Finding of No Significant Impact and
Final Supplement to the Environmental Assessment
(Issued February 17, 2017)

Caminada Headland Back Barrier Marsh Creation Project
Coastal Wetlands Planning Protection and Restoration Act (CWPPRA)
Project BA-171

Lafourche Parish, Louisiana
Prepared by: U.S. Environmental Protection Agency, Region 6

August 26, 2019

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Contents

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

To All Interested Agencies and Public Groups:

In accordance with the environmental review guidelines of the Council on Environmental Quality at 40 Code of Federal Regulations Part 1500, the U. S. Environmental Protection Agency (EPA) has performed an Environmental Assessment of the following proposed action under the authority of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of November 1990, House Document 646, 101st Congress (Public Law 101-646).

Project Name: Caminada Headlands Back Barrier Marsh Creation (BA-171).

Location: The modified Caminada Headlands Back Barrier Marsh Creation, BA-171 project is located within Planning Region 2, Barataria Basin, in the Coast 2050 management unit, Lafourche Parish. The project boundary is defined as the area south of Louisiana Highway 1 between Belle Pass and Caminada Pass and stretches from the area in and around Bay Champagne to the west of Elmer's Island along the headland.

Sponsors: The U.S. Environmental Protection Agency (EPA) Region 6, and the Coastal Protection and Restoration Authority of Louisiana (CPRA).

Introduction: This supplement to the Final Environmental Assessment (EA) supporting the preliminary Finding of No Significant Impact (FONSI) issued for public notice on February 3, 2017 is in response to the increased project footprint of the Caminada Headland Back Barrier Marsh Project (BA-171). The project footprint increased by 543 acres due to the combining of the Caminada Headland Back Barrier Marsh Creation, Increment 2 Project (BA-193) into the BA-171 Project. An additional 133 acres have been added to the footprint for dewatering.

Restoration projects such as the modified BA-171 project seek to offset losses by slowing or preventing the loss of wetland habitat. The proposed action is part of and consistent with the Louisiana Coastal Wetlands Conservation and Restoration Task Force, and the Wetlands Conservation and Restoration Authority's ecosystem strategies to maintain shoreline integrity, dedicated dredging, and beneficial use of dredged material. CWPPRA provides federal funds for planning and implementing projects that create, protect, restore, and enhance wetlands in coastal Louisiana.

Proposed Action: The goals of the modified BA-171 project are to 1) Create and/or nourish 928 acres of back barrier marsh using dredged material pumped from an offshore borrow site in the Gulf of Mexico. The project would result in approximately 378 net acres over the 20-year project life; 2) Create a platform upon which the beach and dune can migrate, reducing the likelihood of breaching, improving the longevity of the barrier shoreline, and protecting wetlands and infrastructure to the north and west. The modified BA-171 project is expected to slow the current trend of degradation in the headland. (CPRA 2016).

Summary of Environmental Consequences: The proposed action for the modified BA-171 project does not differ from the findings presented in the original Finding of No Significant Impact (FONSI) issued for public notice on February 3, 2017. The supplemental EA finds that the modified BA-171, Caminada Headlands Back Barrier Marsh Creation project, will have long-term beneficial impacts in coastal Louisiana and will not result any significant direct, indirect, or cumulative adverse impacts. The supplemental EA describes construction-related adverse impacts as minor and not significant due to their limited duration, location, and/or mitigation. Positive impacts are minor to moderate but are not significant. The supplemental EA bases this finding on a comprehensive analytic review and relevant literature, site-specific data, project specific engineering and environmental reports, as well as cumulative experience gained through similar restoration projects in South Louisiana. The proposed action is projected to have no significant adverse impacts.

The action has some short-term, localized, adverse impacts and long-term beneficial impacts. These impacts will be mitigated in the short-term through avoidance measures and in the long-term by the restoration and vegetative planting features. No long-term adverse impacts to the affected resources are expected.

Finding: Based on the Environmental Assessment of the proposed project, the EPA has determined that the proposed project is not a major Federal action significantly adversely affecting the quality of the human environment, and that the preparation of an Environmental Impact Statement (EIS) is not warranted. The project individually, cumulatively over time, or in conjunction with other actions, will have a beneficial effect on the quality of the environment.

This preliminary Finding of No Significant Impact (FONSI) will become final 30 days after the issuance of the public notice if no new information is received to alter this finding. No administrative action will be taken on this decision during the 30-day comment period. Comments regarding this preliminary decision not to prepare an EIS, requests for copies of the EA, or review of the Administrative Record containing the information supporting this decision may be submitted to the U.S. Environmental Protection Agency, Assistance Programs Branch, Marine, Coastal & Non-Point Source Section, (6WD-AM), 1201 Elm Street, Suite 500, Dallas, Texas 75270-2102.

August 26, 2019

Date:

Karen McCormick, Chief
Marine, Coastal & Non-Point Source Section
Assistance Programs Branch
Water Division
U.S. EPA, Region 6

Acronyms

BBBS	Barataria Basin Barrier Shoreline Restoration Study
BOD	Biological Oxygen Demand
CPRA	Coastal Protection and Restoration Authority of Louisiana
CPT	Cone Penetration Test
CRMS	Coastwide Reference Monitoring System
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act
EA	Environmental Assessment
ECD	Earthen Containment Dike
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
LCA	Louisiana Coastal Area
LDWF	Louisiana Department of Wildlife and Fisheries
MCA	Marsh Creation Area
MHW	Mean High Water
MLW	Mean Low Water
MPO	Metropolitan Planning Organization
MTL	Mean Tidal Level
NAAQS	National Ambient Air Quality Standards
NAVD 88	North American Vertical Datum of 1988
PM	
PMT	Project Management Team
PPL	Priority Project List (CWPPRA)
ROD	Record of Decision
RSLR	Relative Sea Level Rise
SAV	Submerged aquatic vegetation
SCPDC	South Central Planning and Development Commission
SLR	Sea Level Rise
SHPO	State Historic Preservation Office
T&E	Threatened and Endangered Species
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey
USFWS	U.S. Fish and Wildlife Service

WVA	Wetland Value Assessment

Units of Measure

ac	Acres
ft	Feet
LF	Linear feet
ha	Hectares
lbs	Pounds
mi^2	Square Miles
ppb	Parts Per Billion
ppm	Parts Per Million
ppt	Parts Per Thousand
yd^3	Cubic Yards

Part 1. Purpose and Need for Proposed Action

1.1 Introduction

This supplement to the Final Environmental Assessment (EA) supporting the preliminary Finding of No Significant Impact (FONSI) issued for public notice on February 3, 2017 is in response to the increased project footprint of the Caminada Headland Back Barrier Marsh Project (BA-171). The project footprint increased by 543 acres due to the combining of the Caminada Headland Back Barrier Marsh Creation, Increment 2 Project (BA-193) into the BA-171 Project. An additional 133 acres have been added to the footprint for dewatering. This modified project (BA-171 & BA-193) boundary is defined as the area south of Louisiana Highway 1 between Belle Pass and Caminada Pass and stretches from the area in and around Bay Champagne to the west of Elmer's Island along the headland (Figure 1).

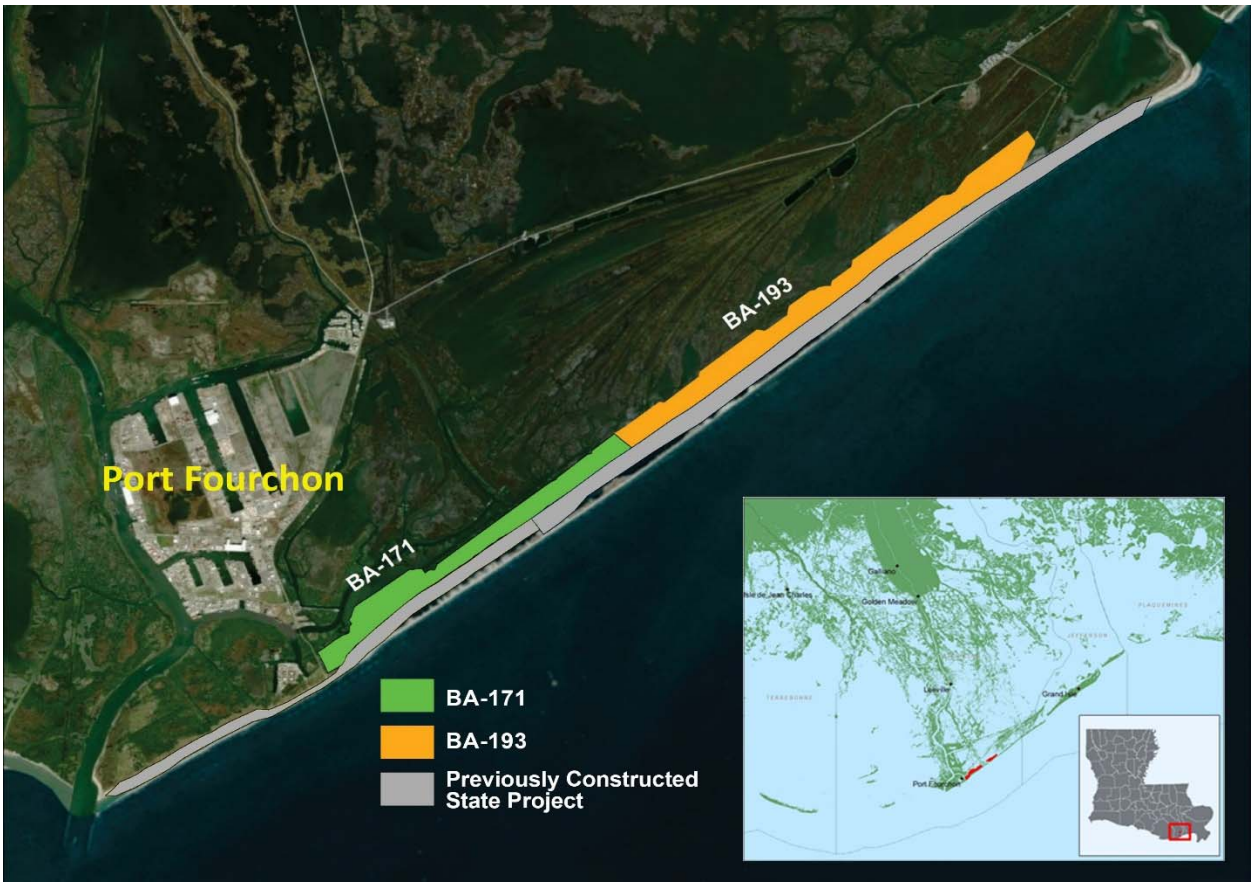

Figure 1. Modified (BA-171 & BA-193) project footprint.

