DEEPWATER HORIZON OIL SPILL
LOUISIANA AND OPEN OCEAN TRUSTEE IMPLEMENTATION GROUPS

DRAFT
JOINT RESTORATION PLAN AND ENVIRONMENTAL ASSESSMENT #1:

Restoring Wetlands, Coastal, and Nearshore Habitats, Federally Managed Lands, Fish and Water Column Invertebrates, Sea Turtles, Submerged Aquatic Vegetation, and Birds of the Chandeleur Islands

June 2025

EXECUTIVE SUMMARY

On April 20, 2010, the Deepwater Horizon (DWH) mobile drilling unit exploded, resulting in loss of life and discharge of millions of barrels of oil into the Gulf of America[1] (the Gulf) from the BP Exploration and Production, Inc. (BP) Macondo. As an oil pollution incident, the DWH oil spill is subject to the provisions of the Oil Pollution Act of 1990 (OPA; 33 United States Code [U.S.C.] Section [§] 2701 et seq.). A primary goal of OPA is to make the environment and public whole for injuries to natural resources and services resulting from incidents involving an oil discharge or substantial threat of an oil discharge. Immediately following the DWH oil spill, the DWH Trustee Council initiated an injury assessment pursuant to OPA and associated natural resource damage assessment (NRDA) regulations, which established the nature, degree, and extent of injuries from the DWH incident to both natural resources and the services they provide.

As part of the 2016 DWH legal settlement, BP agreed to pay $8.1 billion in natural resource damages (inclusive of Early Restoration funding) over a 15-year period, and up to an additional $700 million for adaptive management or to address natural resource injuries that may become apparent in the future, for a total of up to $8.8 billion. Following this comprehensive settlement agreement, the DWH Trustees released the *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement* (Final PDARP/PEIS), outlining the programmatic plan to restore natural resources impacted by the DWH oil spill.

In the Final PDARP/PEIS, the DWH NRDA Trustees established 13 restoration types under five programmatic restoration goals. The Final PDARP/PEIS also established a distributed governance structure that assigned a Trustee Implementation Group (TIG) for eight designated Restoration Areas.

The Louisiana Trustee Implementation Group (LA TIG) and Open Ocean Trustee Implementation Group (Open Ocean TIG) have cooperatively prepared this draft *Joint Restoration Plan and Environmental Assessment #1* (Joint RP/EA #1) which presents OPA NRDA and National Environmental Policy Act of 1969 (NEPA) evaluations for two sets of alternatives: one set for Chandeleur Islands Habitat Restoration and one set for Chandeleur Islands Fish and Water Column Invertebrates (FWCI) Restoration. The LA and Open Ocean TIGs propose to allocate $10 million to fully implement the Fisheries Engagement and Restoration Project and approximately $237 million toward implementation of Chandeleur Islands Habitat Restoration Alternative 5.

The Chandeleur Islands are a series of barrier islands in the Gulf marking the outer boundary of the Chandeleur Sound off the southeast coast of Louisiana and eastern St. Bernard and Plaquemines Parishes. The Chandeleur Islands habitats, including associated seagrass beds, are state and federally owned and collectively managed by the United States Fish and Wildlife Service (USFWS) via a Memorandum of Agreement with the Louisiana Department of Wildlife and Fisheries (LDWF) as the Breton National Wildlife Refuge (NWR).

[1] Formerly Gulf of Mexico, revised per Executive Order 14172 “Restoring Names That Honor American Greatness”.

This Joint RP/EA #1 addresses two of the programmatic goals established in the Final PDARP/PEIS: *Replenish and Protect Living Coastal and Marine Resources* and *Restore and Conserve Habitat*. Under these programmatic goals, this Joint RP/EA #1 addresses six restoration types. Table ES-1 provides a summary of the alternatives evaluated in this Joint RP/EA #1 and their respective programmatic restoration goals and restoration types.

Table ES-1. Summary of the Alternatives Evaluated in this Joint RP/EA #1 and Their Respective Programmatic Restoration Goals and Restoration Types.

