption of highway use. The method of construction was determined with consultation with the Louisiana Department of Transportation and Development of Transportation and Development (DOTD) staff. The DOTD desires that two lanes of the highway be maintained at all times (5-9-16 personal communication, John Foret).

<u>Terrace</u> Terracing would be done in the southeast section of the identified marsh creation area as a windfetch block. An estimated 4 acres of marsh (12,150 linear feet) would be created from the terrace creation (NOAA Fisheries Service 2016). Terraces would be constructed to 3-feet, have a crest width of 15 feet; side slopes of 1 vertical foot to 5 horizontal feet, and comprised of three joined segments totaling a length of approximately 450 feet per terrace for twenty-seven terraces. Borrow depths would not exceed 9 feet, and be a minimum of 25 feet between borrow and terrace. It is assumed that marsh creation and terracing be constructed concurrently, with a total timeline of 320 days (Wall and others 2016).

<u>Plantings</u> After initial settlement of marsh creation sediments, marsh would be planted with native vegetation appropriate to the area (most likely smooth cordgrass *Spartina alterniflora* cv. Vermilion). The constructed terrace acres would be vegetated along the crown and side slopes with marsh species.

2.2.3 Terrace and Marsh Creation Plus Culverts

This alternative is to fund the marsh and terrace components of the preferred alternative and a hydrologic component (installation of 6 culverts operated for fisheries access). The marsh; borrow and conveyance route; terrace; and plantings are the same as described in the Preferred Alternative.

<u>Hydrology</u> In addition to the Preferred Alternative description, this alternative consists of adding a water control structure location to the water-managed project area. Options to altering the existing structures and adding structures are described in detail in Miller and others (2016), a hydrologic modeling report by The Water Institute of the Gulf.

Project area surveys indicated water levels are higher than expected, and perimeter canal capacity was not the reason for high water levels, thus an alternative became reducing water inundation (*i.e.*, excessive flooding) in the proposed area. To achieve this, a water control structure would be added to increase potential drainage water volumes at a location north of the added features (Figure 6). Several options were considered in design of this feature, including varying pipe materials, pipe diameter, and gate/valve type. Six 90 feet length 42"-diameter CMP pipes were chosen to be fitted with inline check valves, antiseepage collars, and pile supports (Wall and others 2016).



FIGURE 5. MARSH CREATION AND TERRACES OF THE BUILD ALTERNATIVES

Source: Wall and others 2016 (95% design draft plans)



FIGURE 6. BUILD ALTERNATIVES BORROW AREA AND CULVERT LOCATION

Source: Wall and others 2016 (95% design draft)

3 AFFECTED ENVIRONMENT

3.1 Physical Environment

3.1.1 Geology, Soils, and Topography

The soils at the proposed marsh creation and terracing area consist almost entirely of Banker muck (USDA 2015). These are frequently flooded soils unsuitable for urban or agricultural use. Soil surveys specific to the proposed project were conducted by CB&I (2015). The borrow area consists of very soft to firm clay with stiff clay soils, and is located approximately 6 miles south of the center of the marsh fill area (Figure 6; CB&I 2015).

Coastwide Reference Monitoring System (CRMS) stations are located outside of the project area among other soil types at the ridges that occur north and south of the proposed project area, and therefore of limited use for this analysis. A review of the topography, elevation, wetlands, soils, flood zones, and historic conditions, however, is available and hereby incorporated by reference from Balanced Environmental Management Systems (BEM 2014).

3.1.2 Climate and Air Quality

The subtropical climate of coastal Louisiana is characterized by long, hot summers and, mild winters with high humidity year round. Over the past 40 years, air temperature ranged from 14 to 102 °F; average winter and summer temperatures are 55.3 and 82.4 °F, respectively. In a typical year, more than 60 inches of rain falls, mostly in the spring and summer. In the fall and winter, winds tend to be from the north-northeast; in spring and summer, winds are generally from the south-southeast.

Hurricanes and tropical storms typically occur over the study area between June and November. On average, since 1871, a tropical storm or hurricane is expected somewhere within the state of Louisiana every 0.7 years; hurricanes make landfall about every 2.8 years (Roth 1998). Historic data from the National Hurricane Center dataset on tropical cyclones (including tropical depressions, tropical storms, and hurricanes) along the Louisiana coast from 1899 to 2007 indicates a total of 63 storms, of which 49 were Category 3 or less.

Louisiana air quality is good, having "attainment" status according to the National Ambient Air Quality Standards (Appendix A; LDEQ letter). Air quality monitoring throughout the state exceeds the monitoring required, however, the Louisiana Department of Environmental Quality (LDEQ) does not have air quality monitoring sites in the parish (LDEQ 2015). In Cameron Parish, offshore breezes mix and freshen the air. Frequent precipitation prevents accumulation of particulates. The American Lung Association and other air quality sources do not report on the parish air quality. Sources of air emissions in the parish are mainly associated with industries to the west at Port of Sabine Pass, Texas; oil and gas industry; commercial vessel traffic; and recreational fishing.

Wetlands, such as those of the proposed project area, are more valuable than other ecosystem types as carbon sinks due to high carbon sequestration and negligible methane emissions (Choi and Wang 2004). Average soil carbon accumulation in estuarine emergent wetlands is 6.4 metric tons of carbon per acre per year, and has been reported as high as 42.7 metric tons per acre per year at Sabine National Wildlife Refuge near the project area (Bryant and Chabreck 1998; Engle 2011). The latter is roughly equivalent to the annual carbon emissions per person in Louisiana (WRI 2013; total greenhouse gas emissions, 44.1 metric tons per year). A review of the process and amounts of carbon sequestration in Gulf of Mexico wetlands was considered in this analysis (Engle 2011).

3.1.3 Water Resources

The U.S. Environmental Protection Agency (EPA) has authority through Section 1424(e) of the Safe Drinking Water Act of 1974 to review federally financed projects to determine their potential for

contaminating sole source aquifers. The proposed project is located over the Chicot Aquifer. Chicot Aquifer has high concentrations of chloride and is being impacted by freshwater withdraws for industry and agriculture. Saltwater encroachment from Gulf of Mexico is also occurring from the saltwater wedge that extends from 5 to 40 miles north of the Gulf of Mexico shoreline (LDNR 2002).

The proposed project is within the Calcasieu River Basin described by LDEQ (2008). The dominant hydrologic features of the basin are the Calcasieu and Sabine Lakes, both of which are influenced by the Calcasieu, Sabine, and Neches Rivers. The nearest surface water monitoring by LDEQ from this wetland are approximately 12 miles east of Sabine Lake, 16 miles west Calcasieu Lake, and 12 miles northwest of Holly Beach (subsegments LA030401_00, LA110303_00, LA110401_00, LA031201_00). The non-coastal waters are listed as "fully supporting the designated use" of swimming, boating, fishing, and oyster propagation, whereas the coastal waters at Holly beach were suspected of impairment for primary contact through enterococcus bacteria (LDEQ 2013). The core indicators used to support the determination for each use is based on the following standards:

- Primary contact (swimming): fecal coliform (in freshwater), enterococcus (in marine water), temperature, and metals and toxic substances
- Secondary contact (boating): fecal coliform, metals and toxic substances
- Fish and Wildlife propagation (fishing): DO ambient and continuous, temperature, pH, chloride, sulfate, total dissolved solids, turbidity, toxic substances, metals
- Oyster propagation: fecal coliform

Offshore, at the borrow location, low dissolved oxygen (DO) waters occur along coastal Louisiana due to periodical Mississippi River discharge (Osterman and others 2008). Low DO waters may also occur inland after storm events as a result of the decomposition of debris deposited in the water bodies.

3.2 Biological Environment

3.2.1 Vegetation Resources

Coastal Louisiana contains an estimated 40 percent of the vegetated estuarine wetlands in the contiguous United States (USACE 2004). The 1200-acre project area is marsh and open water (NOAA Fisheries Service 2013). In a recent high rainfall year, the area was flooded an estimated 287 days (79%) of the year. According to USGS surveys, the marsh was half fresh marsh and half intermediate in 1997. The area became all open water and intermediate marsh 2007 according to USGS surveys (CRMS 2015). The area was intermediate with areas of brackish marsh in 2013 (Sasser 2014). Intermediate marsh is frequently dominated by common reed, bulrush, and other species. Saltmeadow cordgrass can be prevalent in both intermediate and brackish marshes.

Rare plants that may occur in Cameron Parish are mostly of freshwater marsh, dune, or prairie habitats, and thus would not occur in the project area. The Louisiana Department of Wildlife and Fisheries (LDWF) Natural Heritage Program list rare plant species and their associated habitat, threats, and recommended practices. The LDWF was consulted in this analysis (Appendix C, summary of comments).

Submerged aquatic vegetation (SAV) occurs in the open water areas. Widgeon grass was the only species identified in 2011 site-visits and were estimated to cover 70% of the open water areas considered (NOAA Fisheries Service 2013). The proposed project location has more SAV than is common for shallow open water in Louisiana.

3.2.2 Benthic Habitats

The project marsh creation area is primarily shallow ($\sim 0.5-2$ feet) open-water and benthic habitat. The borrow area is benthic habitat under 19–24 feet open marine water column. CB&I (2015) surveyed 0.19

square miles of surface area encompassing 120.28 acres of ocean bottom in November 2014 along the proposed pipeline corridor. Benthic habitats near marsh support bacteria, fungi, microalgae, meiofauna, and microfauna (Day and others 1989). The benthic community supports higher levels of the food chain, such as shrimp and demersal fish (Conner and Day 1987). Substrate quality strongly influences the distribution of benthic fauna. Other variables affecting the distribution of benthic organisms include water depth, salinity, illumination, food availability, currents, and tides.

3.2.3 Essential Fish Habitat (EFH)

The proposed project area contains EFH as designated by the Gulf of Mexico Fishery Management Council (GMFMC) for species that are federally managed under the Magnuson-Stevens Fishery Conservation and Management Act, P.L. 104-297; 16 U.S.C. 1801 et seq. (Magnuson-Stevens Act). Categories of EFH in the project area include estuarine emergent wetlands (*e.g.*, marsh), estuarine water column, estuarine water bottoms (*e.g.*, soft bottom), SAV, and nearshore waters (GMFMC 2005). Table 2 lists the EFH by life stage for federally managed and highly migratory species at the proposed project and borrow areas, which occur along the 19-24 feet bathymetric contour.

In the Calcasieu/ Sabine Basin, the estuarine-dependent assemblage, including white and brown shrimp, has shown decreasing trends over the last 10 to 20 years (LCWCRTF and WCRA 1999). These species migrate through tidal passes during their post-larval life stage and depend on the estuarine environment for survival and reproduction. Shrimp are prey species for other federally managed fish and crustaceans (GMFMC 1998).

TABLE 2. ESSENTIAL FISH HABITAT IN THE PROJECT AREA FOR FISHERY SPECIES MANAGED BY THE GULF OF MEXICO FISHERY MANAGEMENT COUNCIL AND HIGHLY MIGRATORY SPECIES (HMS) MANAGED BY THE NATIONAL MARINE FISHERY SERVICE.

Common Name	Life Stage	Essential Fish Habitat of the proposed project	
		and borrow areas	
Brown shrimp	early juvenile	estuarine marsh, estuarine and nearshore	
		SAV and softbottom	
White shrimp	early juvenile	estuarine marsh and soft bottom	
Red drum	larvae	estuarine SAV and soft bottom	
	postlarvae	estuarine marsh and SAV and estuarine and	
		nearshore soft bottom	
early juvenile		estuarine marsh	
late juvenile		estuarine SAV	
	adult	estuarine marsh and SAV and estuarine and	
		nearshore softbottom	
Gray snapper	adult	estuarine marsh, and estuarine and nearshore	
		softbottom	
Lane snapper	postlarvae	nearshore and estuarine SAV	
	juvenile	nearshore and estuarine SAV and softbottom	
Greater amberjack	eggs, larvae, post-larvae, early-	nearshore waters >1 meter	
	juvenile, adult and spawning adults		
Cobia	adult	nearshore waters 1 to 70 meters	
Scalloped	neonate	all nearshore waters	
hammerhead			
shark, HMS			
Bull shark, HMS	neonate and juvenile	all estuarine and nearshore waters	
Atlantic sharpnose	neonate, juvenile, and adult	all nearshore waters	
shark, HMS	-		

Source: National Marine Fisheries Service, EFH consultation (Appendix C).