1.2 Purpose of Proposed Action

The goals of the modified BA-171 project (referenced in this document as "BA-171-2" or the "modified footprint") are to create and/or nourish 928 acres of back barrier marsh using dredged material pumped from an offshore borrow site in the Gulf of Mexico. The project would result in approximately 378 net acres over the 20-year project life (Figure 1).

1.3 Problem

The problem, historic land loss, and future land loss projections for the Caminada Headland, is identical to the information included in the BA-171 EA. Please refer to Appendix B.

1.4 Coordination and Consultation

The coordination and consultation for the BA-171-2 project is identical to the information presented in the BA-171 EA prior to April 17, 2019 (refer to Appendix B). On April 17, 2019, the CWPPRA Task Force accepted the Technical Committee's recommendation and approved the proposal to combine the Caminada Headland Back Barrier Marsh Creation, Increment II (BA-193) project footprint with the BA-171 project footprint as well as the corresponding increase in the Phase 2 construction budget for the BA-171-2 project.

Part 2. Proposed Action and Alternatives

A No-Action alternative (Alternative 1) and Proposed Action (Alternative 2) were evaluated in the Final Environmental Assessment (Appendix B) for the BA-171 project. The Proposed Action in this section analyzes the differences in the proposed design components between the BA-171 project and the BA-171-2 project.

The surveys conducted for the BA-193 project differ from the surveys conducted for BA-171 because of location, but they do not affect the design of the BA-171-2 project. The survey results for BA-193 have been presented below. Please refer to Appendix B for additional information.

Topographic, Bathymetric, and Magnetometer Surveys

Topographic, bathymetric, and magnetometer survey data was collected utilizing current Coastal Restoration and Protection Authority (CPRA) Surveying Standards within the Project area to facilitate the design of the marsh creation area (MCA). The 95% Design Report contains details and results of the surveys (CPRA, 2018b).

The magnetometer survey verified the existence of three pipeline canals within the Project area. The first, a 20-inch Chevron Pipeline, was positioned in the southern pipeline canal and was parallel to the shoreline. Two other pipelines were positioned in the northern pipeline canal and were parallel to the shoreline. One pipeline was a 12-inch Arrowhead/Harvest Pipeline while the second pipeline was actually two pipelines. They two pipelines were of unknown size crossing the Project area from north to south within the western portion of the marsh creation area.

A geotechnical subsurface investigation and geotechnical engineering analysis was conducted by Ardaman & Associates, Inc. to determine the suitability and physical characteristics of the soils in the BA-193 Project area. Ardaman & Associates (Ardaman) contracted Ocean Surveys, Inc. (OSI) to collect vibracores in the offshore borrow area. Ardaman performed laboratory tests to determine soil characteristics and consolidation tests to aid in the settlement determination in the marsh

creation area. They were also tasked to collect soil borings and cone penetration tests (CPTs) on the Caminada Headland, perform laboratory tests to determine soil characteristics, perform global slope stability analysis of the proposed earthen containment dikes, estimate the total settlement of the proposed earthen containment dikes and marsh creation area, determine an appropriate cut-to-fill ratio for the dredge and fill operations, and evaluate soil strength conditions at multiple locations along the proposed earthen containment dike alignment.

Birds

SWCA Environmental Consultants performed reconnaissance nesting bird surveys within a project area that was composed of 1) a 300-foot-wide corridor centered on the access route that would be used by the Ardaman crew during geotechnical sampling, and 2) a 400-meter buffer area centered on each geotechnical sampling location. The combination of these two areas created a project area that was approximately 0.50-mile-wide and 4.30 miles long. The field team was comprised of three biologists familiar with the identification of migratory and nesting birds, as well as pre-nesting behaviors in Louisiana.

Cultural Resources Surveys

As a part of the Louisiana Coastal Area Barataria Basin Barrier Shoreline study, Goodwin & Associates performed a Cultural Resources Survey on the headland and offshore borrow area. Using this data and survey data collect during the BA-171 and BA-193 projects, the SHPO issued EPA a determination stating that no known culturally significant sites would be disturbed through the creation of the BA-193 project (Appendix A).

2.1 Alternative 1 No-Action

The No-Action Alternative information for BA-171-2 is the same as that presented in Section 2.1 of the BA-171 EA. Please refer to Appendix B.

2.2 Alternatives Considered But Not Evaluated – Earthen Containment Dikes

The Alternatives Considered but Not Evaluated information for BA-171-2 is the same as that presented in Section 2.2 of the BA-171 EA. Please refer to Appendix B.

2.3 Alternative 2 (Proposed Action)

The Proposed Action Alternative information in the following subsections of Section 2.3 analyzes the differences between the proposed design components for the BA-171-2 project and the BA-171 project.

2.3.1 Project Footprint

BA-171: The original project footprint: 385 acres – consists of 137 acres of back barrier

intertidal marsh and 248 acres of open water. The net acreage at the end of the 20-year life of the project will be 165 acres (Figure 2). Please refer to Appendix B for additional information.

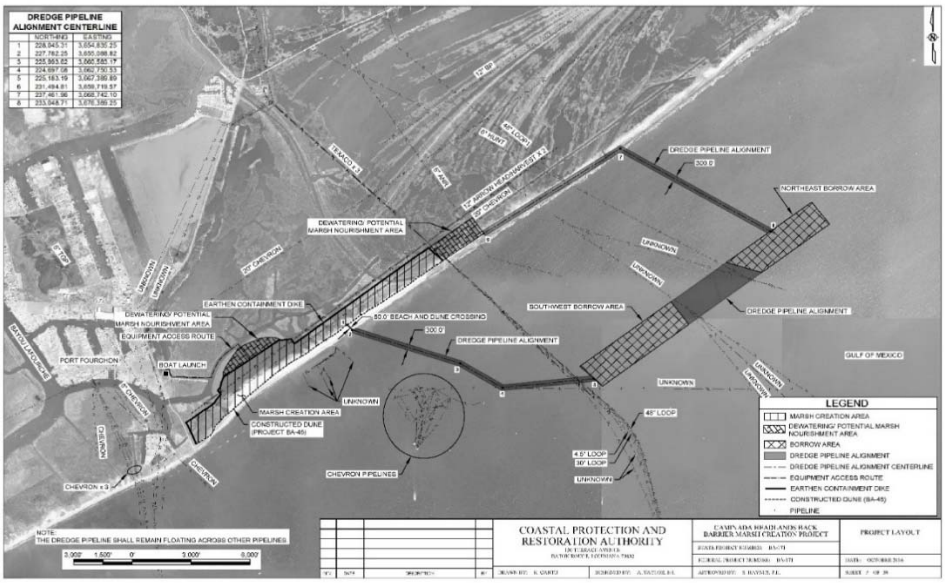

Figure 2. Plan view of the original BA-171 project's footprint and design features including marsh creation, borrow area, containment dike, and dredge pipeline alignment.

BA-171-2: The modified project footprint: 1061acres – consists of 430 acres of back barrier intertidal marsh, 498 acres of open water and 133 acres for dewatering (Figure 3).

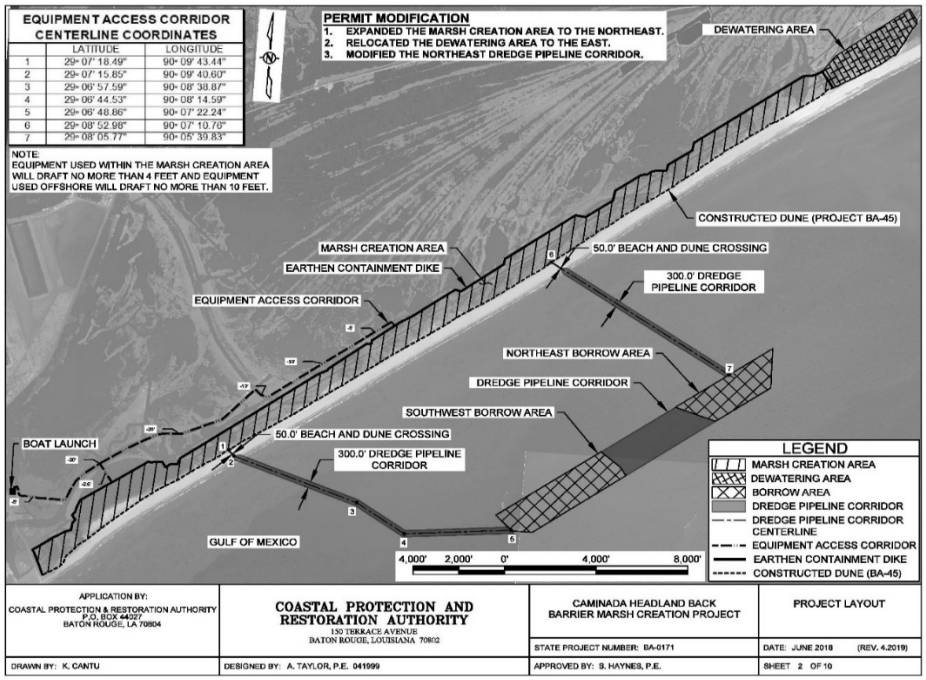

Figure 3. Plan view of the BA-171-2 design features including marsh creation, borrow area, containment dike, and dredge pipeline alignment

2.3.2 Marsh Creation Fill Area (MCA) Design

BA-171: 2 lift construction; Constructed fill elevation = +2.0 ft NAVD88; Cut-to-fill ratio = 1.5; Volume of fill = 1,325,405 yd^3; Volume of cut = 1,988,108 yd^3 (Figure 2).

BA-171-2: 1 lift construction; Constructed fill elevation = +2.5 ft NAVD88; Cut-to-fill ratio = 1.0; Volume of fill = 3,136,829 yd^3; volume of cut = 6,806,312 yd^3 (includes an additional 214,573 yd^3 for the dewatering area) (Figure 3).