<table>
<tr><th></th><th>Restoration Goals</th><th>Restoration Types</th><th>Alternatives</th></tr>
<tr><td rowspan="4">Chandeleur Islands Habitat Restoration</td><td rowspan="2">Restore and Conserve Habitat</td><td>Wetlands, Coastal, and Nearshore Habitats</td><td rowspan="4">• Habitat Restoration Alternative 2: Beach, Dune, Marsh, Sand Reservoirs, and New Harbor Island
• Habitat Restoration Alternative 3: Beach, Dune, Marsh, Pocket Marshes, and New Harbor Island
• Habitat Restoration Alternative 4: Beach, Dune, Marsh, Feeder Beach, and New Harbor Island
• Habitat Restoration Alternative 5: Beach, Dune, Marsh, Sand Reservoirs, Pocket Marsh, Feeder Beach, and New Harbor Island (preferred)</td></tr>
<tr><td>Habitat Projects on Federally Managed Lands</td></tr>
<tr><td rowspan="2">Replenish and Protect Living Coastal and Marine Resources</td><td>Submerged Aquatic Vegetation</td></tr>
<tr><td>Sea Turtles</td></tr>
<tr><td></td><td></td><td>Birds</td></tr>
<tr><td>Chandeleur Islands Fish and Water Column Invertebrate Restoration</td><td>Replenish and Protect Living Coastal and Marine Resources</td><td>Fish and Water Column Invertebrates</td><td>• FWCI Restoration Alternative 2: Chandeleur Islands Fisheries Engagement and Restoration (preferred)
• FWCI Restoration Alternative 3: Chandeleur Islands Fisheries Resource Monitoring and Management</td></tr>
</table>

Tiering from the Final PDARP/PEIS, the Regionwide TIG prepared *Regionwide Trustee Implementation Group Final Restoration Plan / Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles* (Regionwide RP/EA #1), which selected data collection and Engineering and Design (E&D) efforts under the "Conservation and Enhancement of Nesting and Foraging Habitat for Birds, Component 1: Chandeleur Islands, LA" for funding. These E&D efforts resulted in engineering design alternatives for Chandeleur Islands Habitat Restoration. As such,

alternative screening for Chandeleur Islands Habitat Restoration, a "Phase 2" project[2], focuses on the nuances between four different habitat restoration design alternatives for the same project rather than screening from a pool of potential projects.

To develop a reasonable range of alternatives for Chandeleur Islands FWCI Restoration, the TIGs considered FWCI restoration goals specified in the Final PDARP/PEIS, public input processes including the Open Ocean TIG's June 2023 request for project ideas to inform restoration planning for FWCI, and development of the Open Ocean FWCI Strategic Plan. The TIGs considered this input in formulating then screening two alternatives focused on enhancing ecosystem benefits for fishery resources within the Chandeleur Sound area of the Breton NWR: the Chandeleur Islands Fisheries Engagement and Restoration Project and the Chandeleur Islands Fisheries Resource Monitoring and Management Project.

The Department of Interior (DOI) is the lead federal Trustee for preparing this Joint RP/EA #1 pursuant to NEPA (42 U.S.C. § 4336a(a)(1)(A)). The three other federal Trustees of the LA and Open Ocean TIGs (the National Oceanic and Atmospheric Administration [NOAA], the United States Department of Agriculture [USDA], and the United States Environmental Protection Agency [USEPA]) are acting as cooperating agencies for the purposes of compliance with NEPA in the development of this Joint RP/EA #1 (42 U.S.C. § 4336a(a)(3)). Each federal cooperating agency has reviewed the analysis for adequacy in meeting the standards set forth in its own NEPA implementing procedures and intends to adopt the NEPA analysis (42 U.S.C. § 4336a(b)). Adoption of the EA would be completed via signature on the relevant NEPA decision document.

The public is encouraged to review and comment on this draft Joint RP/EA #1 during the 30-day comment period, as specified in the public notice published in the Federal and Louisiana Registers. Comments may be submitted during the comment period by one of the following methods:

- *Via the internet at the following URL:* https://parkplanning.nps.gov/LAOOTIGRP1;
- *Via hard copy to:* Coastal Protection and Restoration Authority, Attn: Maury Chatellier, 150 Terrace Ave., Baton Rouge, LA 70802; or
- *Via webinar:* registration for, and details specific to, the webinar are provided in a web story posted at the following URL: http://www.gulfspillrestoration.noaa.gov/restoration-areas/louisiana.

Submissions must be postmarked no later than 30 days after the release date of the draft Joint RP/EA #1. To facilitate public comment, a public review meeting is scheduled via webinar for June 26, 2025, at 11:00 am central time. Comments will be summarized in the final Joint RP/EA #1, and all public comments will be included in their entirety in the administrative record.

[2] The Final PDARP/PEIS also outlines provisions for TIGs to phase restoration projects across multiple restoration plans. For example, a TIG may propose funding a planning phase (e.g., initial E&D and compliance) in one plan for a conceptual project (i.e., "Phase 1"). This allows the TIG to develop information needed to fully consider a subsequent implementation phase of that project in a future restoration plan (i.e., "Phase 2").