3.2.4 Marine Fishery Resources

A wide variety of estuarine-dependent fishery species found in the Calcasieu/Sabine Basin (LCWCRTF and WCRA 1999) are of national economic importance. Most species vary in abundance from season to season due to their migratory life cycle, habitat preferences according to life stage, and the variation in salinity (Herke 1978, Rogers and others 1993, LCWCRTF and WCRA 1999). Most spawn offshore in the open Gulf of Mexico and enter the marsh area as postlarvae or young juveniles to use the marshes as a nursery, and return to the open gulf as subadults or adults.

Population trends and projections for the estuarine-dependent species: red drum, black drum, spotted seatrout, Gulf menhaden, southern flounder, white shrimp, brown shrimp, blue crab are listed as having a decreasing trend, and projected to continue to decline toward the year 2050 (LCWCRTF and WCRA 1998).

3.2.5 Marine Mammal Resources

Marine mammals that occur in Louisiana waters include the blue, sei, finback and humpback whales, several species of dolphin, and the endangered West Indian manatee. NOAA Protected Resources division reports that whales occur in nearshore waters of Louisiana, defined as waters 0 to 650 feet in depth, rarely at depths less than 25 feet. The borrow area is at a depth of less than 25 feet and whale are unlikely to occur, so are not further discussed. West Indian manatees may be found in Louisiana coastal

waters, as discussed in the Threatened and Endangered Species section (3.2.8). Dolphins are common along the shore and should be expected to occur in surface waters in the borrow area. Dolphin follow schooling fishes, such as menhaden that are prey, and seek food and refuge in interior bays. Population estimates are unknown for coastal, Sabine Lake, and Calcasieu Lake NOAA designated bottlenose dolphin stock (Waring and others 2013, Labrecque and other 2015).

3.2.6 Migratory Bird Resources

Waterbirds were specifically considered pursuant to the Migratory Bird Treaty Act. No colonies of colonial-nesting waterbirds have been observed in the proposed project area but could occur. This resource consists of heron, egret, night-heron, ibis, roseate spoonbill, anhinga, and/or cormorant. Shallow marsh water areas are used as forage habitat. No migratory birds are known to nest in the area, as it is primarily open water. Critical habitat is designated along the shoreline south of the project area and U.S. Fish and Wildlife Service (USFWS) was contacted in January 2015 concerning the proposed project area and continue to be in coordination so those areas are not affected by the proposed project.

3.2.7 Wildlife Resources

Louisiana's coastal zone supports 19 percent of the United States' winter population for 14 species of ducks and geese. The North American Waterfowl Management Plan identified coastal Louisiana as one of the most important regions for the maintenance of continental waterfowl populations in North America (USACE 2004).

Approximately 735 species of birds, finfish, shellfish, reptiles, amphibians, and mammals spend all or part of their life cycle in the estuaries of coastal Louisiana (USACE 2004). Wildlife species surrounding the project area have been stable. Prominent Louisiana wildlife groups or species and their habitat function, status, trend, and projected status are provided in Tables 3 and 4 (LCWCRTF and WCRA 1998). The referenced source consisted of selecting prominent functional groups that represent other species or functional groups and is not meant to be all encompassing for any animal or avian group. While species that frequent woody or freshwater habitats may be listed as occurring in the surrounding geographic area, the proposed project area does not contain habitat supportive of such species. The area is within the Mississippi Flyway, and birds from central and northern North America start to converge in the fall.

1988 Habitat		Open Water	Intermediate Marsh
% of area		7	80 (7% freshmarsh)
Brown Pelican	Status	Not historically	Not historically present
		present (NH)	(NH)
Bald Eagle	Status	NH	NH
Wading Birds	Function		Multiple functions
	Status	NH	High numbers
	Trend/Proj.	•	Increasing/Steady
Shorebirds	Function		Multiple functions
	Status	NH	High numbers
	Trend/Proj.	•	Steady/Decreasing
Dabbling Ducks and Diving Ducks	Function	Wintering area	Wintering area
	Status	High numbers	High numbers
	Trend/Proj.	Increasing/Decreasing	Increasing/Decreasing
Geese	Function	Wintering area	Wintering area
	Status	Moderate numbers	Moderate numbers
	Trend/Proj.	Increasing/Decreasing	Increasing/Decreasing
Raptors	Function	•	Multiple functions
	Status	NH	Low numbers
	Trend/Proj.	•	Steady/Decreasing
Rails, Coots, and Gallinules	Function	Wintering area	Wintering area
	Status	Low numbers	Low numbers
	Trend/Proj.	Steady/Steady	Steady/Decreasing
Other Marsh/OW Residents	Function	Multiple functions	Multiple functions
	Status	Moderate numbers	High numbers
	Trend/Proj.	Steady/Steady	Steady/Decreasing
Other Marsh/OW Migrants	Function	Multiple functions	Multiple functions
	Status	Moderate numbers	High numbers
	Trend/Proj.	Steady/Steady	Steady/Decreasing

TABLE 3. AVIAN AND OTHER POPULATION FUNCTIONAL GROUPS HISTORICAL STATUS AND TRENDS

*Refer to project location section 1.2, Projection (Proj.), Function, Status, and Trends for East Johnson's Bayou mapping unit (LCWCRTF and WCRA 1998) NH indicates groups not historically present.

	1988 Habitat		Open Water	Intermediate Marsh
Furbearers	Nutria	Function	Multiple functions	Multiple functions
		Status	Moderate numbers	Moderate numbers
		Trend/Proj.	Steady/Steady	Steady/Steady
	Muskrat and Mink, Otter, Raccoon	Function	Multiple functions	Multiple functions
		Status	Moderate numbers	Moderate numbers
		Trend/Proj.	Steady/Steady	Steady/Steady
Game	Rabbits	Function		Multiple functions
		Status	NH	Low numbers
		Trend/Proj.		Steady/Decreasing
	Deer	Function		Multiple functions
		Status	NH	Low numbers
		Trend/Proj.		Steady/Steady
Reptiles	American Alligator	Function	Multiple functions	Multiple functions
		Status	High numbers	Low numbers
		Trend/Proj.	Increasing/Steady	Increasing/Steady

TABLE 4. OTHER POPULATION FUNCTIONAL GROUPS HISTORICAL STATUS AND TRENDS

*Projection (Proj.), Function, Status, and Trends for East Johnson's Bayou mapping unit (LCWCRTF and WCRA 1998) NH indicates groups not historically present.

3.2.8 Threatened and Endangered Species

Coordination under the Endangered Species Act has been initiated with USFWS as required and is completed with NOAA. Threatened and Endangered species, and critical habitats that were identified as needing consideration at the proposed project location by the Information, Planning, and Conservation System of USFWS are listed below (USFWS 2015). No critical habitats occur at the proposed project area.

Birds

	Piping plover Red Knot Sprague's Pipit	Threatened status, critical habitat designated Threatened status, no critical habitat designated Candidate species
Fish	Gulf sturgeon	Threatened status, critical habitat designated
Mamn	n als West Indian manatee	Endangered status, critical habitat designated
Reptile	es Kemp's ridley turtle Hawksbill turtle Leatherback turtle Green turtle Loggerhead turtle	Endangered, no critical habitat designated Endangered, critical habitat designated Endangered, no critical habitat designated Threatened, critical habitat designated Threatened, critical habitat designated

Sprague's pipits are unlikely to utilize the proposed project area, as there are no grasslands or prairie. Piping plover are shorebirds that may utilize intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide for foraging. The species is unlikely to utilize the proposed project area. Red Knot is a migratory bird that was Endangered Species Act (ESA)-listed January 2015. The species has been seen in western Louisiana, but are rare. They may utilize the coastline as resting or foraging areas during migration.

Gulf sturgeon are not expected to occur west of the Mississippi River. Hawksbill and leatherback sea turtles are not expected to occur at the proposed project area because hawksbills are associated with coral reefs and leatherbacks with deepwater, which do not occur at or near the action area. West Indian manatees are not known to travel into interior marshes. Young males are known to migrate along nearshore waters of Louisiana, but sightings are rare and unlikely, so these are not further discussed.

Green, Kemp's ridley, and loggerhead sea turtles may be in the borrow area while migrating between their nesting and foraging sites in Florida and Texas. Green sea turtles feed on phytoplankton, zooplankton, SAV, and small fish or crab. Kemp's ridley sea turtles are believed to occur in shallow, warm, nearshore waters in the northern Gulf of Mexico, foraging for crabs, mollusks, shrimp, and small fish. Loggerhead sea turtles are highly migratory, and can occur in coastal waters. No sea turtle nesting is known to occur in the vicinity of the project.

3.3 Cultural Resources

3.3.1 Historic, Prehistoric and Native American

This section considers both terrestrial and submerged cultural resources. There are no known terrestrial or submerged cultural resources in this location. Reviews of the state cultural resources database in January and March of 2015 show cultural resources are south of the proposed marsh creation area at ridges on higher elevations. CB&I conducted a cultural resource investigation of the borrow area and pipeline corridor to the project site including sidescan sonar, magnetometer, and bathymetric surveys in spring 2015 (CB&I 2015). "No evidence of shell middens, paleo-channel confluences or lagoon complexes considered to be associated with prehistoric habitation" was found at either the pipeline corridor or borrow area (CB&I 2015). They located 23 magnetic anomalies, and 7 acoustic targets were determined to have a potential association with shipwreck remains, other structure and/or modern debris. The pipeline corridor was also surveyed, and one area was recommended for avoidance as a potential shipwreck remains or other modern debris.

3.3.2 Socioeconomics (Income and Environmental Justice)

Table 5 provides population / poverty data for Louisiana, Cameron Parish, and the town of Cameron. Johnson's Bayou is of closer proximity, but is not designated in the census. This data is considered because population is one standard for the number of humans impacted, and population by race and poverty level are standards in considering environmental justice. The majority of employments in Cameron Parish are from the industries of educational, health and social services (19.3%); agriculture, forestry, fishing and hunting, and mining (12.1%); construction (12.1%); and transportation and warehousing, and utilities (11%).

	Louisiana, 2014 estimate	Cameron Parish, 2013 estimate	Cameron, 2010
Total Population	4,649676	6,679	406
White	63.5%	96.1%	92.4%
Black or African American	32.4%	2.1%	2.5%
American Indian and Alaska Native	0.8%	0.6%	2%
Asian	1.7%	0.2%	0%
Native Hawaiian and Other Pacific Islander	0.1%	0%	0%
Persons of Hispanic or Latin Origin	4.7%	3.2%	2.5%
2009-2013 percent persons below poverty level	19.1%	8.7%	not available



Source: U.S. Census 2015

3.3.3 Land Use and Infrastructure

According to information provided by the landowner there are numerous tenants in the Cameron Meadows project area that include petroleum exploration and production companies, recreational sportsman clubs, and various individuals (BEM 2014). The area is remote, with primarily recreational and oil and gas field use (Appendix B Land Use). The marshes and bayous of the area are used for hunting, fishing, and birding. Water line, fiber optic and telephone lines, and overhead power lines are at Highway 82 (Wall and others 2016; section 9.7). All utilities on the northern side of the highway are 50 to 60 feet from the center of the roadway. One pipeline to the south of the highway is located 86 feet away.

3.3.4 Hazardous, Toxic, and Radioactive Wastes

Balanced Environmental Management Systems (BEM) were contracted to conduct a survey of the area for any hazardous, toxic, and radioactive waste (HTRW). No "presence or likely presence of any hazardous substances or petroleum products in, on, or at a property" were found at the proposed project location (BEM 2014).

4 CONSEQUENCES

Effects of alternatives were designated as having no impact, no significant impact (minor or moderate), or significant impact. Consideration was given to both length of time and severity of the impact. Minor impacts are those that may be measurable but not result in adverse or beneficial effects to the human environment; these are short-term and reversible. Moderate impacts may have longer-term adverse or beneficial effects that have a measurable change to the identified environment, and thus warrant consideration of revision of the project component causing the impact. Significant impacts can be either harmful or beneficial to the natural and physical environment, and/or the relationship of people with those environments, and would require preparation of an EIS. The qualitative assessment is based on reference material and professional judgment. A quantitative assessment is included when sufficient data are available to do so.