One continuous MCA is proposed to start in the area in and around Bay Champagne and continue approximately 8 miles along the Caminada Headland to Elmer's Island Road. A dewatering area/potential marsh nourishment area is located to the east of the marsh creation fill area and west of Elmer's Road. While this area will be primarily used for decanting supernatant water, there is a potential for sediment fines to be present in this water resulting in potential nourishment for the surrounding marshes. Therefore, this area will also be permitted as a potential marsh nourishment area to account for any sediment that may escape through the dewatering structures.

2.3.3 Earthen Containment Dike (ECD) Design

BA-171: Design height = +3.0 ft NAVD88 (+0.5 ft Tolerance); Side slopes = 5H:1V; Volume of fill = 74,970 yd^3; Volume of cut = 105,479 yd^3; Total length of ECD = 22,703 LF; Length of ECD w/ geotextile fabric = 6,330 LF (Figure 4).

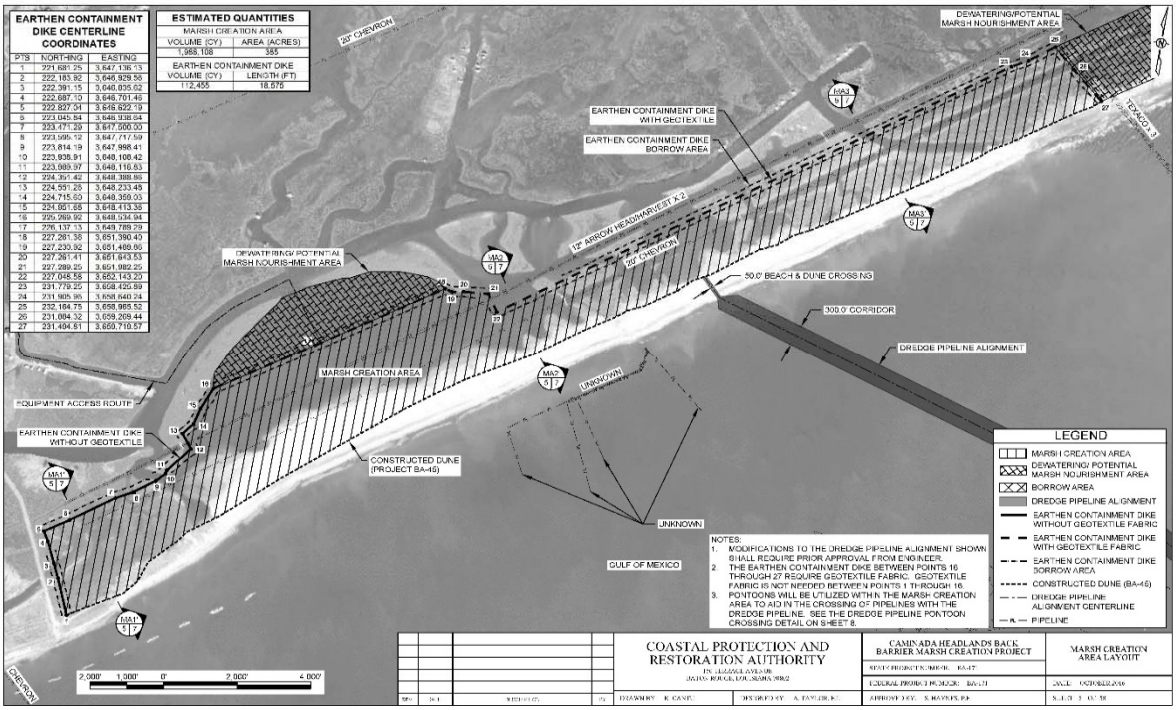

Figure 4. Plan view of the BA-171 earthen containment dikes

BA-171-2: Design height = +3.5 ft NAVD88 (+0.5 ft Tolerance); Side slopes = 4H:1V; Volume of fill = 179,425 yd^3; Volume of cut = 530,393 yd^3 (218,672 yd^3 fill not be backfilled); Total length of ECD = 47,369 LF. The northern ECD alignment was constrained by the existing Arrowhead/Harvest pipeline corridor and multiple deeper mudline elevations (Figure 5 & 6).

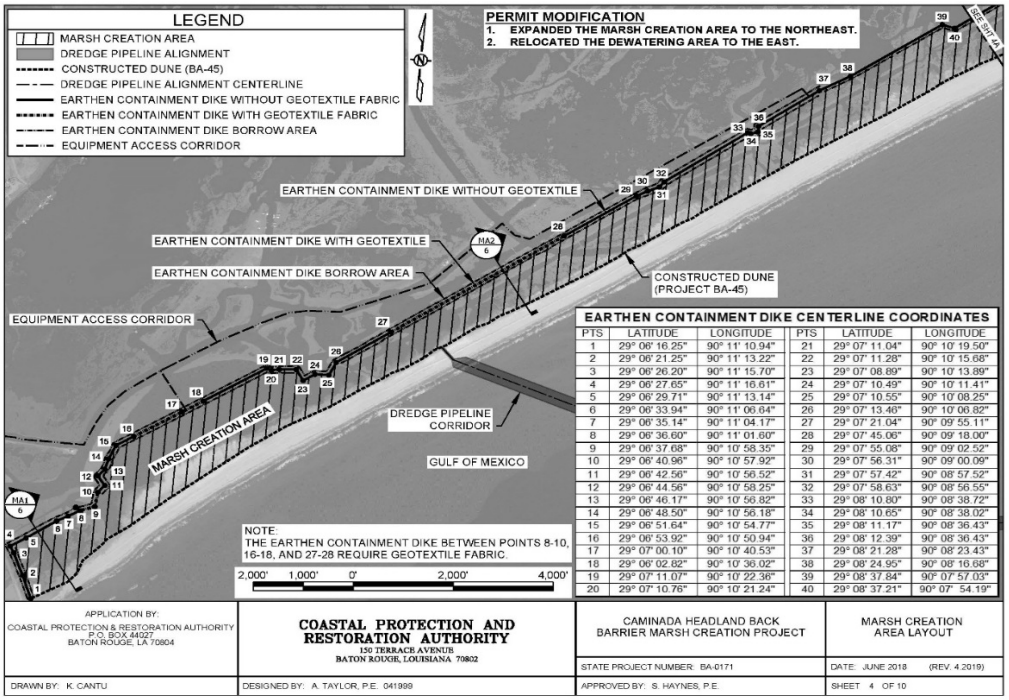

Figure 5. Plan view of the BA-171-2 earthen containment dikes (in the BA-171 project footprint)

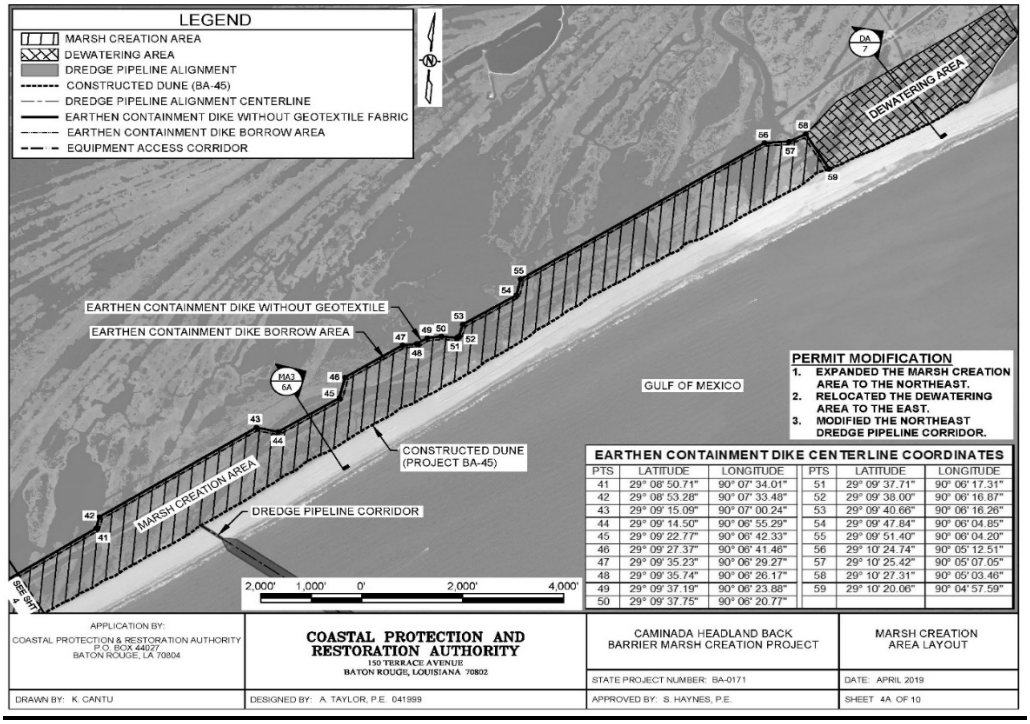

Figure 6. Plan view of the BA-171-2 earthen containment dikes (in the BA-193 project footprint)

2.3.4 Borrow Area Design

The borrow area design did not change from the BA-171 EA. Please refer to Appendix B.

2.3.5 Dredge Pipeline Alignment Design

The dredge pipeline alignment design did not change from the BA-171 EA. Please refer to Appendix B.

Part 3. Affected Environment

The information presented in Part 3 describes the environment for only the BA-193 portion of the BA-171-2 project. Data collected in this section differs slightly from the data presented in the BA-171 EA due to tidal influences, time of year, day and time of day the data was collected. Please refer to Appendix B for additional information.

3.1 Physical Environment

The information in Section 3.1 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.1.1 Topography, Geomorphology, and Soils

The information in Section 3.1.1 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.1.2 Climate and Weather

The information in Section 3.1.2 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.1.3 Air Quality

The information in Section 3.1.3 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.1.4 Surface Water Resources

The proposed project is in the West Central Louisiana Coastal Watershed. The United States Geological Survey (USGS) Hydrologic Unit Code is 08090302. The southern half of the Barataria Basin consists of tidally-influenced marshes connected to a large bay system behind barrier islands. Please refer to Appendix B.