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List of Acronyms

§	Section
AL	Alabama
APE	Area of Potential Effects
APS	Acoustic Positioning System
BA	Biological Assessment
BMP	Best Management Practice
BP	BP Exploration and Production, Inc.
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CCP	Comprehensive Conservation Plan
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CPRA	Louisiana Coastal Protection and Restoration Authority
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
cy	Cubic Yards
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
DOI	Department of the Interior
DPS	Distinct Population System
DWH	2010 Deepwater Horizon
DWH Trustees	Deepwater Horizon Oil Spill Natural Resource Trustees
E&D	Engineering and Design
EAC	Early Action Compact
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EMU	Environmental Management Unit
EO	Executive Order
ERMA	Environmental Response Management Application
ESA	Endangered Species Act
Fed. Reg.	Federal Register
FEMA	Federal Emergency Management Agency
Final PDARP/PEIS	*Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement*
FL	Florida
FMC	Fishery Management Council
FMP	Fishery Management Plan
FRA	Fiscal Responsibility Act of 2023

FWCI	Fish and Water Column Invertebrates
GEBF	Gulf Environmental Benefit Fund
GFMC	Gulf Fishery Management Council
Goodwin	Goodwin & Associates, Inc.
HAPC	Habitat Areas of Particular Concern
HMP	Habitat Management Plan
HMS	Highly Migratory Species
HPBA	Hewes Point Borrow Area
IPaC	Information for Planning and Consultation
Joint RP/EA #1	*Joint Restoration Plan and Environmental Assessment #1: Chandeleur Islands – Wetlands, Coastal, and Nearshore Habitats, Fish and Water Column Invertebrates, Sea Turtles, Submerged Aquatic Vegetation, and Birds*
LA	Louisiana
LA TIG	Louisiana Trustee Implementation Group
La. Admin. Code	Louisiana Administrative Code
La. Rev. Stat.	Louisiana Revised Statutes
LDENR	Louisiana Department of Energy and Natural Resources
LDEQ	Louisiana Department of Environmental Quality
LDWF	Louisiana Department of Wildlife and Fisheries
LNM	Local Notice to Mariners
LOSCO	Louisiana Oil Spill Coordinator's Office
MAM	Monitoring and Adaptive Management
manatee	West Indian Manatee
MBTA	Migratory Bird Treaty Act
MCY	Million Cubic Yards
MHW	Mean High Water
MMPA	Marine Mammal Protection Act
MS	Mississippi
MSA	Magnuson-Stevens Fishery Conservation and Management Act
mSAV	Marine SAV
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum of 1988
NDVI	Normalized Difference Vegetation Index
NEPA	National Environmental Policy Act of 1969
NFWF	National Fish and Wildlife Foundation
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration

NOI	Notice of Intent
NRDA	Natural Resource Damage Assessment
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	Ozone
OCM	Office of Coastal Management
OPA	Oil Pollution Act of 1990
Open Ocean TIG	Open Ocean Trustee Implementation Group
OSI	Ocean Surveys, Inc
Pb	Lead
PM	Particulate Matter
POSG	Public Oyster Seed Grounds
ppt	parts per thousand
PSD	Prevention of Significant Deterioration
Regionwide RP/EA #1	*Deepwater Horizon Oil Spill Regionwide Trustee Implementation Group Final Restoration Plan / Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles*
RESTORE Act	Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act
SAV	Submerged Aquatic Vegetation
SCAT	Shoreline Cleanup Assessment Technique
SGCN	Species of Greatest Conservation Need
SO_2	Sulfur Dioxide
SONRIS	Strategic Online Natural Resources Information System
the Gulf	Gulf of America
TIG	Trustee Implementation Group
TX	Texas
TY	Target Year
U.S.C.	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
ZOI	Zone of Influence

1. INTRODUCTION

The Louisiana Trustee Implementation Group (LA TIG) and Open Ocean Trustee Implementation Group (Open Ocean TIG) have cooperatively prepared this draft *Joint Restoration Plan and Environmental Assessment #1: Restoring Wetlands, Coastal, and Nearshore Habitats; Federally Managed Lands; Fish and Water Column Invertebrates; Sea Turtles; Submerged Aquatic Vegetation; and Birds of the Chandeleur Islands* (Joint RP/EA #1) to partially address injuries to multiple resources caused by the 2010 Deepwater Horizon (DWH) oil spill. This Joint RP/EA #1 was prepared in accordance with the *Deepwater Horizon Oil Spill: Final Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact Statement* (Final PDARP/PEIS) developed by the Deepwater Horizon Oil Spill Natural Resource Trustees (DWH Trustees, 2016), its Record of Decision, the Oil Pollution Act of 1990 (OPA) and associated natural resource damage assessment (NRDA) regulations, and the National Environmental Policy Act of 1969 (NEPA). This draft Joint RP/EA #1 describes the DWH oil spill restoration planning process and presents OPA NRDA and NEPA evaluations for two sets of alternatives: one set for Chandeleur Islands Habitat Restoration and one set for Chandeleur Islands Fish and Water Column Invertebrates (FWCI) Restoration.