4.1 Physical Environment

4.1.1 Geology, Soils, and Topography

Impacts of No Action Long-term, direct, minor adverse impacts could be expected. With no action, the existing marsh would continue to erode in storm conditions and the area of inundated soils increase. Without terracing and marsh creation, waves from wind and tide would erode the area, moving sediments around, and undercutting existing vegetation. While subsidence continues with or without the project,

without an increase in elevation or an increase in plant productivity soils would continue to weaken without recovery. Natural ridges to the north and south of the project area would be increasingly exposed to erosion.

Impacts of Preferred Alternative Long-term, indirect, moderate benefits to this resource would result as vegetation colonizes the recreated emergent areas. The created habitat would reduce wave energy and allow establishment of vegetation, reduce turbidity of the water, reduce the wind-induced marsh loss, and allow post-construction recovery of submerged aquatic vegetation. The proposed elevation increase would reduce vegetation stress caused by subsidence, and placed sediments would increase nutrient availability to plants. Increased plant productivity and subsequent increases in organic material would result in area soils.

Wave heights and wave direction were estimated using a Simulating Waves Nearshore (SWAN) model to compare differences in existing conditions and excavating the borrow area to nearshore zone (-5 to -10 feet NAVD88) and erosional patterns along vicinity shoreline (CB&I 2015).

Short-term, direct, minor adverse effects would result from the burial of approximately 2 acres of marsh that exist in the area. This impact would be temporary, as long-term, direct benefits of recreating approximately 359 acres of marsh is expected with increased elevation, plant productivity, and reduced stress. The dredged material used for the terraces would consist of naturally occurring material to the area. Native vegetative plantings would be used to stabilize soil, reduce resuspension of recently deposited sediment, and encourage sedimentation and colonization.

Impacts of Terrace and Marsh Creation Plus Culverts In addition to the effects of burial noted above for creating marsh, short-term, direct, adverse impacts related to construction activities disturbing soils would also result from hydrologic features. The long-term, indirect, moderate beneficial impacts are similar to the alternative. The created habitat would reduce wave energy and placed sediments would increase nutrient availability to plants that create organic soil material. Soils would be flooded 31 days less with this option, which would increase plant productivity of the created and existing marshes. This is calculated based on a 17-day difference in inundation (Table H, Alternative B of WIG 2016). Adding a hydrologic structure increases the risk of structure failures and added inundation in the long-term, which would reduce soil creation.

4.1.2 Climate and Air Quality

Impacts of No Action The no-action alternative would not substantially affect the climate or weather, and would not result in any changes to existing air quality in the area. Air quality would not be impacted by the volatizing of organic materials, nor emissions from dredging equipment from the proposed build alternatives. However, air quality would have some long-term, indirect, minor adverse impacts from the reduction of marsh over 20 years reducing the ability of the project area to extract carbon from the air during photosynthetic processes of the marsh plants. The areas ability to sequester atmospheric carbon would continue to decline due to the projected wetland loss.

Impacts of Preferred and Terrace and Marsh Creation Plus Culverts Alternatives Short-term, direct, minor adverse impacts to air quality from construction would be associated with emissions from diesel engines that would power the dredging machinery, and material placement operations. The addition of culverts would add short-term, adverse impacts from the greater length of construction emissions of unquantifiable difference from the Preferred Alternative. Emissions would occur over a period of a few months, with most emissions occurring at the dredge and creation sites. The emissions would consist predominantly of nitrogen oxides, with smaller amounts of carbon monoxide, sulfur dioxide, particulate matter, and volatile organic compounds.

Dredging is required to attain the sediment for marsh creation. Because there is some suggestion that increases in marsh acreage can contribute to the overall carbon sink and mitigate the effects of atmospheric carbon on global warming, any short-term, direct, minor adverse impacts from dredge material and machine operation would be negated by the long-term, direct, minor beneficial impacts. Prevailing winds would dissipate airborne pollutants and limit them to the proposed project's construction phase. In addition, newly placed, unconsolidated dredged material is subject to drying and blowing during high wind events, adding particulates to the air. Revegetation would hold sediments in place after a time. The impact to human health would be negligible because the proposed project area is remote from any residential area. In the long-term, air quality in the area is expected to be unchanged.

4.1.3 Water Resources

Impacts of No Action The no-action alternative would not directly affect local water quality. Long-term, indirect, moderate adverse impacts would result from increased turbidity, and with decline of the marsh health and productivity.

Impacts of Preferred Alternative Short-term, direct, minor adverse impacts associated with the dredging required for implementation include: (1) increased turbidity and decreased dissolved oxygen in the water column at the dredge sites (dredge plume) and fill sites; (2) potential decreased dissolved oxygen in the water column at the borrow area due to increased water depth; (3) possible exhumation of buried debris; and (4) discharges from the dredge vessel. During dredging, silt or clay may become suspended in the water column near the dredge site. The suspended sediment would settle in a matter of hours to days (depending on current). If the disturbed sediments were anoxic, the dissolved oxygen levels in the water column would decrease. Turbidity and suspended particulate levels in the water column above the borrow area are normally high as a result of coastal processes.

Long-term, indirect, minor benefits to water quality would result from the ability of created marsh to remove nitrates and phosphate. Construction of terraces is expected to reduce turbidity in adjacent water bodies by lessening the amount of wind generated water turbulence. Beneficial impacts to water quality are likely to result from the ability of terraces to trap sediments and decrease shoreline-erosion (Steyer and others 1993) thereby reducing turbidity, and increase submerged aquatics (Rozas and Minello 2001, 2006) that trap sediments and consume nitrates and phosphates.

Impacts of Terrace and Marsh Creation Plus Culverts Short-term, direct, minor adverse impacts associated with the dredging required for implementation of the alternative are similar to the Preferred Alternative. The additional activity would increase turbidity during construction, but would provide long-term, beneficial impacts to area water by improving oxygenation. Bank retention and preventative flapgates would preserve water flow and quality.

4.2 Biological Environment

4.2.1 Vegetation Resources

Impacts of No Action With no action, continued erosion and subsidence are expected to occur, resulting in losses to over 20 acres of marsh resources (NOAA Fisheries Service 2013). The area would convert to open water in the foreseeable future.

Impacts of Preferred Alternative Funding this alternative would exert long-term, direct, minor benefits on vegetative communities of the area by adding elevation to marshes. This would offset some subsidence, increase vegetative productivity, and decrease conversion of remaining marshes to open water for 20 years. The increase in elevation would be beneficial to vegetative communities by reducing flooding stress on the plants and allow time for vegetation to colonize and contribute to the elevation. Accumulation of organic material is a primary factor influencing the vertical accretion of marshes.
Implementing this alternative would have unavoidable short-term, direct, minor adverse impacts to the existing marsh. Some marsh (~1 acre) would be adversely impacted by burial during construction of the marsh (on the scale of hundreds of acres). Shallow open waters, which are abundant in coastal Louisiana, would be replaced with marsh. Within the shallow open waters, SAV habitat would have direct, moderate, adverse impacts that would be local and long-term in nature.

Direct, adverse impacts from marsh creation would fill in 293 acres of shallow open water where SAV was estimated at 70% cover. The benefit of increased marsh from marsh creation is expected to offset the adverse effects to SAV, such that the overall impact to SAV is not significant.

Impacts of Terrace and Marsh Creation Plus Culverts Improvements to hydrology would increase oxygenation of soils that can increase plant productivity for emergent and submerged species. Salinity may be slightly improved, thereby lessening stress on plant production. Initial unavoidable, short-term disturbance of the vegetation would be insignificant compared to long-term increase to emergent marsh from this alternative.

Utilizing information from WIG (2016) and the WVA (NOAA Fisheries Service 2016), the existing 7,531 acres of marsh are flooded 79% of the time. This alternative would reduce the inundation <14% based on a similar alternative (WIG 2016 Alternative P). This does not meet a target of 50% inundation for a healthy marsh. Also, there is some risks involved in altering hydrology. Adding hydrologic structures within an existing spoil bank provides an opportunity for structures to be vandalized, or fall into disrepair, and adversely impact the 7,531 acres of healthy intermediate and brackish marsh. Therefore, this alternative carries greater cost and risk than the Preferred Alternative.

SAV impacts are similar to the Preferred Alternative. Decreases in water depth may increase SAV at some locations, while exposing marsh edges. Habitat quality may be increased for SAV (water clarity, salinity, and depth), but quantity of habitat reduced as there would be less water area.

4.2.2 Benthic Habitats

Impacts of No Action The benthic area at the marsh creation location would continue to increase as marsh converts to open water, increasing the quantity of habitat and thus a long-term, direct, minor benefit to the aquatic and benthic habitat. However, the area would become more exposed to marine processes, shearing, and other storm-related disruptions that would have long-term, direct, minor adverse impacts to associated infauna habitat in the re-suspended or disturbed sediments.

Impacts of Preferred Alternative Long-term, indirect, minor benefits would be expected from improved water quality resulting from increased primary productivity surrounding the proposed marsh creation areas. The created marsh would contribute to detritus and decrease turbidity. Short-term, local, direct, minor to moderate adverse impacts to aquatic and benthic resources would occur from the direct disturbance or burial of sediment and associated organisms during dredging. Other direct, adverse impacts could include entrapment and likely death of slow-moving organisms and polychaetes during dredging, and smothering of benthic organisms in the deposition sites. Mobile invertebrates would be expected to vacate the proposed project area during construction and return after construction is complete. Organisms that do not move out of the area would likely be injured by suffocation from suspended sediments. Dredging would change substrate topography, causing a temporary redistribution of organisms in the immediate vicinity. Benthic community in the borrow area is expected to recover, as organisms would likely re-colonize borrow areas. Early-stage recruitment of defaunated sediments occurs rapidly in coastal systems (Grassle and Grassle 1974, McCall, 1977, Simon and Dauer 1977, Ruth and others 1994, all as cited in EPA 2003). Later stages of colonization would be more gradual and would depend on environmental conditions after cessation of dredging. Fish and invertebrates are expected to recover as turbidity returns to pre-construction levels.

Impacts of Terrace and Marsh Creation Plus Culverts Minor to moderate adverse impacts to aquatic and benthic resources would be similar to the Preferred Alternative. Benthic organisms would be impacted from dredging of the borrow area, as with the Preferred Alternative. Benthic community in the borrow area is expected to recover, as organisms would likely re-colonize borrow areas. Early-stage recruitment of defaunated sediments occurs rapidly in coastal systems (Grassle and Grassle 1974, McCall, 1977, Simon and Dauer 1977, Ruth and others 1994, all as cited in EPA 2003). Later stages of colonization would be more gradual and would depend on environmental conditions after cessation of dredging. Fish and invertebrates are expected to recover as turbidity returns to pre-construction levels.

4.2.3 Essential Fish Habitat (EFH)

Impacts of No Action The variety and quality of EFH associated with estuarine areas are expected to continue to decrease as the remaining marsh converts to open-water. Open-water EFH that is already plentiful in the area would increase. SAV is not expected to decline, as some areas would be exposed to marine waters and experience declines, while other areas that convert from marsh would increase.

Impacts of Preferred Alternative Open water EFH that is already plentiful in the area would be replaced with marsh EFH at the marsh creation area. Open water EFH at the borrow area would be converted to deeper open water EFH. Federally managed species such as brown shrimp, white shrimp and red drum have higher standing crops in marsh as compared to unvegetated open water, as marsh habitats support nursery and foraging functions. The restoration of more productive categories of EFH at the expense of less productive categories is expected to benefit those federally managed fishery species. SAV EFH is expected to remain the same after a temporary decline due to burial from sediment placement in shallow open water. Unavoidable entrapment of slow-moving organisms during construction and temporary increases in turbidity would be minor and limited in space and time. Long-term benefits of increased marsh include increasing detrital material formed by the breakdown of emergent vegetation, which contribute to the aquatic food web of the near-shore Gulf ecosystem.

Impacts of Terrace and Marsh Creation Plus Culverts Open water EFH at the borrow area would be converted to deeper open water EFH. Marsh EFH would replace ~400 acres of shallow open water soft bottom EFH. Construction of the water control structure would convert ~ 0.17 acre (75 feet by 100 feet) of a soft bottom in a man-made canal to rock bottom EFH (Wall and others 2016; sheet 13 draft plans). Changes to marsh productivity could increase or decrease the quality marsh EFH in the long-term for hundreds of acres.