3.1.5 Tidal Datum, Inundation, and Relative Sea Level Rise (RSLR)

The information in this section differs slightly from the information presented in Section 3.1.5 of the BA-171 EA. Tidal datum, inundation, and relative sea level rise is presented below for both the BA-171 and BA-193 projects. Please refer to Appendix B for additional information.

BA-171: The tidal datum determination for the project area is:

- Mean High Water (MHW) = 0.84 feet, NAVD88
- Mean Low Water (MLW) = -0.59 feet, NAVD88
- Mean Tidal Levels (MTL) = 0.12 feet, NAVD88

Percent inundation elevations from recent field data are shown in the table below:

10%	1.03
20%	0.74
30%	0.53
40%	0.35
50%	0.17
60%	-0.03
70%	-0.17
80%	-0.47
90%	-0.77

Table 1: Elevation (ft NAVD88) % inundation baseline data (CPRA 2016b).

In the 95% Design Report, it was determined that accretion would be sufficient to offset subsidence over the project life. Therefore, RSLR will be the only component applied to future conditions. The rate of SLR was used to determine the annual incremental RSLR for the BA-171 project area over the 20-year project life, and ranged from 0.000 to 0.449 ft NAVD88 Geoid12A at 20 years (CPRA 2016b).

BA-193: The tidal datum determination for the project area is:

- MHW = 0.74 feet, NAVD88
- MLW = -0.18 feet, NAVD88
- MTL = 0.28 feet, NAVD88

Percent inundation elevations for BA-193 from field data are shown in Table 2 on page 10.

10%	0.99
20%	0.75
30%	0.58
40%	0.44
50%	0.30
60%	0.16
70%	0.01
80%	-0.15
90%	-0.37

Table 2: Elevation (ft NAVD88) % inundation baseline data (CPRA 2018b).

The RSLR for the BA-193 project area over the 20-year project life ranged from 0.000 to 0.472 ft NAVD88 Geoid12A at 20 years (CPRA 2018b).

3.1.6 Interior Land Loss Data

The difference in the interior land loss rate between the two project areas is minimal, thus having no effect on the BA-171-2 project. Land loss data for BA-171 and BA-193 is presented below.

BA-171: Using a linear regression of land acreages, USGS determined that this area experiences a -1.47% land loss annually (Figure 5). For interior marsh loss, USGS evaluated land/water data from 1984 to 2016 within an extended boundary surrounding the project area (USGS 2011, BA-171).

BA-193: Using a linear regression of land acreages, USGS determined that this area experiences a -0.33% land loss annually (Figure 3). For interior marsh loss, USGS evaluated land/water data from 1984 to 2018 within an extended boundary surrounding the project area from 1984 to 2018 (USGS 2011, BA-193).

3.2 Biological Environment

The differences in the biological environment is negligible since the BA-171 and BA-193 project are located within the same vicinity. The differences in the information for the biological environment do not affect the BA-171-2 project. Refer to Appendix B for additional information.

3.2.1 Vegetation

The difference in the vegetation between BA-171 and BA-193 do not affect the BA-171-2 project. The marsh classification and vegetation for both BA-171 and BA-193 have been presented below. Refer to Appendix B for additional information.

BA-171 Marsh Classification

Coastwide Reference Monitoring System (CRMS) 0292 is the closest station to the project location (Figure 9). According to the marsh type survey (Sasser *et al*. 2014), the project area is 19% shore, 26% saline marsh and 55% water (Figure 7). Field observations indicate saline marsh dominated by black mangrove (*Avicennia germinans*) and smooth cordgrass (*Spartina alterniflora*) (Figure 12). The project area is entirely classified as saline marsh. No submerged aquatic vegetation (SAV) has been observed in the project area or in nearby marshes (EPA 2016b) CRMS 0292. Observations from CRMS 0292 indicate the project site is 100% saline marsh (Figure 8).

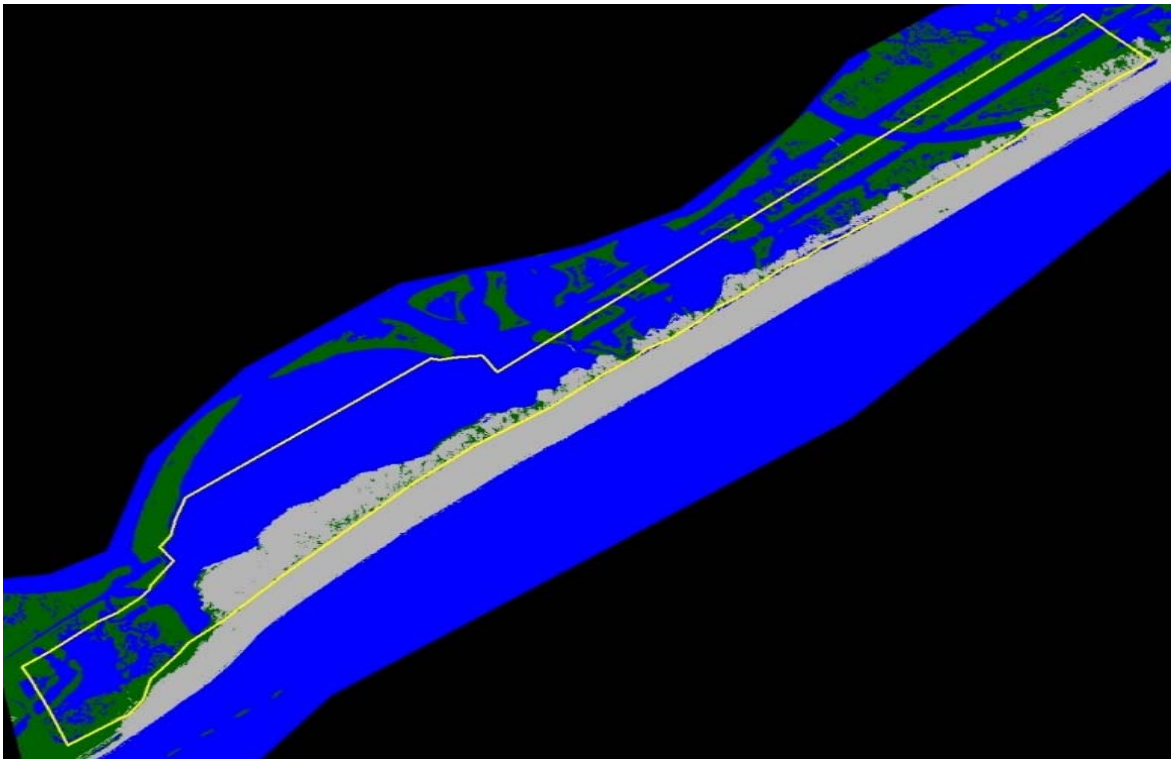

Figure 7. 2016 Marsh Type Survey (from Sasser et. al. 2014).

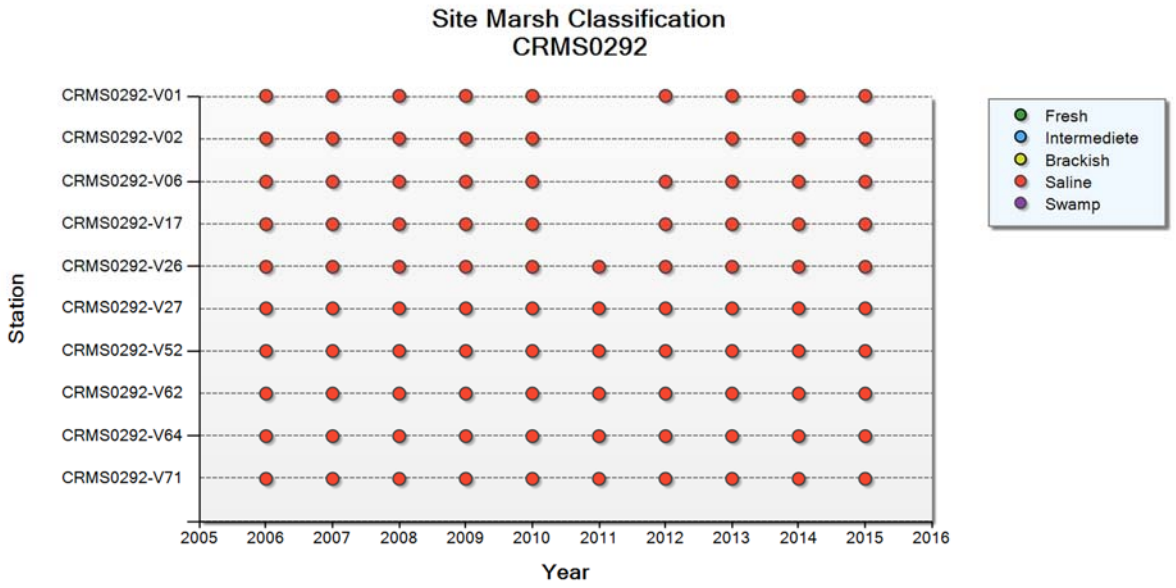

Figure 8. CRMS 0292 Marsh Classification, 2005-2015 (EPA 2016b).

BA-193 Marsh Classification

CRMS 0292 and CRMS 0164 are the closest CRMS stations to the project location and are generally located north and east of the project area (Figure 9). According to the marsh type survey (Sasser et al. 2014) (Figure 10), the project shows less than 1% shore, 54% saline marsh

and 46% water. Observations from CRMS site 0164 indicate the project site is 100% saline marsh over the last four years (2011 – 2014) (Figure 11) (EPA 2018).

Figure 9. Location of CRMS 0292 and CRMS 0164 sites (BA-193) (EPA 2018)

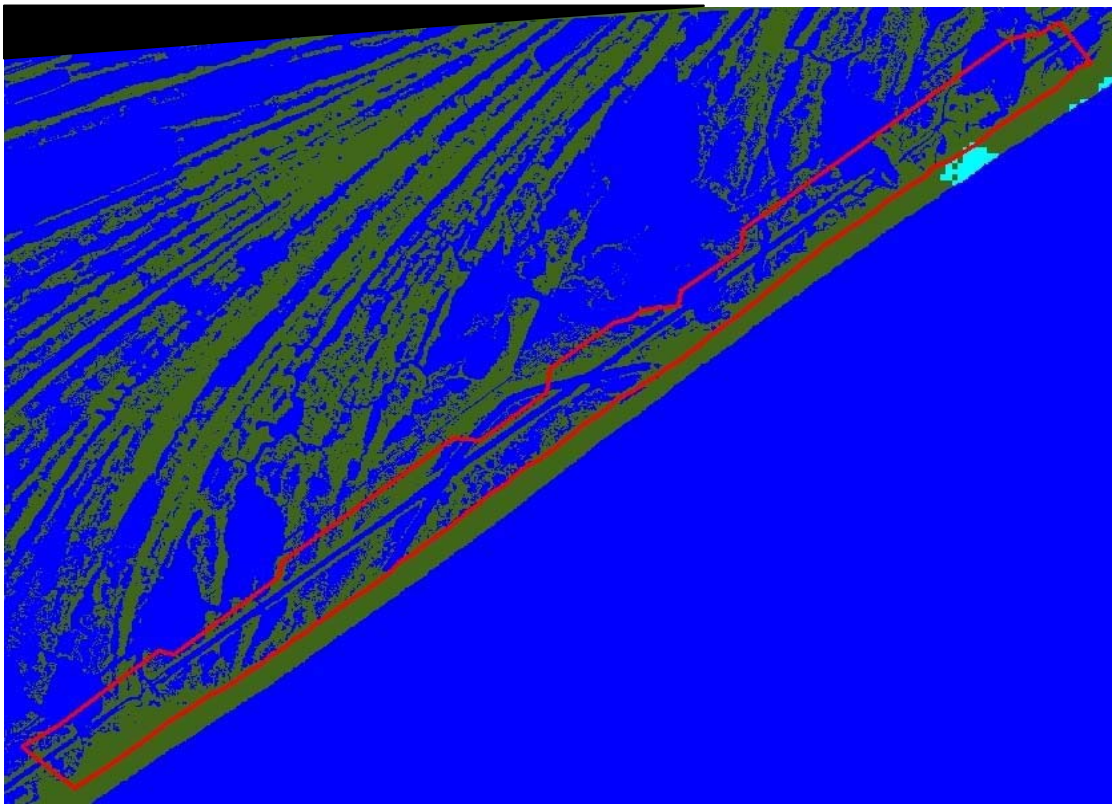

Figure 10. 2018 BA-193 Marsh Type Survey (from Sasser et. al. 2014).

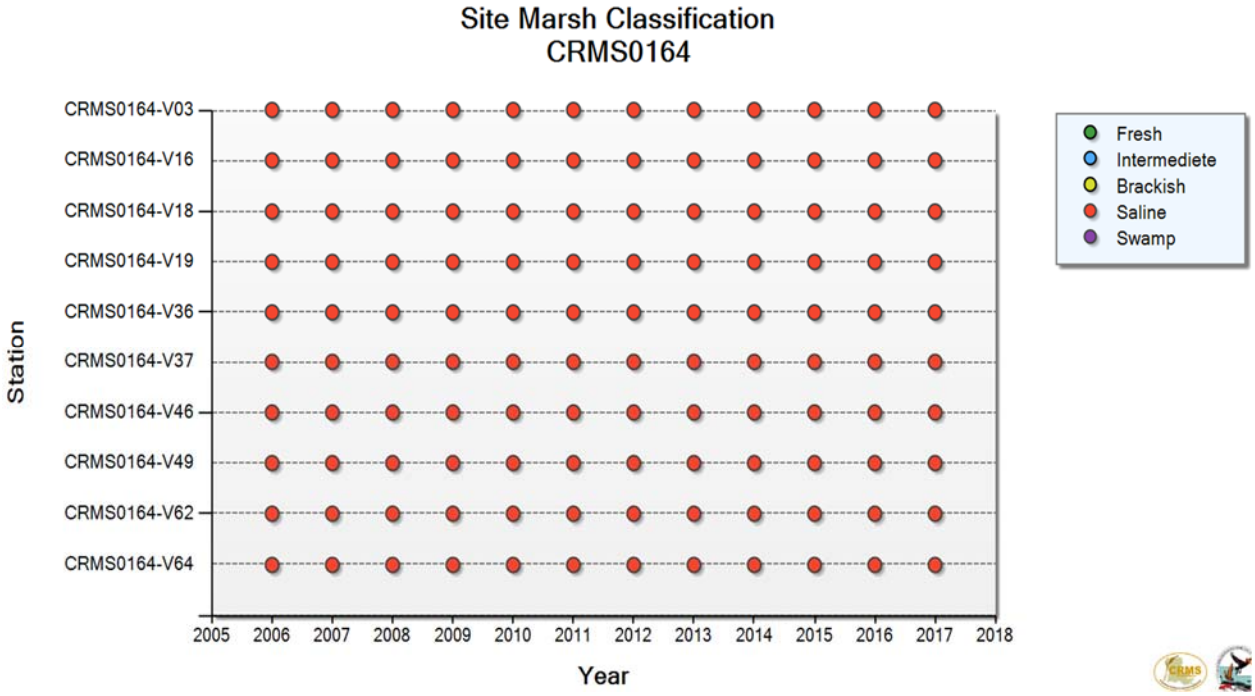

Figure 11. Saline Marsh Classification 2005-2015 from CRMS 0164, all plots (BA-193) (EPA 2018).

BA-171 Vegetative Survey

Field observations indicate saline marsh dominated by black mangrove (*Avicennia germinans*) and smooth cordgrass (*Spartina alterniflora*) (Figure 12). The project area is entirely classified as saline marsh. No SAV has been observed in the project area or in nearby marshes (EPA 2016b).

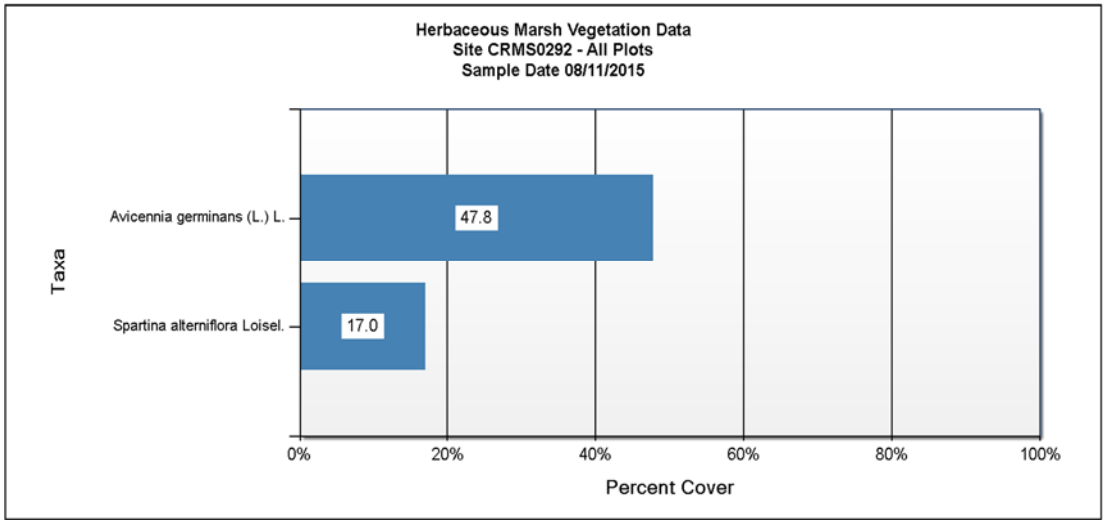

Figure 12. Vegetative Community, August 2015, from CRMS 0292, all plots (EPA 2016b).

BA-193 Vegetative Survey

CRMS vegetative survey data from CRMS 0164 indicate that this site is dominated by smooth cordgrass (*Spartina alterniflora*) (Figure 13). Site visit observations in the project area on May 15, and June 3, 2015 indicate the site is dominated by black mangrove (*Avicennia germinans*). CRMS 0292 is also dominated by black mangrove (USEPA 2018).

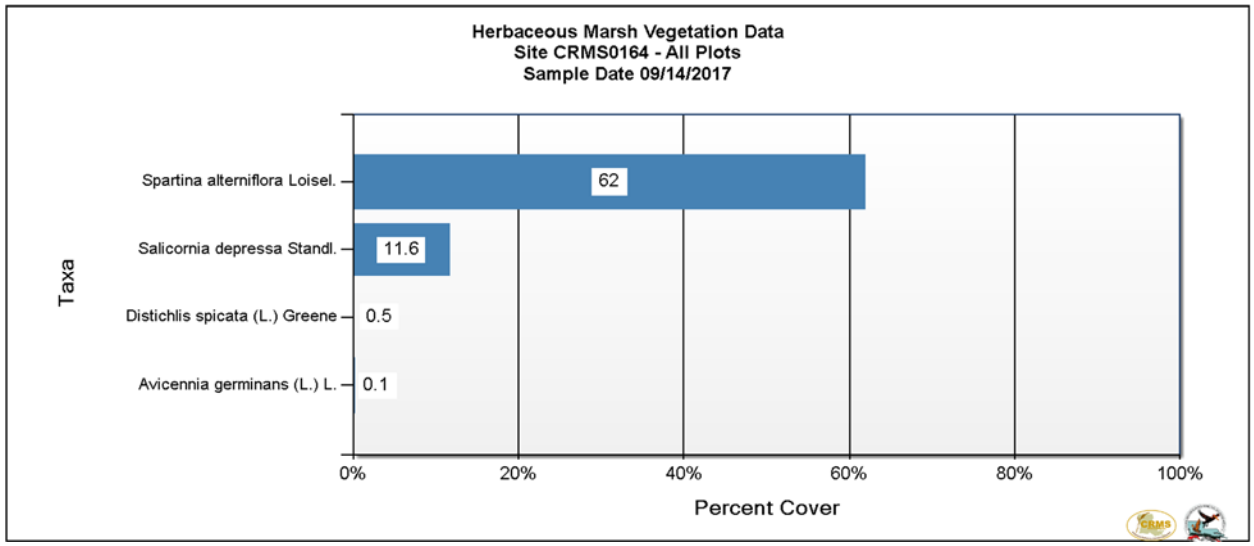

Figure 13. Vegetative Community, September 2017, CRMS 0164 (BA-193) (EPA 2018)

3.2.2 Essential Fish Habitat

The information in Section 3.2.2 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.2.3 Fish and Wildlife Resources

The information in Section 3.2.3 is very similar for the BA-171 and BA-193 project areas. Please refer to Appendix B for additional information.