4.2.4 Marine Fishery Resources

Impacts of No Action Abundant open-water fisheries habitat is available in coastal Louisiana and increasing. The increase in open-water fisheries habitat comes at the expense of submerged vegetation and emergent fisheries habitats, which are less common and more vulnerable to disturbance than open-water habitat. The quality of fish habitat is expected to decrease as remaining marsh converts to open water reducing the nursery function of the area for estuarine-dependent species.

Impacts of Preferred Alternative Short-term, local, direct, minor adverse impacts to fishery resources would occur during construction from dredging and placement of sediments. Short-term moderate effects on fish eggs and larvae in the immediate area may occur. Fish and invertebrates are expected to recover as turbidity returns to pre-construction levels. Long-term, direct and indirect, minor beneficial impacts would result from the increase in marsh habitat providing nursery for estuarine-dependent fisheries.

Impacts of Terrace and Marsh Creation Plus Culverts The long-term, direct and indirect, minor beneficial impacts would be similar to the Preferred Alternative, from increasing marsh habitat that provides nursery functions for estuarine-dependent fisheries.

4.2.5 Marine Mammal Resources

Impacts of No Action With no action, the marsh used by marine mammal forage species, such as small fish, would decline resulting in long-term, indirect, minor adverse impacts.

Impacts of Preferred Alternative Dolphin and their prey species may be temporarily displaced to other similar habitat, so short-term, indirect, minor adverse impacts may be associated with the build alternatives. Construction is expected to occur continuously for a period of 12-18 months. These are minor adverse impacts as they are temporary and the borrow area is located in open water where dolphin movements would not be restricted. Should any manatee or dolphin be seen, any workboats in the area would be instructed to cease work until the marine animal is over 500 feet away.

Impacts of Terrace and Marsh Creation Plus Culverts Impacts are the same as the Preferred Alternative. No additional restrictions of prey ingress and egress to the marsh would be affected, as the water control structures would be placed in an existing spoil bank. Contractors would be instructed to watch for marine mammals. Should any manatee or dolphin be seen, any workboats in the area would be instructed to cease work until the marine animal is over 500 feet away.

4.2.6 Migratory Bird Resources

Impacts of No Action With no action, the marsh used by migratory birds and their forage species would decline. Long-term, indirect, minor adverse impacts would be related to habitat quality and quantity reduction.

Impacts of Preferred Alternative Terracing is known to increase waterbird density (O'Connell 2006). Short-term, direct, minor adverse impact would result from the displacement of foraging birds. Greater long-term, indirect, minor benefits after construction would result from increased longevity of the foraging habitat and habitat diversity.

Although no nesting colonies are known to occur within the project area at this time, if nesting colonies (i.e., plovers, terns, herons, egrets, night-herons, ibis, and roseate spoonbills) anhinga, and/or cormorants are observed, all activities within 1,000 feet of the nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). Because the anticipated construction duration is in excess of eight months and some construction activities may occur during the nesting season, time-of-year restrictions may not be practicable. Accordingly, an abatement plan to ensure that birds do no nest at the time of project construction would be developed in consultation with the U.S. Fish and Wildlife Service if required to address potential nesting.

The disturbance of construction activities is likely to prevent colonies from selecting the area for nesting once activities have commenced. Long-term, direct and indirect, moderate benefits would occur by increasing the quality of foraging area.

Impacts of Terrace and Marsh Creation Plus Culverts Foragers would be temporarily displaced to an abundance of nearby foraging habitat the same as with the Preferred Alternative. Short-term, direct, minor adverse impacts would be similar to the Preferred Alternative with a longer construction time and longer disturbance due to culvert construction. Also, greater long-term, indirect, minor benefits related to new habitat diversity, and longevity of the foraging marsh are similar to the Preferred Alternative, but impacts vary by scale. This alternative would influence a much larger area than the Preferred Alternative (Table 1).

4.2.7 Wildlife Resources

Impacts of No Action Without action existing marsh that is habitat for species that support game, reptiles, avian and other wildlife, would continue to erode. Shallow open water is likely to increase with some areas becoming deep open water, and current marsh areas becoming shallow open water. Long-term, indirect, minor adverse impacts would result from no action.

Impacts of Preferred Alternative Habitat diversity that supports the potentially diverse wildlife population would be maintained for the 20-year project life. The build alternatives would create increased habitat areas for wildlife, resulting in minor to moderate beneficial impacts.

4.2.8 Threatened and Endangered Species

Impacts of No Action Without action existing marsh that is habitat for species that support sea turtle and marine mammal, such as species of shrimp and fish, would be lost. Long-term, indirect, minor adverse impacts would result from no action.

Impacts of Build Alternatives Effects to the three potential species of sea turtles include the risk of injury from dredging, but the sea turtles are able to move away from the project site. If a sea turtle was spotted within 50 feet of the project action area, construction would cease temporarily in compliance with NOAA's Sea Turtle and Smalltooth Sawfish Construction Conditions (Appendix B). Temporary, indirect, minor adverse impacts from the sea turtles' inability to use the area for foraging and shelter due to noise and construction avoidance could occur, but are not significant, because the borrow area is in open water that does not restrict movement or contain special foraging/ sheltering habitat. Increases in turbidity are not expected to be significant, as the area is already highly turbid water. Use of hydraulic dredging equipment presents direct risks to sea turtles. However based on analysis of dredging in Biological Opinions by NOAA Fisheries Service, the particular type of dredging method for this proposed project - mechanical, bucket, cutterhead, and/or pipeline – is likely to have no significant impact on sea turtles that may be in the project area.

The U.S. Fish and Wildlife Service and NOAA Protected Resources concurred that the proposed project is not likely to adversely affect federally-listed threatened or endangered species or associated critical habitat (Appendix C). Long-term, moderate, indirect benefits to listed species may result from increasing the quality of forage species habitat.

4.3 Cultural Resources

4.3.1 Historic, Prehistoric and Native American

Impacts of No Action No resources have been identified in the area to be affected.

Impacts of Build Alternatives No resources are likely to be affected by these actions, because the marsh creation areas have not been at elevations suitable for habitation, major waterways, nor the banks of shorelines, and the pipeline corridor and borrow areas have been surveyed for potential historical significance and none were found (CB&I 2015). The State Historic Preservation Office concur (Appendix C). Potential shipwrecks and modern debris that were identified in surveys of the pipeline and borrow area would be undisturbed, as they would be marked as avoidance or no-work zones and "should have no adverse impact of historical vessel remains or other significant submerged cultural resources (CB&I 2015).

4.3.2 Socioeconomics (Income and Environmental Justice)

Impacts of No Action The area marshes support shrimping in the region. Eventually, habitat conversion to shallow open water would lead to loss of income in the region because marsh habitats provide essential nursery function to shrimp.

Impacts of the Build Alternatives Neither build alternative would impact socioeconomics. Either build alternative would provide some employment and have potential to have some local business use for groceries, fuel, or other essentials during construction.

4.3.3 Land Use and Infrastructure

Impacts of No Action Conversion of the proposed project area to open water increases exposure of active and inactive pipelines posing threats to human safety, and decreases the commercial and recreational value of the area. Increased storm surges would erode nearby land and increase structural damages from storms. Therefore, long-term, direct, moderate adverse impacts are expected with no action.

Impacts of Preferred Alternative Long-term, direct and indirect, minor benefits would result from a decrease in wave erosion for surrounding land, pipelines, and infrastructure. Short-term, reversible, direct and indirect, minor adverse impacts on recreational use and highway use would occur during construction. Recreational uses would not be prevented, as the marsh area is not public. Impacts to highway LA 27/82 include the installation of a permanent pipeline and water control structure (Figure 7). All utilities on the northern side of the highway are 50 to 60 feet from the center of the roadway. One pipeline to the south of the highway is located 86 feet away. The spacing of utilities near the highway 82 allow adequate area for the proposed installation assuming trenchless installation techniques (Wall and others 2016).

Impacts of Terrace and Marsh Creation Plus Culverts Impacts to land use/ recreation would be similar to Preferred Alternative. Long-term, direct and indirect, minor benefits would result from a decrease in wave erosion for surrounding land, pipelines, and infrastructure. Short-term, reversible, direct and indirect, minor adverse impacts on recreational use and highway use would occur during construction. Recreational uses by the public would not be prevented, as the marsh area is private. The alternative is consistent with the current landowner uses to minimize salinity intrusion and promote the wetland habitat functions for recreation (primarily hunting and fishing). Impacts to highway LA 27/82 include the installation of a permanent pipeline and water control structure (Figure 7), same as with the Preferred Alternative.



FIGURE 7. STRUCTURE LOCATIONS OF TERRACE AND MARSH CREATION PLUS CULVERTS

Source: GeoEngineers 2016

4.3.4 Hazardous, Toxic, and Radioactive Wastes

Impacts of No Action Long-term, indirect, minor adverse impacts due to increased exposure of oil and gas infrastructure.

Impacts of Build Alternatives The state of Louisiana specifies contract conditions that minimize adverse impacts. Magnetometer surveys were conducted to verify the location of submerged oil and gas pipelines, to identify any potential hazards. Anomalies have been mapped for avoidance and specification of no work zones near pipelines. Pipelines have been identified and mapped that have less than 3 feet of sediment cover around the dredge pipeline corridor. The risk of disturbance would be minimized by floating the needed pipe for dredged sediment over areas with existing pipelines. The build alternatives do not differ in HTRW considerations.

4.4 Other Considerations

4.4.1 Cumulative Impacts

Direct and indirect impacts of past, present, and reasonably foreseeable future events were considered in the analysis of the proposed project consequences. These impacts include historical and predicted future land loss rates for the area and other restoration projects in the vicinity.

Coastal Louisiana within the project area has been greatly impacted by natural subsidence (Reed and Yuill 2009), levees, hurricanes, and oil and gas infrastructure. Recent events, such as hurricanes or oil

spills, contribute to the loss of habitat, and similar influences, such as future sea level rise, have been considered in impact analysis.

No wetland restoration projects are in the area; however, a beach and dune restoration along the shoreline southeast of the area was constructed by the state near Holly Beach, which is the only habitat restoration conducted in a 15-mile radius of the proposed project area. The 2012 State Master Plan is the State's plan to prioritize restoration projects, and includes this proposed project's restoration area, along with beach and ridge protection and restoration to the south. These features are to synergistically foster structural and functional integrity of the ecosystem, improve primary productivity rates, and thereby improve the overall environmental resources. The proposed project is consistent with this coastwide planning (Appendix B Coastal Master Plan for Cameron Meadows).

The hydrologic model (the ICM, WIG 2016) suggests negligible effect (no significant impact) of the alternatives to surrounding water level and salinity. The ICM model was considered to see if the action would influence the Coastal Master Plan. "No significant changes are apparent based on the pre/post project output provided by the ICM," says the report (Miller and others 2016) about an alternative the same as the Terrace and Marsh Plus Culverts Alternative; thus, no cumulative impacts are expected.

4.4.2 Invasive Species

Executive Order 13112 requires federal agencies to use authorities to prevent introduction and control (in cost effective and environmentally sound manners) invasive species, and to provide for restoration of native species and habitats in ecosystems that have been invaded. The purpose of the Preferred Alternative is to restore the native habitat. The project would not introduce invasive species, any invasive species present could spread on the newly created mudflat. The State of Louisiana, whom administers contracts for plantings, uses only plantings authorized for release. This ensures appropriate (noninvasive) species and cultivars are provided.

4.4.3 Selection of Preferred Alternative

Selection of the preferred alternative was based on the analysis of the impacts of both build alternatives in comparison with the no action alternative. The Terrace and Marsh Creation Plus Culverts alternative was considered throughout this EA, but was not selected as the preferred alternative for NOAA Fisheries Service and consideration for funding through the CWPPRA program. It was not selected due to minor and unclear benefits (potential reductions of inundation and salinity in the project area) with clear increases in cost and long-term maintenance requirements due to the installation of culverts.