Marine Fishery Resources

The BA-171-2 project area serve as a habitat for estuarine species. Estuarine marshes reduce shoreline erosion by dissipating wave and tidal energy. Estuarine marshes within the study area provide nursery and feeding habitat for many commercially and recreationally important fishes and shellfishes. Those marshes support estuarine-dependent species such as blue crab, white shrimp, brown shrimp, Gulf menhaden, Atlantic croaker, red drum, spotted seatrout, black drum, sand seatrout, spot, southern flounder, striped mullet, and others (Clark 2000). Commercial shrimp harvests are positively correlated with the area of tidal emergent wetlands (Turner 1977 and 1982).

Wildlife

Wildlife that utilize estuarine marshes include wading birds (herons, egrets, ibises, and roseate spoonbills), rails, migratory waterfowl (green-winged teal, blue-winged teal, mottled duck, gadwall, American widgeon, and lesser scaup), raptors, and songbirds. Brackish marshes with submerged aquatic vegetation often support large numbers of puddle ducks (dabbling ducks such as mallards and pintails). Shorebirds utilizing estuarine marshes include killdeer, American avocet, black-necked stilt, American oystercatcher, common snipe, and various species of sandpipers. Seabirds supported by those habitats include white pelican, brown pelican, black skimmer, herring gull, laughing gull, and several species of terns. Other nongame birds such as boat-tailed grackle, red-winged blackbird, seaside sparrow, olivaceous cormorant, northern harrier, belted kingfisher, and sedge wren also utilize estuarine marshes (Clark 2000).

According to both the United States Fish and Wildlife Service (USFWS) and the Louisiana Department of Wildlife and Fisheries (LDWF), bird nesting colonies may occur in the project area. If colonies were found, further consultation with the USFWS and the LDWF would be required.

No reconnaissance bird surveys were conducted for BA-171. However, for BA-193 since it was during nesting season during data collection, reconnaissance bird surveys were conducted by SWCA Environmental Consultants on June 16, 19, 26, and 27, 2017 (Table 3). A total of 29 active nests were recorded. The dominant species observed with active nests was the red-winged blackbird (*Agelaius phoeniceus*). Of the 29 active nests recorded during the reconnaissance surveys, 21 belonged to red-winged blackbirds. Two of the active nest structures were indicative of red-winged blackbird construction; however, the single egg found within each nest had characteristics that suggested the egg was laid by a brown-headed cowbird (*Molothrus ater*). The remaining active nests were occupied by species such as least tern (*Sternula antillarum*), common nighthawk (*Chordeiles minor*), eastern kingbird (*Tyrannus tyrannus*), and clapper rail (*Rallus crepitans*). Table 3 provides a list of all bird species observed in adjacent areas during the reconnaissance and geotechnical data collection surveys (SWCA 2017).

Common Name	Scientific Name	Common Name	Scientific Name
Double-crested Cormorant	*Phalacrocorax auritus*	Brown Pelican	*Pelecanus occidentalis*
Great Egret	*Ardea alba*	Great Blue Heron	*Ardea Herodias*
Snowy Egret	*Egretta thula*	Reddish Egret	*Egretta rufescens*
Little Blue Heron	*Egretta caerulea*	Tricolored Heron	*Egretta tricolor*
Green Heron	*Butorides virescens*	Clapper Rail	*Rallus crepitans*
Least Sandpiper	*Calidris minutilla*	Greater Yellowlegs	*Tringa melanoleuca*
Willet	*Tringa semipalmata*	Black-necked Stilt	*Himantopus mexicanus*
Wilson's Plover	*Charadrius wilsonia*	Killdeer	*Charadrius vociferous*
Least Tern	*Sternula antillarum*	Forster's Tern	*Sterna forsteri*
Royal Tern	*Thalasseus maximus*	Laughing Gull	*Leucophaeus atricilla*
Ring-billed Gull	*Larus delawarensis*	Herring Gull	*Larus argentatus*
Black Skimmer	*Rynchops niger*	Magnificent Frigatebird	*Fregata magnificens*
Boat-tailed Grackle	*Quiscalus major*	Common Nighthawk	*Chordeiles minor*
Red-winged Blackbird	*Agelaius phoeniceus*	Seaside Sparrow	*Ammodramus maritimus*
Eastern Kingbird	*Tyrannus tyrannus*	Marsh Wren	*Cistothorus palustris*
Northern Mockingbird	*Mimus polyglottos*	Barn Swallow	*Hirundo rustica*
Osprey	*Pandion haliaetus*		

Table 3. Avian species observed during nesting surveys (BA-193).

Estuarine marsh mammals include swamp rabbit, nutria, muskrat, mink, river otter, raccoon, white-tailed deer, and coyote. Reptiles are limited primarily to the American alligator in intermediate and brackish marshes, and the diamond-backed terrapin and gulf salt marsh snake in brackish and saline marshes. Juvenile sea turtles may occasionally utilize bays and saline marsh ponds adjacent to the Gulf (Clark 2000).

3.2.4 Threatened and Endangered Species

BA-171: The EPA consulted with the USFWS to ensure construction activities are not likely to adversely affect the critical habitat to the West Indian Manatee **(***Trichechus manatus***),** Piping Plover (*Charadrius melodius*), Red Knot (*Calidris canutus rufa*), and the loggerhead sea turtle (*Caretta caretta*), and the endangered Kemp's ridley (*Lepidochelys kempii*). On July 12, 2018 the USFWS concurred with EPA's determination that the Caminada Headlands Back Barrier Marsh Creation project (BA-171) "may affect but is not likely to adversely affect the above-mentioned species" (Appendix A).

BA-171-2: The consultation with the USFWS yielded the same results. On May 20, 2019 the USFWS concurred with EPA's determination that the modified Caminada Headlands Back Barrier Marsh Creation project "may affect but is not likely to adversely affect the above-mentioned species" (Appendix A).

3.3 Other Environmental Considerations

Cultural resources for the BA-171 project were addressed in the EA (Appendix B). Compliance from State Historic Preservation Office (SHPO) was obtained for the BA-193 addition and has been addressed in Section 3.3.1.

3.3.1 Cultural Resources

BA-171: The BA-171 project will have no effect on cultural resources. No archeological sites or standing structures eligible for or listed on the National Register of Historic Places are located within the proposed project area. No historic properties will be affected by the conveyance of material from the offshore borrow area to the project area during construction. Please refer to Appendix B for additional information.

BA-193: The SHPO issued a determination dated March 2, 2017, stating that no known culturally significant sites would be disturbed through the creation of the BA-193 project (Appendix A).

Archeological site 16LF271 was discovered within the BA-193 marsh creation area and consultation was initiated with the Chitimacha Tribe. The Chitimacha Tribe had concerns with human remains and cultural artifacts. On February 13, 2018, the Project Management Team (PMT) spoke with the Chitimacha Tribal Historic Preservation Officer, Ms. Kimberly Walden. After further consultation, Ms. Walden noted that a 100 ft. radial buffer zone would be accepted to establish a no working zone to prevent heavy equipment of any other potentially damaging activity from occurring in this important area. In addition, she requested to have fencing installed between archaeological site 16LF274 and the work area. The earthen containment dike alignment was realigned to be a minimum of 100 feet from the identified site as designated by SHPO. (email from Ms. Walden to Adrian Chavarria, Renee Bennett and Elizabeth Davoli. February 13, 2018, Appendix A).

Consultation was also initiated with the Choctaw Nation of Oklahoma, which had no concerns, but asked that work be stopped if artifacts or human remains were encountered during project construction (Appendix A).

BA-171-2: The BA-171-2 project will have no effect on cultural resources.

3.3.2 Socioeconomics and Environmental Justice (EJ)

The information in this section for the BA-171 and BA-193 project areas differ slightly but does not affect the BA-171-2 project.

BA-171: According to the 2010 Census of the United States, the population of Lafourche Parish is 96,318. The 2015 estimate is 98,325, which reflects a 1.8 percent gain of population from 2010. The Parish population demographic profile is:

White	79.4 percent
Black or African-American	13.9 percent
Asian-American	0.7 percent
American Indian	2.8 percent
Hispanic or Latino	3.8 percent
Two or more races	1.8 percent
White alone, not Hispanic or Latino	78.0 percent

The percent of the population living below the Census definition of poverty was 17.6 percent in 2010-2014, compared with 19.1 percent for the state of Louisiana. The median household income for 2010-2014 was $50,396. This compares to $44,991 for the state of Louisiana.

The Lafourche Parish land area is approximately 1,068.21 square miles, with a population density of 90.2 persons per square mile. In comparison, the population density of Louisiana is 104.9 (US Census Bureau, 2010).

For a project-specific summary report, a one-mile buffer was added around the proposed BA-171 project area boundary using EPA's "EJScreen" mapping tool. The results showed a population in the buffered proposed project area of zero (USEPA, 2016a).

The area around Port Fourchon is sparsely populated. Despite the potential hazards related to the energy industry's infrastructure associated with the port, the area is not one of significant environmental justice concern. The town of Larose has a relatively large population and is thus the most vulnerable area in the region. However, Larose is approximately 35 miles northwest of the project site (Hemmerling and Colten, 2004).

BA-193: The information is similar to that of BA-171 except that it has been updated based on the 2016 data. According to the 2010 Census of the United States, the population of Lafourche Parish is 96,318. The 2016 estimate is 98,305, which reflects a 1.8 percent gain of population from 2010. The Parish population demographic profile is:

White	80.5 percent
Black or African-American	13.6 percent
Asian-American	1.0 percent
American Indian	3.0 percent
Hispanic or Latino	4.4 percent
Two or more races	1.8 percent
White alone, not Hispanic or Latino	76.8 percent

The percent of the population living below the Census definition of poverty was 17.6 percent in 2010-2014, compared with 19.1 percent for the state of Louisiana. The median household income for 2011-2015 was $51,030. This compares to $44,991 for the state of Louisiana.

The Lafourche Parish land area is approximately 1,068.21 square miles, with a population density of 90.2 persons per square mile. In comparison, the population density of Louisiana is 104.9 (US Census Bureau, 2010).

For a project-specific summary report, a one-mile buffer was added around the proposed BA-193 project area boundary using EPA's "EJScreen" mapping tool. The results showed a population in the buffered proposed project area of zero (USEPA, 2016a).

The area around Port Fourchon is sparsely populated. Despite the potential hazards related to the energy industry's infrastructure associated with the port, the area is not one of significant environmental justice concern. The town of Larose has a relatively large population and is thus the most vulnerable area in the region. However, Larose is approximately 35 miles northwest of the project site (Hemmerling and Colten, 2004).

3.3.3 Infrastructure

The analysis of the infrastructure within the BA-171 project area has been addressed in the BA-171 EA in Section 3.3.3. The difference in infrastructure between the BA-171 and BA-193 project areas has been addressed below.

BA-171: The magnetometer survey identified three pipelines parallel to the shore and three pipelines perpendicular to the shore just east of the project area. One pipeline (20-inch Chevron pipeline) was positioned in the southernmost canal running parallel to the shoreline. This pipeline has an average depth of cover of approximately eight (8) feet along the pipeline canal. Two other pipelines running parallel to the shoreline were identified in a canal just north of the Chevron pipeline, which contains two 12-inch Arrowhead/Harvest pipelines. These pipelines have depths of cover that varied across the length of the canal. At their deepest, the pipelines have depths of cover of approximately five feet; however, areas of the pipelines near Bay Champagne were exposed. Since the magnetometer survey was taken, Arrowhead/Harvest buried their pipeline further to maintain a depth of cover of at least four feet. Three other pipelines were identified as pipelines associated with LOOP and were located east of the marsh creation fill area. These pipelines had an approximate depth of cover of seven feet and ran perpendicular to the shoreline (CPRA 2016).

BA-193: The pipeline corridor shows two pipelines of unknown size running north to south within the western portion of the marsh creation area. These pipelines have an average depth of cover of approximately 4.5 feet along the pipeline canal. (CPRA 2018b).

3.3.4 Noise

The information in Section 3.3.4 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

3.3.5 Hazardous, Toxic, and Radioactive Waste

The information in Section 3.3.5 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

Part 4. Environmental Consequences of Alternatives

Part 4 evaluates the anticipated environmental impacts that would result from the alternatives evaluated. It includes an analysis of the direct, indirect, and cumulative impacts of the proposed project alternatives, including the No-Action Alternative.

Each component of the Affected Environment is evaluated across an appropriate spatial and temporal scale (i.e. short term and long term) to determine the environmental impacts associated with each alternative. These impacts are classified as *Direct*, *Indirect* and *Cumulative*. *Direct* and *Indirect* impacts were listed for each alternative and can either be designated as *no impact*, *not significant impact* or *significant impact*.

The assessment of environmental consequences (i.e. impacts) is based upon a review of the best available information and relevant reference materials. Quantitative and qualitative information is used in the assessment. Factors that influence the assessment of impacts include, but are not limited to, the duration of the impact and the abundance or scarcity of the resource.

4.1 Physical Environment

4.1.1 Topography, Geomorphology, and Soils

Alternative 1 No-Action

Under the No-Action Alternative, there would be no construction activity. The topography of the proposed BA-171-2 project area would continue to change as land is lost and converted to open water.

Alternative 2 (Proposed Action)

BA-171: Table 4 shows line items for construction activities and equipment for the BA-171 project alternative (CPRA, 95% Report, Cost Estimate, 2016b). Please refer to Appendix B.

Work or Material	Quantity	Unit
Mobilization/Demobilization	1	Lump Sum
Surveys	1	Lump Sum
Grade Stakes	150	Each
Settlement Plates	8	Each
Earthen Containment Dikes	112,455	Cubic Yards
Hydraulic Dredging (Marsh Creation)	1,988,108	Cubic Yards
Woven Geotextile Fabric	169,990	Square Yards

Table 4. Construction Activities and Equipment for BA-171

BA-171-2: Table 5 shows line items for construction activities and equipment for the BA-171-2 project. No significant direct impacts are expected from these short duration activities (CPRA, 95% Report, Cost Estimate, 2018b).

Work or Material	Quantity	Unit
Mobilization/Demobilization	1	Lump Sum
Surveys	1	Lump Sum
Grade Stakes	200	Each
Settlement Plates	16	Each
Earthen Containment Dikes	179,425	Cubic Yards
Hydraulic Dredging (Marsh Creation)	2,656,600	Cubic Yards

Table 5. Construction Activities and Equipment for BA-171-2

No significant direct impacts are expected from these activities of short duration. The deposition of sediments to build the marsh platform will preserve the topography of the project area and prevent land loss to open water.

Indirect Impacts: It is unlikely that there will be any indirect impacts on topography, geomorphology, and soils for the BA-171-2 project.

4.1.2 Climate and Weather

Neither Alternative will impact climate or weather. The scientific record suggests that the improved marsh health from the Proposed Action Alternative (BA-171-2) project may have a beneficial effect to help create a carbon sink and reduce atmospheric carbon dioxide (Burkett and Kusler 2000; Bridgham et al. 2006). Please refer to Appendix B.

4.1.3 Air Quality

Alternative 1 No-Action

The No-Action Alternative would not result in changes in the existing air quality in the area.

Alternative 2 (Proposed Action)

Direct Impacts: Impacts resulting from Alternative 2 would be associated with the emissions of diesel engines that would power the construction equipment, including but not limited to marsh buggies, dozers, electric generators, backhoes, and watercraft. The duration of the impact is limited as construction is estimated to take approximately eight months. Emissions would consist primarily of nitrogen oxides, with smaller amounts of carbon monoxide, sulfur dioxide, particulate matter, and volatile organic compounds.

Lafourche Parish is currently in attainment of all National Ambient Air Quality Standards (NAAQS). The proposed project BA-171-2 is unlikely to affect the Parish's attainment status. However, Lafourche Parish is represented by the South Central Planning and Development Commission (SCPDC), the metropolitan planning organization (MPO) for the area. The South Central area is at risk for being designated as non-attainment for ozone and particulate matter (PM) NAAQS in the next few years. Due to the sensitivity of ozone and PM levels in the area, the SCPDC has applied to and been accepted by EPA into the EPA Ozone Advance and PM Advance programs. The Advance programs are a collaborative effort between EPA, states, and local governments to enact expeditious emission reductions to help near non-attainment areas remain in attainment of the NAAQS.

The EPA recommends that to reduce potential short-term air quality impacts associated with construction activities, the agencies responsible for the project should also include a Construction Emissions Mitigation Plan and adopt this plan in the Record of Decision (ROD). In addition to all applicable local, state, or federal requirements, the EPA recommends that the specific mitigation measures be included in the Construction Emissions Mitigation Plan to reduce impacts associated with emissions of NOx, CO, PM, SO_2, and other pollutants from construction-related activities (40 CFR § 1502.14(f) & 1502.16(h)). Construction emissions will be addressed and minimized with appropriate mitigation measures such as:

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
- Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Plan construction scheduling to minimize vehicle trips;
- Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections;
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;
- If practicable, utilize new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible;
- Lacking availability of non-road construction equipment that meets Tier 4 engine standards, the responsible agency should commit to using EPA-verified particulate traps, oxidation catalysts and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site; and
- Consider alternative fuels and energy sources such as natural gas and electricity (plug-in or battery).

Administrative controls:

- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking;
- Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and
- Identify sensitive receptors in the project area, if any, such as children, elderly, and infirm, and specify how impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).

Indirect Impacts: It is unlikely that there will be any indirect impacts on air quality resulting from Alternative 2.

4.1.4 Surface Water Resources

Alternative 1 No-Action

The No-Action Alternative would not have any direct impacts on surface water resources. Present conditions would continue and the headland and the back barrier marsh would continue to deteriorate.

Alternative 2 (Proposed Action)

Direct Impacts: With implementation of the Proposed Action, it is expected that there would be a temporary and duration-limited increase in turbidity near construction activity areas in the borrow and fill areas.

Indirect Impacts: Alternative 2 is not anticipated to negatively impact dissolved oxygen levels within the subsegment or contribute to the causes of the current impairment as identified on the LDEQ 2014 303(d) list. Certain long-term benefits to water quality may be realized in the locale of the proposed project as the increased wetland plant acreage can take up and sequester nutrients - identified as causative agents of depressed dissolved oxygen levels within the subsegment. However, the impacts of this project are not expected to significantly affect nutrient levels in the subsegment.

4.1.5 Tidal Datum, Inundation, and Relative Sea Level Rise

Alternative 1 No-Action

Under the No-Action Alternative, the shoreline will continue to migrate, and interior marshes will continue to be lost. As the beach and dune continue to migrate landward, overwashed sediment will be lost into newly formed open water and land loss rates will increase.
Land subsidence and sea level rise is assumed to continue. The natural and human-induced land loss processes on the Caminada Headland would likely continue at the present rates. Marine influences and tropical storm events would be the primary factors affecting land loss of these features. As this land loss trend continues, hydrologic connections between the gulf and interior areas would increase and exacerbate land loss and conversion of habitat type within the interior wetland communities. The continued loss of these coastal barrier systems would result in the reduction and eventual loss of the natural protective storm buffering of these barrier systems (USACE 2012).

Alternative 2 (Proposed Action)

Direct Impacts and Indirect Impacts: Barrier system restoration, including interior marsh restoration features, would likely alter the tidal prism, thereby reducing formation of any additional tidal passes as well as “healing” (closing or narrowing) existing tidal passes and overwash areas. This would help slow saltwater intrusion into more northern portions of the Barataria Basin. Restoration of the Caminada Headland would provide an increased level of natural storm buffering, reduction of storm surge heights, and would provide protection for the interior wetlands, bays, and estuaries (USACE 2012).

4.2 Biological Environment

This section describes potential impacts to the biological environment described in Section 3.2 Biological Environment, which includes vegetation, essential fish habitat, fish and wildlife resources, and threatened and endangered species.

4.2.1 Vegetation

Alternative 1 No-Action

Under the No-Action Alternative, the project area will continue to degrade, and interior marshes will continue to be lost. Vegetation in the project area will continue to degrade and convert to open water.