4.4.4 Coordination

Coordination in development of the proposed project, its alternatives and selection of the preferred alternative has been maintained with each CWPPRA Task Force agency. The project was vetted publicly through the CWPPRA process, which includes opportunities for the public and CWPPRA agencies to comment on the proposed project. The project was discussed in public meetings for CWPPRA where project details were made available. Prior to initiating the draft EA, a solicitation of views was sent to those listed in the distribution section. Comments received are summarized in Appendix C. A draft of this EA was circulated to participating restoration agencies in December 2016 and was available to the public in April 2016. The Preferred Alternative is not expected to cause adverse environmental impacts that would require compensatory mitigation.

4.4.5 Compliance with Laws and Regulations

Many federal, state, and local laws and regulations were considered during development of the proposed restoration project, as well as several regulatory requirements that are typically evaluated during the permitting process. A brief review of potentially applicable laws and regulations that may pertain to this proposed project is available in Appendix A. Relevant correspondence is provided in Appendix C and the

status in Table 6. The project manager would ensure that there is coordination among these programs where possible and that project implementation and monitoring comply with all applicable laws and regulations.

Law or Regulation	Status	
Archeological & Historic	Completed as per SHPO letter 2-11-15, and cultural	
Preservation Act of 1974	surveys in CB&I 2015 report	
Clean Air Act of 1970	Coordinated with LDEQ 4-14-15	
Clean Water Act	Pending, Permit application to USACE for section	
	404 is being prepared concurrent with the	
	completion of this EA	
Coastal Zone Management Act	In Process	
of Louisiana Executive Order		
11998, Floodplain Management		
Endangered Species Act of	Coordination complete with U.S. Fish and Wildlife	
1973	Service 4-2-15, and NOAA 11-2-15	
Executive Order 11990,	Coordinated with Floodplain Administration of	
Protection of Wetlands	Cameron Parish and FEMA	
Executive Order 12898, Federal	In compliance, assessed with this EA	
Actions to Address		
Environmental Justice in		
Minority Populations & Low-		
Fish & Wildlife Coordination	Coordination with U.S. Fish and Wildlife Service	
A ct	for ESA 4.2.15 NOAA Eisberies for EEH and sea	
Act	for ESA 4-2-15, NOAA Fishences for EFH and sea turtles 11_{-2-15} and 12_{-1-16} and as a CWPPR A	
	narticinating agencies	
Magnuson-Stevens Fishery	Completed with NOAA Fisheries 12-1-16	
Conservation & Management		
Act		
Migratory Bird Treaty Act of	Coordinated with U.S. Fish and Wildlife Service 4-	
1918	2-15	
National Environmental Policy	In Process with this EA draft	
Act of 1969		
National Historic Preservation	Completed as per SHPO letter 2-11-15	
Act of 1966		

5 CONCLUSIONS

The natural processes of subsidence, habitat change, and erosion of wetlands have been exacerbated by widespread human alterations of sediment delivery and other processes, resulting in marked degradation of the Louisiana coastal area. Without intervention to slow or reverse the loss of marshes, Louisiana's healthy and highly productive coastal ecosystem would not be maintained. Table 7 presents avoidance and minimization measures of the preferred alternative. Table 8 presents a summary of environmental impacts associated with the no-action and build alternatives.

Resource	Potential Avoidance and Minimization Measures
Geology, Soil &	None
Topography	
Climate & Air	None
Quality	
Water	None
Vegetation	Care would be taken and measures included in the construction contracts to increase awareness to rare plants and excessive disruption to existing vegetation by heavy machinery at the pipeline shoreline access area.
Aquatic & Benthic Habitats	A Turbidity Control Plan, and designated dewatering water control structures are standard contract provisions.
Essential Fish Habitat & Fisheries	None
Marine Mammals	Should any manatee or dolphin be seen, any workboats in the area would be instructed to cease work until the marine animal is over 500 feet away.
Migratory Birds	Coordination with U.S. Fish and Wildlife Service to avoid construction during nesting season.
Wildlife	Care would be taken and measures included in the construction contracts to increase awareness to wildlife and potential sources of disruption.
Threatened & Endangered Species	Construction contract provisions would include avoidance measure to prevent takings of threatened and endangered species. If a sea turtle was spotted within 50 feet of the project action area, construction would cease temporarily in compliance with NOAA's Sea Turtle and Smalltooth Sawfish Construction Conditions
Historic, Prehistoric & Native American	Contract provisions would require areas of potential submerged artifices to be avoided
Socioeconomics	None
Land Use & Infrastructure	Contract provisions would include plans to keep one lane open, and to open both lanes as soon as practicable if an evacuation route is needed. Highway alteration would be completed outside hurricane season.
Hazardous, Toxic & Radioactive Waste	Contract provisions would require pre-construction magnetometer surveys to avoid potential oil and gas pipeline interactions and construction plans include offsets from identified pipeline areas.

TABLE 7. AVOIDANCE AND MINIMIZATION MEASURES OF THE PREFERRED ALTERNATIVE

TABLE 8. SUMMARY OF DIRECT, INDIRECT, AND CUMULATIVE ENVIRONMENTAL IMPACTS OF ALTERNATIVES

Resource	No Action	Preferred Alternative – Terrace and Marsh Creation	Terrace and Marsh Creation Plus Culverts
Geology, Soils & Topography	Minor adverse as soils subside at marsh	Minor beneficial with soil formation, sediment addition	Minor beneficial with soil formation, sediment addition
Climate & Air Quality	Minor adverse from lost carbon sequestration	Minor adverse from emissions.	Minor adverse from emissions (more emissions than with preferred alternative).
Water	Minor adverse as continued and increased turbidity occur with marsh loss	Minor adverse from increased turbidity during dredging, and minor beneficial from wave- reductions	Minor adverse effects of turbidity with dredging, with long-term, minor benefits of functional marsh lowering turbidity
Vegetation	Minor adverse with conversion to open water due to continued inundation.	Moderate beneficial from increased marsh quality and quantity	Moderate beneficial from increased marsh quantity
Aquatic & Benthic Habitats	Minor adverse from reduced marsh acres, no change at borrow	Minor adverse from dredging	Minor adverse from dredging.
Essential Fish Habitat & Fisheries	Minor adverse from conversion of marsh to open water	Moderate benefit from conversion of open water to ~400 acres marsh	Moderate benefit from conversion of open water to ~400 acres marsh
Marine Mammals	None	Minor adverse from construction	Minor adverse from construction
Migratory Birds	None	Minor benefit from increased habitat quality and quantity	Minor benefit from increased habitat quality and quantity
Wildlife	None	Minor benefit from retention of habitat diversity	Minor benefit from retention of habitat diversity
Threatened & Endangered Species	Minor adverse from prey habitat declines	Minor beneficial from prey habitat increases	Minor beneficial from prey habitat increases
Historic, Prehistoric & Native American	None	None	None
Socioeconomics	Minor adverse from declined use and value with land loss	Minor benefit from increased available marsh, fish and wildlife	None
Land Use & Infrastructure	Minor adverse from increased exposure to storms and erosion	None	None
Hazardous, Toxic, & Radioactive Waste	None	None	None

This EA provides information on the direct, indirect, and cumulative impacts on the human environment likely to result from funding Cameron Meadows. The analysis in this EA provides evidence that the long-term beneficial impacts on the coastal resources of south Louisiana would not result in any substantial long-term adverse environmental impacts. Construction-related adverse impacts would be temporary or reversible, and therefore qualified as minor in the EA. The analysis of this EA further provides evidence that beneficial impacts would be minor to moderate. This effects analysis is based on a review of relevant literature, site-specific data, and project-specific engineering reports related to biological, physical, and cultural resources, as well as on the cumulative experience gained through many similar coastal restoration projects in other areas of south Louisiana in past decades. The increase of fisheries habitat is anticipated to have long-term beneficial impacts on the local economy and culture as it relates to recreational and commercial fishing. In addition, the preferred alternative would result in increased protection of adjacent marsh in the area to be restored. NOAA Fisheries Service will review, evaluate, and consider the evidence in this EA to determine whether it supports a finding that the proposed action would have no significant impact on the quality of the human environment.

6 PREPARERS

This EA was prepared by biologists Joy Merino, Cecelia Linder, Jessica Berrio, and Patrick Williams of NOAA Fisheries Service.

7 PERSONS / AGENCIES CONSULTED

References in the literature cited and the following persons / agencies were consulted in the preparation of this EA.

- Linda Hardy, Louisiana Department of Environmental Quality
- Pam Breaux, Louisiana State Historic Preservation Officer

8 DISTRIBUTION LIST

This EA was distributed for comment to agencies of the CWPPRA Task Force and resource agencies as listed below. A minimum 30-day comment period was provided. A draft EA was available for public review. A final EA will be made available to the public at http://www.lacoast.gov along with other public records for the project. The EA was distributed to:

Mark Wingate Chairman Deputy District Engineer, U.S. Army Engineer District, New Orleans Office of the Chief. 7400 Leake Ave. New Orleans, Louisiana 70160-0267
Darryl Clark Senior Field Biologist, U.S. Fish and Wildlife Service. 646 Cajundome Blvd, Suite 400 Lafayette, Louisiana 70506
Bren Haas Deputy Chief- Studies & Environmental Branch, Coastal Protection and Restoration Authority. 617 North 3rd Street Baton Rouge, Louisiana 70804-4027
Richard Hartman Fishery Biologist, National Marine Fisheries Service. Rm 266 Military Science Bldg South Stadium Drive, LSU Baton Rouge, Louisiana 70803-7535
Karen McCormick Section Chief Environmental Protection Agency, Region 6 Marine and Coastal Protection Division (6WQ-EC). 1445 Ross Avenue Dallas, Texas 75202-2733
Britt Paul, P.E. Assistant State Conservationist, Water Resources, Natural Resources Conservation Service. 3737 Government Street Alexandria, Louisiana 71302

A solicitation of comments on the proposed project was conducted by mailing letters to the following listed entities prior to this analysis. Comments received are summarized in Appendix C and considered in

analysis and project design. Full letters of reply are available in the project files maintained by the NOAA Fisheries Service.

8th Coast Guard District Commander Cameron Parish Civil Defense Cameron Parish Police Jury Cameron Parish School Board **Cameron Parish Sheriff** Coalition to Restore Coastal Louisiana Coushatta Tribe of Louisiana Department of Health and Hospitals Chief Sanitarian and Division of Environmental Health Department of Public Safety Highway Safety Commission Department of the Army Technical Support Department of the Army, Galveston District Corps of Engineers Department of Wildlife & Fisheries Louisiana Natural Heritage Program Department of Agriculture and Forestry - Office of Soil & Water Conservation and Office of Forestry Department of Culture Recreation & Tourism/Division of Archaeology and Office of State Parks Department of Economic Development Office of Business Development Division of Administration State Land Office and State Planning Office Environmental Protection Agency Source Water Protection and Federal Activities Federal Transit Administration Region 6 Floodplain Management Program District 64 Gulf Coast Soil and Water Conservation District of Louisiana Imperial Calcasieu Regional Planning and Development Inter-Tribal Council of Louisiana, Inc. Jena Band of Choctaw Indians Lake Charles Harbor and Terminal Louisiana Department of Environmental Quality Beth Altazan-Dixon, Office of the Secretary Louisiana House of Representatives District 47 Bob Hensgens Louisiana Senate District 25 Dan Blade Morrish Louisiana Department of Natural Resources Office of Conservation, Office of Mineral Resources Louisiana Forestry Association Louisiana Good Roads Association Louisiana State University Sea Grant Legal Advisory Service Mississippi Band of Choctaw Indians Natural Resources Conservation Service Office of Indian Affairs Seminole Nation of Oklahoma Tunica - Biloxi Tribe of Louisiana U.S. Geological Survey U.S. House of Representatives; District 1 - Steve Scalise, District 2 - Cedric Richmond, District 3 -Charles Boustany, Jr. MD, District 4 - John Fleming, MD, District 5 - Ralph Abraham, District 6 - Garret Graves U.S. National Park Service U.S. Senate - David Vitter and Bill Cassidy

9 LITERATURE CITED

Balanced Environmental Management Systems (BEM) 2014. Cameron Meadows Marsh Creation and Terracing Phase I ESA. Sept. 16, 2014.

Bryant, J and RH Chabreck. 1998. Effects of impoundment on vertical accretion of coastal marsh.

Estuaries.

- Choi, Y and Y Wang. 2004. Dynamics of carbon sequestration in a coastal wetland using radiocarbon measurements. *Global Biogeochemical Cycles* 18:GB4016.
- CB&I Coastal Planning & Engineering, Inc. 2015. Cameron Meadows Marsh Creation and Terracing (CS-66) Geophysical Investigations Data Report. Boca Raton, Florida: 20p. Prepared for Coastal Protection and Restoration Authority, Louisiana.
- Coastwide Reference Monitoring System (CRMS). 2015. Basic Viewer. U.S. Geologic Society. Lafayette, LA. Accessed March 27, 2015 at http://lacoast.gov/crms2/Home.aspx
- Council on Environmental Quality (CEQ). 1992. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, Reprint, 40 CFR Parts 1500-1508, Executive Office of the President, Council on Environmental Quality.
- Wall, J, K Guillory, V Carver, and J Foret. 2015. Cameron Meadows Marsh Creation and Terracing Project (CS-66) – Preliminary (30%) Design Report. Baton Rouge, Louisiana: CB&I Coastal Planning & Engineering, Inc. July.
- Wall, J, K Guillory, K Freer, and J Foret. 2016. Cameron Meadows Marsh Creation and Terracing Project (CS-66) – Preliminary (95%) Design Report and Plans. Baton Rouge, Louisiana: CB&I Coastal Planning & Engineering, Inc. July.
- Engle, VD. 2011. Estimating the provision of ecosystem services by Gulf of Mexico Coastal Wetlands. Wetlands. 31:179–193.
- GeoEngineers. 2016. Draft Geotechnical Engineering Services: Cameron Meadows Marsh Creation and Terracing (CS-66). February 1, 2016. Final April 1, 2016.
- Gould, HR and E McFarlan. 1959. Geologic history of the Chenier Plain, southwestern Louisiana. *Gulf Coast Association and Geologic Society Transactions* 9:261–279.
- Gulf of Mexico Fishery Management Council (GMFMC). 1998. Generic amendment for addressing essential fish habitat requirements in the following Fishery Management plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States waters; Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerel) in the Gulf of Mexico and South Atlantic; Stone Crab Fishery of the Gulf of Mexico; Spiny Lobster Fishery of the Gulf of Mexico; Coral and Coral Reefs of the Gulf of Mexico. GMFMC, Tampa, FL.
- GMFMC. 2005. Final Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Water, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic, Stone Crab Fishery of the Gulf of Mexico. Spiny Lobster in the Gulf of Mexico and South Atlantic, Coral and Coral Reefs of the Gulf of Mexico. GMFMC, Tampa, FL.
- Herke, WH. 1978. Some effects of semi-impoundment on coastal Louisiana fish and crustacean nursery usage. In: RH Chabreck (ed.) Proceedings of the Third Coastal Marsh and Estuary Management Symposium. Division of Continuing Education, Louisiana State University, Baton Rouge, LA.
- LaBrecque, E, C Curtice, J Harrison, SM Van Parijs, PN Halpin. 2015. Biologically Important Areas for Cetaceans Within U.W. Waters –Gulf of Mexico Regions. *Aquatic Mammals*. 41:30-38.
- Louisiana Coastal Wetlands Conservation and Restoration Task Force (LCWCRTF). 1993. Louisiana Coastal Wetlands Restoration Plan: Main Report and Environmental Impact Statement. 163 pp.
- LCWCRTF. 2011. 21th Priority Project List Report (Appendices). Louisiana Department of Natural Resources. Baton Rouge, LA.
- LCWCRTF and the Wetlands Conservation and Restoration Authority (WCRA). 1998. *Coast 2050: Towards a Sustainable Coastal Louisiana*. Louisiana Department of Natural Resources. Baton Rouge, LA. 161 pp.

- LCWCRTF and WCRA. 1999. Coast 2050: Towards a Sustainable Coastal Louisiana, The Appendices. Appendix F – Region 4 Supplemental Information. Louisiana Department of Natural Resources. Baton Rouge, LA. 260 pp.
- Louisiana Department of Environmental Quality (LDEQ). 2008. Water quality management plan: volume 4 Basin and subsegment Boundaries. Baton Rouge, LA.
- LDEQ. 2015. *National Ambient Air Quality Standards*. Accessed March 25, 2015 at http://airquality.deq.louisiana.gov/
- LDEQ. 2013. The 2012 Louisiana Water Quality Inventory: Integrated Report Accessed March 27, 2015 at

http://www.deq.louisiana.gov/portal/DIVISIONS/WaterPermits/WaterQualityStandardsAssessme nt/WaterQualityInventorySection305b/2012IntegratedReport.aspx

- Louisiana Department of Natural Resources (LDNR). 2002. *Hydrologic Investigation of the Chenier Plain.*
- McBride, RA, MJ Taylor, and MR Byrnes. 2007. Coastal morphodynamics and Chenier-Plain evolution in southwestern Louisiana, USA: A geomorphic model. *Geomorphology* 88:367–422.
- Miller, R, CH Fenstermaker, and E Meselhe. 2016. *Cameron Meadows Marsh Creation and Terracing* (CS-66) Hydrodynamic Modeling Report. Water Institute of the Gulf (WIG) April 22.
- NOAA Fisheries Service. 2007. Revision 2 to the November 19, 2003, Gulf of Mexico Biological Opinion to the U.S. Army Corps of Engineers on Hopper Dredging of Navigation channels and Borrow Areas in the U.S. Gulf of Mexico. Southeast Regional Office, Protected Resources Division, St. Petersburg, Florida.
- NOAA. 2012. Commercial Fisheries Landings Data for 2010 and 2011. Office of Science and Technology. Available on-line at http://www.st.nmfs.noaa.gov/commercial-fisheries/fus/fus11/index
- NOAA Fisheries Service. 2013. Cameron Meadows Marsh Creation and Terracing Candidate Project Final Information Sheet for Wetland Value Assessment. April 19.
- NOAA Fisheries Service. 2016. Cameron Meadows Marsh Creation and Terracing Final Information Sheet for Wetland Value Assessment. October.
- O'Connell, J. 2006. Coastal marsh restoration using terraces: effects on waterbird habitat in Louisiana's Chenier Plain. Louisiana State University, School of Renewable Natural Resources, Masters Thesis.
- Office of Coastal Protection and Restoration (OCPR). 2012. Louisiana's Comprehensive Master Plan for a Sustainable Coast. Accessed March 27, 2015 at http://sonriswww.dnr.state.la.us/gis/agsweb/IE/JSViewer/
- Owen, D. 2008. Geology of the Chenier Plain of Cameron Parish, southwestern Louisiana. Field Guides. 14:27–38.
- Penland S and JR Suter. 1989. The geomorphology of the Mississippi River Chenier Plain. *Marine Geology* 90: 231–258.
- Rogers, BD, RF Shaw, WH Herke and RH Blanchet. 1993. *Recruitment of postlarval and juvenile brown shrimp (Penaeus aztecus Ives) from offshore to estuarine waters of the northwestern Gulf of Mexico*. Estuarine, Coastal and Shelf Science 36:377–394
- Roth, David. 1998. *Louisiana Hurricane History* (http://www.srh.noaa.gov/images/lch/tropical/lahurricanehistory.pdf)
- Sasser, CE, JM Visser, E Mouton, J Linscombe, and SB Hartley. 2014. Vegetation types in coastal Louisiana in 2013: U.S. Geological Survey Scientific Investigation Map 3290. Accessed April 2014 at http://pubs.er.usgs.gov/publication/sim3290
- U.S. Army Corps of Engineers (USACE). 2004. *Final Programmatic Environmental Impact Statement*. Volume 2 of the Louisiana Coastal Area Ecosystem Restoration Study. November 2004.
- USACE. 2015. Southwest Coastal Louisiana draft Feasibility Study and EIS. New Orleans, LA
- U.S. Census Bureau. 2015. State and County QuickFacts. Accessed March 30, 2015 at http://quickfacts.census.gov/qfd/states/22/22023.html

- U.S. Department of Agriculture (USDA). 1994. Calcasieu-Sabine cooperative river basin study report.
 U.S. Department of Agriculture, Natural Resources Conservation Service, Alexandria, Louisiana.
 151 pp.
- USDA. 2015. Web Soil Survey Geographic Database. Accessed March 25, 2015 at http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx
- U.S. Fish and Wildlife Service (USFWS). 2015. Trust Resources List: for specified area of interest. Generated by http://ecos.fws.gov/ipac/wizard March 30, 2015.
- Waring, GT, E Josephson, K Maze-Foley, and PE Rosel. 2013. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments- 2012. National Marine Fisheries Service, Woods Hole, MA.

APPENDIX A- ENVIRONMENTAL LAWS AND REGULATIONS

The proposed project is compliant or in the process of compliance with the following laws and regulations.

A current status of compliance in provided in the attached EA.

Archeological and Historic Preservation Act of 1974 The Archeological and Historic Preservation Act of 1974 states that, if an activity may cause irreparable loss or destruction of significant scientific, prehistoric, historic, or archeological data, the responsible agency is authorized to undertake data recovery and preservation activities, in accordance with implementing procedures promulgated by the Secretary of the Interior.

Clean Air Act of 1970 Under the Clean Air Act of 1970, Congress established procedures for developing National Ambient Air Quality Standards (NAAQS) for the protection of human health and public welfare. EPA published the NAAQS in 1971, and they became effective at that time. Standards are provided for the following criteria pollutants: carbon monoxide, sulfur dioxide, nitric oxide, ozone, lead, and fine particulate matter.

Clean Water Act (CWA) The CWA is the principal law governing pollution control and water quality of the nation's waterways. It requires the establishment of guidelines and standards to control the direct or indirect discharge of pollutants to waters of the United States. Discharges of material into navigable waters are regulated under Sections 401 and 404 of the CWA. The USACE has the primary responsibility for administering the Section 404 permit program. Under Section 401 of the CWA, projects that involve discharge or fill to wetlands or navigable waters must obtain certification of compliance with state water quality standards.

Coastal Zone Management Act The Coastal Zone Management Act (CZMA) provides for protection of resources found in the coastal zone, proactive land management practices, and preservation of unique coastal resources. Included in the CZMA is the requirement that all federal actions within the coastal zone of Louisiana must be consistent with the federally approved State of Louisiana Coastal Resource Management Plan.

Endangered Species Act of 1973 (ESA) The ESA directs all federal agencies to conserve endangered and threatened species and their habitats and encourages such agencies to utilize their authorities to further these purposes. Under the Act, NOAA Fisheries Service and U.S. Fish and Wildlife Service publish lists of endangered and threatened species. Section 7 of the act requires that federal agencies consult with these agencies to minimize the effects of federal actions on endangered and threatened species.

Executive Order 11990, Protection of Wetlands The intent of Executive Order 11990, Protection of Wetlands, is to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support for new construction in wetlands whenever there is a practicable alternative.

Executive Order 11998, Floodplain Management Executive Order 11998, Floodplain Management, requires each agency (including military departments) to determine whether any action undertaken would occur in a floodplain. The Federal Emergency Management Agency provides Flood Insurance Rate Maps (FIRM) for more than 19,000 communities in the country as part of the Flood Insurance Studies the agency completes. In addition to the 100-year floodplain, which is the area of the community with a 1 percent chance of flooding in any given year, the FIRM also illustrates coastal high hazard areas, the

floodway, and the 500-year floodplain, which is the area of the community with a 0.2 percent chance of flooding in any given year.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs that the programs of federal agencies identify and address disproportionately high and adverse effects on human health and the environment of minority or low-income populations.

Fish and Wildlife Coordination Act The Fish and Wildlife Coordination Act requires agencies to consult with the U.S. Fish and Wildlife Service, NOAA Fisheries Service, and appropriate state agencies, prior to modification of any stream or other body of water, to ensure conservation of wildlife resources. Compliance with the FWCA is integrated into the USACE interagency review process under Section 404 of the CWA as well as through the NEPA review process.

Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) In 1996, the act was reauthorized and changed by amendments to require that fisheries be managed at maximum sustainable levels and that new approaches be taken in habitat conservation. EFH is defined broadly to include "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (62 Fed. Reg. 66551, § 600.10 Definitions). The act requires consultation for all federal agency actions that may adversely affect EFH. Under Section 305(b)(4) of the act, NOAA Fisheries Service is required to provide advisory EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Where federal agency actions are subject to ESA Section 7 consultations, such consultations may be combined to accommodate the substantive requirements of both ESA and the Magnuson-Stevens Act.