Alternative 2 (Proposed Action)

Direct Impacts: Under the Proposed Action, a marsh platform of 928 acres will be created and nourished. Direct impacts of implementing the Proposed Action would primarily result from construction activities related to placement of borrow material on existing fragmented habitats (USACE 2012). If there is natural recruitment, approximately half the area, or 464 acres, will be planted with *Spartina patens* and/or *Spartina alterniflora* and *Paspalum vaginatum.* Mangrove is expected to recolonize naturally. No significant adverse impacts are expected.

Indirect Impacts: Under Alternative 2, there would be a net increase of acreage of vegetated habitats used by fish and wildlife for life cycle requirements; increased vegetation growth and productivity; reduced conversion of these habitats to open water habitat; and higher quality Essential Fish Habitat (EFH), especially nursery habitat. Vegetative plantings would contribute to re-establishment of a variety of wetland species that would further aid in sediment trapping. Vegetative productivity would likely increase due to increased vegetated acres of barrier habitats. Important stopover habitats used by migrating neo-tropical birds would be restored and sustained for future use. Compared to the No-Action Alternative, the Proposed Action would delay the conversion of vegetated habitats to open water habitats (USACE 2012).

4.2.2 Essential Fish Habitat

Alternative 1 No-Action

The No-Action Alternative, not implementing the project, would have no direct impacts on EFH. Existing conditions would continue. As noted in the BBBS Study, the continued loss of barrier and wetland habitats throughout the study area would continue to adversely impact essential spawning, nursery, nesting, and foraging habitats for commercially and recreationally important species of finfish and shellfish, as well as other aquatic organisms (USACE, 2012).

Alternative 2 (Proposed Action)

Direct and indirect impacts: Under Alternative 2, construction of the proposed BA-171-2 project would restore shallow open water and fragmented habitats to higher quality and more continuous transitional barrier habitats. This increase in habitat acreage would provide important and essential transitional wetland habitats used by fish and wildlife for spawning, nursery, foraging, cover, and other life requirements. Increased vegetation growth and productivity would also reduce inter- and intra- specific competition between resident and migratory fish and wildlife

species for limited coastal vegetation resources. Direct impacts of construction activities would result in the conversion of existing shallow open water and fragmented barrier wetland EFH into more continuous transitional emergent wetlands thereby increasing the quality of EFH in the Caminada Headland.

Increases in turbidity, coupled with a slight increase in temperature and biological oxygen demand (BOD), and decreased dissolved oxygen associated with construction activities would be temporary and localized. Although existing EFH would be initially negatively impacted, such impacts would be offset by the restoration of transitional barrier habitats, which are considered a higher-quality EFH (USACE 2012).

4.2.3 Fish and Wildlife Resources

Alternative 1 No-Action

Under the No-Action Alternative, the proposed project would not be constructed. There would be a continuation of conditions in the proposed project area and land loss would be expected to continue. Vegetative productivity in the project area would continue to decrease as land eroded or subsided and would negatively impact the habitats of the fish and wildlife species which utilize the project area. Continued degradation of the habitat to eventual unvegetated increasingly open water areas would diminish the habitat value to all species. Future commercial harvests of shrimp and other fishes and shellfishes could be adversely impacted by continued losses in estuarine marsh habitat (Turner 1982).

Alternative 2 (Proposed Action)

Under this Alternative 2, the restored and created marsh will provide improved habitat conditions, as well as an increase in habitat for fish and wildlife.

4.2.4 Threatened and Endangered Species

The USFWS identified West Indian manatee, piping plover and its critical habitat, red knot, and listed sea turtles, (threatened loggerhead and the endangered Kemp's ridley), while the LDWF identified piping plovers and Wilson's plovers as threatened or endangered species that may occur within the proposed project area boundary (Appendix B).

Alternative 1 No-Action

Under the No-Action Alternative, no direct or indirect impacts are anticipated for threatened and endangered species as site conditions would remain the same. No avoidance measures will be required.

Alternative 2 (Proposed Action)

For Alternative 2, the project may have a short-term or temporary effect on threatened and endangered species, specifically the piping plover and its critical habitat, red knot, and the Wilson's plover. Bird survey data gathered in the Caminada Beach Dune and Headland Restoration projects (BA-45 and BA-143 respectively) indicates that construction activities have had little impact to wintering piping plovers and red knots and caused no "incidental take." Piping plover on the construction sites were observed foraging directly along the Gulf shoreline with Wilson's plover, snowy plover, black-bellied plover, and sanderlings in an area where water was slowly seeping from the dredge outfall area, approximately 91 meters from major construction activities (DeMay et al, 2015). Refer to Section 3.2.4 for the USFWS concurrence with EPA's determination that the modified Caminada Headlands Back Barrier Marsh Creation project (BA-171-2) "may affect but is not likely to adversely affect species mentioned in Section 3.2.4.

The West Indian manatee rarely occurs in the marine and coastal waters within the project area. Because the USFWS recommendations for avoiding and minimizing impacts to any manatees that may wander into the work area during summer months will be incorporated into contract work plans, the proposed project is not likely to adversely affect the West Indian manatee. Sea turtle nesting is very rare within the project area, thus no impacts to nesting sea turtles are anticipated.

4.3 Other Considerations

4.3.1 Cultural Resources

No-Action Alternative 1

The No-Action Alternative will not significantly affect cultural resources.

Alternative 2 (Proposed Action)

It has been determined in the BA-171 EA that the project will have no effect on cultural resources (Appendix B).

The BA-171-2 project will have no effect on cultural resources. No archeological sites or standing structures eligible for or listed on the National Register of Historic Places are located within the proposed project area (R. Christopher Goodwin & Associates, Inc. 2015). The SHPO concurred with this finding (Appendix A). No historic properties will be affected by the conveyance of material from the offshore borrow area to the project area during construction.

4.3.2 Socioeconomics and Environmental Justice

Alternative 1 No-Action

In the No-Action Alternative, the proposed project area would continue to degrade. Fishery habitat lost in the proposed project area may have an adverse impact on commercial fishery as well as recreational and subsistence fishermen.

Alternative 2 (Proposed Action)

Direct Impacts: Alternative 2 may beneficially impact the local economy, Louisiana and some of the neighboring towns. Contractor(s) hired to construct the proposed project may need to hire workers locally. Also, the local economy may receive an economic benefit because the workers will likely spend money locally to purchase personal items, food and lodging.

Indirect Impacts: Alternative 2 may help buffer the Caminada Headland from tropical storm impacts.

Alternative 2 will have no significant adverse impact and may have a minor beneficial economic impact on the local area. No environmental justice populations will be disproportionately affected by the proposed Action.

4.3.3 Infrastructure

Alternative 1 No-Action

If the project is not constructed, the infrastructure in the proposed project area would continue to be at risk because of the continued deterioration of the Caminada Headland.

Alternative 2 (Proposed Action) Under Alternative 2, there will be no significant negative impacts on infrastructure. Existing infrastructure will be protected since there will be more land between the gulf and the structures. The pipelines in the proposed project area will be positively affected since there will be an increase in soil depth covering and securing their pipelines. No direct negative impacts are expected due to construction activities since there will be no digging within the rights of way for each pipeline. Pipeline representatives will be asked to be on site during all construction activities to ensure compliance with the rights of way and safety of their lines.

4.3.4 Noise

Alternative 1 No-Action

The No-Action Alternative would not cause any change in the existing noise conditions in the proposed project area. There would be no impact to noise levels.

Alternative 2 (Proposed Action)

Under Alternative 2, short-term increases in noise associated with construction activities and equipment use would occur. There would be no long-term changes in the ambient noise levels associated with this project. Hearing protection may be required for construction crew and visitors to the construction site. Noise impacts are limited to the immediate project area. The closest noise-sensitive receptor is an elementary school in Golden Meadow, about 20 miles north of the project area. The duration of construction is limited. Construction is estimated at approximately one year from mobilization to demobilization, with the time to fill the marsh creation area of approximately six months (CPRA 2018b).

4.3.5 Hazardous, Toxic and Radioactive Waste

Alternative 1 No-Action and Alternative 2 Proposed Action

The No-Action Alternative 1 and Alternative 2 will not significantly impact Hazardous, Toxic and Radioactive Waste (Appendix B).

4.4 Cumulative Impacts

The information in Section 4.4 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

Agencies are focusing their restoration efforts in the coastal areas as described in Louisiana's 2017 Coastal Master Plan to maximize the limited amount of resources available to restore coastal Louisiana (CPRA, 2017).

4.5 Unavoidable Adverse Impacts

The information in Section 4.5 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

4.6 Relationship of Short-Term Uses and Long-Term Effects

Alternative 2 will have some short-term, localized, adverse impacts in the form of lost or disturbed freshwater wetlands and long-term beneficial impacts. These impacts will be mitigated in the short-term through avoidance measures and in the long-term by the creation of additional acres of wetlands. No long-term adverse impacts to the affected resources are expected.

Beneficial impacts in the mid and long-term will be realized by the proposed project. These benefits are expected to be sustained for the duration of the 20-year project life.

Part 5. Conclusion

5.1 Conclusion

Coastal Louisiana is losing wetlands at a rate of approximately 70 km^2 per year due to natural and anthropogenic causes (Barras et al 2008). Restoration projects, such as the one proposed, seek to offset these losses to slow or prevent the loss of wetland habitat in the future.

This Final Supplemental EA finds that the modified Caminada Headland Back Barrier Marsh Creation Project would have long-term beneficial impacts in coastal Louisiana and would not result in any significant direct, indirect, or cumulative adverse impacts. Construction-related adverse impacts are minor to moderate and not significant due to their limited duration and best management practices to minimize adverse impacts. This conclusion is based on a comprehensive review of relevant literature, site-specific data, project-specific engineering and environmental reports, as well as cumulative experience gained through other restoration projects in coastal Louisiana. The proposed action is projected to have no significant impacts.

5.2 Interagency Coordination

The information in Section 5.2 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

5.3 Compliance with Applicable Laws and Regulations

The information in Section 5.3 of the BA-171 EA is applicable for this section of the BA-171-2 project. Please refer to Appendix B.

5.4 Preparers, U. S. Environmental Protection Agency, Region 6, Dallas, Texas

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Appendix A:
Coordination and Consultation Correspondence

Appendix B:

Finding of No Significant Impact and Final Environmental Assessment
Caminada Headlands Back Barrier Marsh Creation

CWPPRA PROJECT BA-171