Marine Mammal Protection Act of 1972 (MMPA) All marine mammals are protected under the MMPA. With its' amendments, it prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters.

Migratory Bird Treaty Act of 1918 (MBTA) The MBTA requires the protection of all migratory bird species and protection of ecosystems of special importance to migratory birds against detrimental alteration, pollution, and other environmental degradation. Coordination under MBTA is generally incorporated into Section 404 of the CWA, NEPA, or other federal permit, license or review requirements.

National Environmental Policy Act of 1969 NEPA was enacted in 1969 to establish a national policy for the protection of the environment. The CEQ was established to advise the President and to carry out certain other responsibilities relating to implementation of NEPA by federal agencies. Pursuant to Presidential Executive Order, federal agencies are obligated to comply with NEPA regulations adopted by the CEQ (40 CFR Parts 1500-1508). These regulations outline the responsibilities of federal agencies under NEPA and provide specific procedures for preparing environmental documentation to comply with NEPA.

National Historic Preservation Act of 1966 The National Historic Preservation Act of 1966, as amended in 1992, requires that responsible agencies taking action that affects any property with historic, architectural, archeological, or cultural value that is listed on or eligible for listing on the National Register of Historic Places (NRHP) comply with the procedures for consultation and comment issued by the Advisory Council on Historic Preservation. The responsible agency also must identify properties affected by the action that are potentially eligible for listing on the NRHP, usually through consultation with the state historic preservation officer.

APPENDIX B- SUPPORTING DOCUMENTATION

Coastal Master Plan For Cameron Meadows

			In Master Plan - 1st	Implementation Period
Cameron Mead Marsh Creation Project ID: 004.MC.13	lows			
Planning Unit 1	Planning Unit 2	Planning Unit 3a	Planning Unit 3b	Planning Unit 4
Bislan ort	Port. Sabino Lake	L.	Gur adMerco	
Project Source	LACPR			
Project Status	Conceptual	Phase		
Description	Creation of a Johnsons B elevation of marsh, and	approximately 3,290 acre ayou (through sediment 3.2 feet NAVD88) to cre reduce wave erosion.	es of marsh at Cameror dredging of offshore site ate new wetland habitat	n Meadows north of as and placement at an a, restore degraded
Scale of Influence				
	local	sub-basin	basin	regional

Coastwide Reference Monitoring Station Water Depth



Hydrologic Model Area



Land use







Figure 1-2. Region 4 mapping units.

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-feet 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

APPENDIX C- CORRESPONDENCE

NOAA Protected Resources Concurrence



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

F/SER31:NB

John Foret, Ph.D. National Marine Fisheries Service SEFC/Estuarine Habitats and Coastal Fisheries Center 646 Cajundome Boulevard Lafayette, Louisiana 70506

NOV 0 2 2015

Dear Dr. Foret:

This letter responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) for the following action.

Applicant(s)	SER Number	Project Type(s)
NMFS Southeast Fisheries Science Center (SEFSC)	SER-2015-16626	Marsh creation and terracing

Consultation History

We received your letter requesting consultation on April 1, 2015. We requested additional information on June 3, 2015. We received a final response on July 17, 2015, and initiated consultation that day.

Project Location

Address	Latitude/Longitude	Water body
Cameron Parish,	Marsh Creation: 29.821034 °N, -	Gulf of Mexico
Louisiana, west of the	93.645806°W (North American Datum	
Calcasieu Ship Channel	1983)	





Existing Site Conditions

The proposed restoration site in an inland marsh that is currently converting to open water due to altered hydrology and hurricanes. The proposed dredging location is in the Gulf of Mexico approximately 1 mile from the shoreline near the restoration site in waters ranging from approximately -20 to -24 feet (ft) deep (NAVD 88). Site visits on May 9, 2011, and May 31, 2011, indicated that dense seagrasses (widgeon grass) over approximately 263 acres (ac) are present in areas surrounding the project; however, no seagrasses are known to occur within the

project footprint (i.e., proposed dredging/borrow area), and no seagrasses are expected to be impacted by the proposed project.

Project Description

The proposed project is intended to restore 350 ac of marsh by dredging material from the Gulf of Mexico and pumping it by pipeline to the marsh. Marsh creation will be completed using a terraced system of earthen retaining dikes. The completed marsh will then be planted with native marsh vegetation. The project includes reconnecting Old North Bayou by dredging over 30,000 linear feet of upland-cut canals to reestablish drainage that has filled in as a result of sediment deposition caused by the hurricanes. The upland work and canals in the upland marsh are in areas too shallow and inaccessible to sea turtles.

Dredging will be done by a hydraulic pipeline dredge. The allowable borrow area is 900 ac, but only 600 ac are anticipated to be dredged for this project. The proposed dredge depth is 14 ft below bottom elevation with a 3-ft maximum disturbance zone beneath it. This dredging depth was suggested by the Environmental Protection Agency to prevent hypoxic conditions in the dredging footprint. The pipeline will be laid on the sea floor unless it is required to be floated over existing pipelines in the area.

Construction Conditions

The applicant will comply with our *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed). Construction will occur 24-hours per day over the course of 12-18 months.

Effects Determinations for Species the	Action Agency	or NMFS	Believes M	lav Be A	ffected
by the Proposed Action					

Species	ESA Listing Status	Action Agency Effect Determination	NMFS Effect Determination
Se	a Turtles	- Harrison and a start	
Green	E/T ¹	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Loggerhead (Northwest Atlantic Ocean distinct population segment [DPS])	Т	NLAA	NLAA
E = endangered; $T =$ threatened; $NLAA = m$	ay affect, not li	kely to adversely af	fect

Critical Habitat

The project is not located in designated critical habitat, and there are no potential routes of effect to any designated critical habitat.

¹ Green turtles are listed as threatened except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered.

³

Analysis of Potential Routes of Effects to Species

Potential effects to sea turtles include the risk of interaction with construction equipment, pipelines, and barges. We believe the chance of injury or death from interactions with mechanical equipment, dredging, and associated barges is discountable as these species are mobile and are likely to avoid the areas during construction. NMFS has previously determined in dredging Biological Opinions² that, while oceangoing hopper-type dredges may lethally entrain protected species, non-hopper type dredging methods (e.g., mechanical, clamshell, and bucket dredging; and hydraulic (suction) cutterhead, pipeline, and sidecast dredging) are slower and unlikely to overtake or adversely affect them. Adherence to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* will further help workers spot ESA-listed species near all the project areas and avoid interactions with these species during removal and construction of these structures.

Potential effects to foraging habitat for sea turtles will be discountable. The borrow area is in open water in an area that lacks seagrasses potentially used for foraging. Sea turtles that may use this area for foraging can use surrounding open water areas and this project (including the dredging footprint and the pipeline) will not restrict the movement of sea turtles from using any surrounding foraging areas that may occur in this part of the Gulf of Mexico.

Conclusion

Because all potential project effects to listed species were found to be discountable, insignificant, or beneficial, we conclude that the proposed action is not likely to adversely affect listed species under NMFS's purview. 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 action not previously considered, or if the identified action is 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 action. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

² NMFS. 2007. Revision 2 to the November 19, 2003, Gulf of Mexico Regional Biological Opinion to the U.S. Army Corps of Engineers on Hopper Dredging of Navigation Channels and Borrow Areas in the U.S. Gulf of Mexico. National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, St. Petersburg, Florida. January 9, 2007. 15 pp.



We have enclosed additional relevant information 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 Nicole Bonine, Consultation Biologist, at (727) 824-5336, or by email at Nicole.Bonine@noaa.gov.

Sincerely,

Roy E. Crabtree, Ph.D. FM 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 March 10, 2015)

File: 1514-22.C





Joy Merino - NOAA Federal <joy.merino@noaa.gov>

Fwd: draft Environmental Assessment for the Cameron Meadows Marsh Creation and Terracing project (CS-66)

Richard Hartman - NOAA Federal

<richard.hartman@noaa.gov>

Thu, Dec 1, 2016 at 10:41 AM

To: Cecelia Linder - NOAA Federal <cecelia.linder@noaa.gov> Cc: "patrick.williams" <patrick.williams@noaa.gov>, Joy Merino <Joy.Merino@noaa.gov>

Cece - I have reviewed the draft Environmental Assessment (EA) for the Cameron Meadows Marsh Creation and Terracing Project (CS-66) transmitted by your email. In general, I find the document to be well written and adequately covering all the resources of concern pertaining to the project. However, I have the following observations and recommendations for incorporation into the document as it is finalized.

General Comment

The document evaluates project impacts on three alternatives; no action, the preferred alternative (marsh creation and terracing only) and a third alternative combining the preferred alternative with the installation of six 42-inch culverts. While there is discussion at various locations in the draft EA on the merits and negative aspects of the third alternative, there is no central location in the document where an explanation is provided on the decision to choose the preferred alternative over the alternative which included the culverts. I believe a summary of the reasons the preferred alternative was identified as such is warranted and should be provided in a clearly identified location in the document.

Specific Comments

It is my understanding project implementation would directly create 384 acres of marsh. That number is broken down as 295 acres confined, 85 acres unconfined, and 4 acres of terraces. The draft EA references "~400 acres" at various locations in the document. While listing 400 acres is acceptable in the Purpose and Need section, the exact figure should be identified in other sections of the document. Those locations where the 400 acre figure are cited include pages 13 and 22.

Table 1 and paragraph 5 on page 9 list the unconfined acreage to be 59 acres. My understanding is the correct number is 85. If the 85 acre number is correct, please change all incorrect acreage citings.

Page 17 references the impacts of the project on the "Build Alternative". All preceeding and following sections include analyses to the "Preferred Alternative" and "Impacts of Terrace and Marsh Creation Plus Culverts". I recommend this section of the document

12/1/2016 National Oceanic and Atmospheric Administration Mail - Fwd: draft Environmental Assessment for the Cameron Meadows Marsh Creation and Terracing proj... be corrected to provide impact analyses to those alternatives in lieu of the "Build Alternative".

Page 19, paragraph 5 references "hundreds of acres" as being the acres of marsh constructed. I recommend the specific number (i.e., 384) be provided in lieu of "hundreds of acres".

The National Marine Fisheries Service, Habitat Conservation Division (NMFS-HCD) has a findings with the CWPPRA program that fulfillment of essential fish habitat (EFH) consultation requirements required by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) would be undertaken through our review and comment on documents completed in fulfillment of the requirements of the National Environmental Policy Act. While the section titled "Essential Fish Habitat" provides an adequate description of the impacts of the various alternatives on EFH, no concluding statement is provided regarding the impacts of the project on EFH. It is the responsibility of the federal project sponsor to provide a summary conclusion for concurrence by NMFS HCD. Given the minor temporary adverse impacts expected by construction and the clear benefits to EFH to be provided by project implementation, the NMFS HCD would concur with a conclusion that project implementation would have minimal and acceptable temporary adverse impacts to EFH.

This concludes the EFH consultation requirements required by the Magnuson-Stevens Act. Unless the project is significantly revised, further coordination on this project is not necessary.

Richard Hartman Fishery Biologist NMFS-HCD [Quoted text hidden]

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USFWS Letter



UNITED STATES DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE SEFC/Estuarine Habitats & Coastal Fisheries Center 646 Cajundome Boulevard Lafayette, Louisiana 70506

April 1, 2015

U.S. Fish and Wildlife Service 646 Cajundome Blvd. Lafayette, LA 70506

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State of the owners where the second s	APR 0 2 2015
Contraction of the local division of the	FISH & WLDL. SERV LAFAYETTE, LA.

Dear Service,

The NOAA National Marine Fisheries Service is the federal sponsor of the *Cameron Meadows Marsh Creation and Terracing Project* (CS-66) in Calcasieu/Sabin Basin. As part of the preparation of the Environmental Assessment, in compliance with the National Environmental Policy Act, the Endangered Species Act, and the Migratory Bird Treaty Act, we ask the Service to review and concur with our determination that no USFWS trust resource species would be adversely impacted by the proposed project. Information is enclosed for your consideration.

This CS-66 project is being funded under the Coastal Wetland Planning, Protection, and Restoration Act (CWPPRA), of which your agency is a cooperating partner. We appreciate your participation in identifying any concerns you have regarding fish and wildlife resources.

The project location is intermediate marsh, brackish marsh, and open water, and is shown on the map provided. Our proposed action includes creating and nourishing marsh from offshore sediments. We propose constructing marsh and terraces.

Please do not hesitate to call or write (337) 291-2107, john.foret@noaa.gov with any questions or concerns that this request raises.

Sincerely.

John Foret, PhD NOAA NMFS

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The protect, as proposed, () Will have no effect on those resources

($\sqrt{}$ is not likely to adversely effect these resources. manafec The finding fulfills the requirements under Section 7(e)(2) of the Act.

cting Supervisor Quisiana Field Office U.S. Fish and Wildlife Service

1 18, 2013

m



SHPO Concurrence



January 28, 2015

Pam Breaux State Historic Preservation Office 1051 North 3rd Street Rm 405 Baton Rouge LA 70802

Dear Mrs. Breaux,

No known historic properties wi this undertaking. This effect dete change should new information attention.	ll be affected by rmination could come to our
Pam Breaux Pam Breaux State Historic Preservation Office	2-11-15 Date

UNITED STATES DEPARTMENT OF COMMERC National Oceanic and Atmospheric Administrati

SEFC/Estuarine Habitats & Coastal Fisheries Center

NATIONAL MARINE FISHERIES SERVICE

646 Cajundome Boulevard Lafayette, Louisiana 70506

The NOAA, National Marine Fisheries Service is reviewing a habitat restoration project in Calcasieu-Sabine Basin, Cameron Parish. In accordance with the National Environmental Protection Act review of cultural and historical resources, and <u>section 106 of the National Historic</u> Preservation Act of 1966, we request concurrence with our determination of effect.

The Cameron Meadows Marsh Creation and Terracing Project (CS-66) is funded under the Coastal Wetlands Planning, Protection and Restoration Act. The site is southwest of the Cameron Meadows Oil and Gas Field. The online database has no records of identified sites in the proposed project area. South of the proposed area, on higher ground, are sites CAM-11-01, 16CM54, and 16CM84.

Our proposed action includes creating and nourishing marsh from offshore sediments. Potential impacts from dredging will primarily be located where previous settlements are unlikely, such as shallow open water and the Gulf of Mexico. Hydraulic dredging would be done in federal waters of the Gulf of Mexico, where the borrow site is under review in another project, CS-33 SF. The proposed project occurs along Old North Bayou. At this natural bayou, the proposal is to place gulf sediments along the west side of Old North Bayou, which would not adversely impact any occurring unknown cultural resources. The east bank of Old North Bayou has eroded into open water. We propose to use mechanical dredges to construct terraces in the open waters along the east side of Old North Bayou, as shown in the attached figure.

The only elevations that would support settlements, and therefore have potential artifacts, are ridges to the south of the project area that will not be impacted by the proposed action, or along the Gulf shoreline where the proposed project may lay a conveyance pipeline. As the pipeline route has not yet been determined, we are interested in hearing any concerns, so it can be altered to avoid any potential adverse impacts to cultural resources. Your comments / concerns would be appreciated no later than February 28, 2015, and may be addressed to:

Sincerely,

RECEIVED

JAN 2 8 2015

Dr. John Foret, NOAA Fisheries Service 646 Cajundome Blvd Lafayette, LA 70506 John.foret@noaa.gov

LDEQ Letter

National Oceanic and Atmospheric Administration Mail - ...

https://mail.google.com/mail/u/0/?ui=2&ik=9cc0c3bc73&v...

wd: DEQ SOV 150204/0145 Cameron Meadows Marsh Creation and Terracing Project		
ohn Foret - NOAA Federa	al <john.foret@noaa.gov></john.foret@noaa.gov>	Tue, Apr 14, 2015 at 8:50 AM
o: "Joy Merino (E-mail)" <j< td=""><td>oy.merino@noaa.gov></td><td></td></j<>	oy.merino@noaa.gov>	
For the project files		
Forwarded Messag Subject:DEQ SOV 1500 Date:Mon, 13 Apr 20 From:Linda (Brown) I To:'john.foret@noa CC:Yasoob Zia <ya< td=""><td>ge 204/0145 Cameron Meadows Marsh Creation and Terracing Project 115 21:10:09 +0000 Hardy <linda.hardy@la.gov> aa.gov' <john.foret@noaa.gov> asoob.Zia@LA.GOV></john.foret@noaa.gov></linda.hardy@la.gov></td><td></td></ya<>	ge 204/0145 Cameron Meadows Marsh Creation and Terracing Project 115 21:10:09 +0000 Hardy <linda.hardy@la.gov> aa.gov' <john.foret@noaa.gov> asoob.Zia@LA.GOV></john.foret@noaa.gov></linda.hardy@la.gov>	
April 13, 2015		
John Foret, Ph. D.		
NOAA Fisheries Serv	ice	
Lafayette, LA		
john.foret@noaa.gov		
RE: 150204/0145	Cameron Meadows Marsh Creation and Terracing Project	
	NOAA National Marine Fisheries Service	
	Cameron Parish	
Dear Mr. Foret:		

After reviewing your request, the Department has no objections based on the information provided in your submittal. However, for your information, the following general comments have been included. Please be advised that if you should encounter a problem during the implementation of this project, you should immediately notify LDEQ's Single-Point-of-contact (SPOC) at (225) 219-3640.

4/15/15, 8:24 AM

Please take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this
proposed project.

- If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.
- If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting the additional wastewater.
- All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact the LDEQ Water Permits Division at (225) 219-9371 to determine if your proposed project requires a permit.

 If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application or Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information may be obtained on the LDEQ website at http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx or by contacting the LDEQ Water Permits Division at (225) 219- 9371.

- If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers, you should contact the Corps directly regarding permitting issues. If a Corps permit is required, part of the application process may involve a water quality certification from LDEQ.
- All precautions should be observed to protect the groundwater of the region.
- Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary.
- Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.
- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are
 encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required.
 Additionally, precautions should be taken to protect workers from these hazardous constituents.

Currently, Cameron Parish is classified as attainment with the National Ambient Air Quality Standards and has no general conformity determination obligations.

Please send all future requests to my attention. If you have any questions, please feel free to contact me at (225) 219-3954 or by email at linda.hardy@la.gov.

Sincerely,

Linda M. Hardy

Technical Assistant to the Deputy Secretary

Louisiana Department of Environmental Quality

Office of the Secretary

P.O. Box 4301

Baton Rouge, LA 70821-4301

Ph: (225) 219-3954

4/15/15, 8:24 AM

Public Notices

CAPITAL CITY PRESS

Publisher of THE ADVOCATE

PROOF OF PUBLICATION

The hereto attached notice was published in THE ADVOCATE, a daily newspaper of general circulation published in Baton Rouge, Louisiana, and the Official Journal of the State of Louisiana, City of Baton Rouge, and Parish of East Baton Rouge or published daily in THE NEW ORLEANS ADVOCATE, in New Orleans Louisiana, or published daily in THE ACADIANA ADVOCATE in Lafayette, Louisiana, in the following issues:

03/22/2017

Shelley Calloni, Public Notices Representative

Sworn and subscribed before me by the person whose signature appears above

3/22/2017

instian)

M. Monic McChristian, Notary Public ID# 88293 State of Louisiana My Commission Expires: Indefinite



NATIONAL MARINE FISHERIES SERVICE 159522-01

JOY MERINO 646 CAJUNDOME BLVD. LAFAYETTE, LA 70506

PUBLIC NOTICE

and terrecting dottice is hereby given of the availability of the draft invironmental Assessment EAV for the proposed Conector Massessment CS-963, The National Oceninistration's (NOAA) Nalonal Marine Esheries Ional Marine Esheries Ional Marine Esheries incover the National Denice with the National Denenated by the Council on nuivormental Quality Act NEPA of 1969, as implemented by the Council on nuivormental Quality Act NEPA of 1969, as implerates 1500 through 1506 CEQ 1992(1) and NOAA Adninistrative Corter (MAG) 10-6, The purpose of the port the coaselal restorion objectives of the costal wetanda Planning, retection and Restoration

As the federal sponsor, NHFS is responsible for the projects' oversight in partnership with the State of coulsing creating of the thority. The draft EA anayzes the impacts of the noaction alternative and two design alternatives that optimizes the preferred alternative would create and nourish approxmately 400 acres of marshnaing Guil of Mexico sedi-

All comments received will be considered by NHFS and will become part of the public record. If no significant issue is identified during the comment partod, NHFS will finalize the draft EA and issue a Finding of No Significant im pact. NHFS will proceed to construction without another notice, unless subed. draft EA is a

allable

159522-mar 22-1t

PUBLIC NOTICE:

- PUBLIC NOTICE: Cameron Meadows Marsh Creation and Terracing Notice is hereby given of the availability of the draft Environmental Assessment (EA) for the proposed Cameron Meadows Marsh Creation and Terracing (CS-66). The National Oceanic and Atmospheric Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has prepared a draft EA in accordance with the National Environmental Policy Act (NEFA) Environmental Policy Act (NEPA) of 1969, as implemented by the Council on Environmental Quality (CEQ) (Title 40 Code of Federal Regulations [CFR] Parts 1500 through 1508 [CEQ 1992]) and NOAA Administrative Order (NAO) 216-6. The purpose of the proposed action is to support the coastal restoration objectives of the Coastal Wetlands Planning, Protection and Restoration Act by creating and nourishing wetlands creating and nourishing wetlands near Cameron, Louisiana.

near Cameron, Louisiana. As the federal sponsor, NMFS is responsible for the projects' oversight in partnership with the State of Louisiana Coastal Protection and Restoration Authority. The draft EA analyzes the impacts of the no action alter-native and two design alternatives that had differences in water con-trol features. The preferred alter-native would create and nourish approximately 400 acres of marsh using Gulf of Mexico sediments. All comments received will be considered by NMFS and will become part of the public record. If no significant issue is identified during the comment period, NMFS will finalize the draft EA and issue a Finding of No

and issue a Finding of No Significant Impact. NMFS will

and issue a finding of No Significant Impact. NMFS will proceed to construction without another notice, unless substantive comments are received. The draft EA is available for review on-line at http://www.habi-tat.noaa.gov/pdf/cameron_CS_66_ draft_ea.pdf or upon request. A printed copy is available at the Cameron Parish Public Library at 501 Marshall St. Cameron, Louisiana 70631. Questions or comments on the draft EA must be received no later than 5 p.m. EST on April 20, 2017. Comments on the draft EA, or requests for it in hard copy or CD, may be sent by mail, e-mail, fax, or phone to Jessica Berrio with the subject line "Cameron Meadows Draft EA." Address: F/HC3 1315 East-West Hwy Silver Spring, MD 20910. E-mail:

Jessica.berrio@noaa.gov, Fax: 301-713-0184, Phone: 301-427-8654.

State of Louisiana

Parish of Calcasieu

Before me the undersigned authority, personally came and appeared Jeffra DeViney, who, being duly sworn, deposes and says: That she is the publisher of the Cameron Parish Pilot, a newspaper published weekly at Cameron, Louisiana.

That the hereto attached notice was published in said newspaper in its issues dated

March 16, 2017

The XVinez Jeffra DeViney, Publisher

Sworn and subscribed to at my office in DeQuincy, Louisiana, A.D., 2017 day of March on this 16th Before me,

Malen 4ster

Evalin D. Hester, Notary Public #060703
Summary of Comments

- US Department of the Army replied that permits are needed under section 404 of the Clean Water Act, and section 10 of the Rivers and Harbors Act of 1899 (2-27-15).
- State Office of Conservation replied that oil and/or gas wells are located at the proposed project area (2-23-15).
- The DOTD advised adequate flow be planned to avoid flooding, and requested the floodplain administrator be contacted, as has been done (2-18-15).
- The USDA stated the project is exempt from the Farmland Protection Policy Act and did not predict impacts to Natural Resource Conservation Service work in the vicinity (2-11-15).
- LDWF replied, "no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site within Louisiana's boundaries" (2-13-15).
- EPA replied that the proposed area is located on the Chicot aquifer system and proposed activities "should not have an adverse effect on the quality of the ground water underlying the project site" (2-10-15).