This draft Joint RP/EA #1 considers design alternatives for Chandeleur Islands Habitat Restoration and identifies Alternative 5 as the preferred design alternative for construction. This draft Joint RP/EA #1 is consistent with the *Deepwater Horizon Oil Spill Regionwide Trustee Implementation Group Final Restoration Plan / Environmental Assessment 1: Birds, Marine Mammals, Oysters, and Sea Turtles* (Regionwide RP/EA #1), which selected data collection and Engineering and Design (E&D) efforts under the "Conservation and Enhancement of Nesting and Foraging Habitat for Birds, Component 1: Chandeleur Islands, LA" for funding. Those E&D efforts resulted in engineering design alternatives for Chandeleur Islands Habitat Restoration which the LA and Open Ocean TIGs are now evaluating for potential construction funding in this Joint RP/EA #1.

This draft Joint RP/EA #1 also considers alternatives for Chandeleur Islands FWCI Restoration and identifies the Chandeleur Islands Fisheries Engagement and Restoration Project as the preferred alternative.

The Final PDARP/PEIS and Regionwide RP/EA #1 are hereby incorporated by reference, and summaries of pertinent information are provided within this Joint RP/EA #1 where specific subsections are referenced. Links to online versions of these documents are included with their respective citations in Chapter 8.

1.1 Background and Summary of Settlement

The DWH oil spill in 2010 was the largest maritime oil spill in U.S. history, resulting in the discharge of millions of barrels of oil into the Gulf of America[1] (the Gulf). Immediately following the DWH oil spill, the DWH Trustee Council, made up of four federal Trustee agencies (Department of the Interior [DOI], United States Environmental Protection Agency [USEPA], National Oceanic and Atmospheric Administration [NOAA], and United States Department of Agriculture [USDA]) and Trustees from all five Gulf states (Alabama [AL], Florida [FL], Louisiana [LA], Mississippi [MS], and

[1] Formerly Gulf of Mexico, revised per Executive Order 14172 "Restoring Names That Honor American Greatness".

Texas [TX]), initiated an injury assessment pursuant to OPA and associated NRDA regulations, which established the nature, degree, and extent of injuries from the DWH incident to both natural resources and the services they provide. The Trustees then used the results of the injury assessment to inform future NRDA restoration planning.

As part of the DWH settlement, BP Exploration and Production, Inc. (BP) agreed to pay $8.1 billion in natural resource damages (inclusive of Early Restoration funding) over a 15-year period, and up to an additional $700 million for adaptive management or to address natural resource injuries that may become apparent in the future, for a total of up to $8.8 billion. Following this comprehensive settlement agreement on April 4, 2016, the DWH Trustees released the Final PDARP/PEIS, outlining the programmatic plan to restore natural resources impacted by the DWH oil spill. The Final PDARP/PEIS established a distributed governance structure that assigned a Trustee Implementation Group (TIG) for each of seven Restoration Areas: Regionwide, Open Ocean, and each of the five Gulf states. The LA TIG[2] makes all restoration decisions for the funding allocated to the Louisiana Restoration Area. The Open Ocean Restoration Area does not constitute a bounded geographic area; but rather wide ranging and migratory species injured by the spill. Therefore, the Open Ocean TIG[3] is responsible for restoration of a wide range of resources, including birds, Gulf sturgeon, FWCI, sea turtles, marine mammals, and deep-sea coral communities.

As described in the Final PDARP/PEIS, the DWH Trustees determined that the injuries caused by the DWH oil spill affected such a wide array of linked resources over such an enormous area that the effects of the spill must be described as constituting an ecosystem-level injury. Consequently, the DWH Trustees' chosen alternative for programmatic restoration planning employs a comprehensive, integrated ecosystem approach to address the ecosystem-level injury. After detailing the nature, degree, and extent of injuries from the DWH oil spill, the Final PDARP/PEIS describes a comprehensive restoration plan at a programmatic level to guide and direct the ecosystem-level restoration effort, based on five programmatic restoration goals listed below.

- *Restore and Conserve Habitat*
- *Restore Water Quality*
- *Replenish and Protect Living Coastal and Marine Resources*
- *Provide and Enhance Recreational Opportunities*
- *Provide for Monitoring, Adaptive Management, and Administrative Oversight to Support Restoration Implementation*

In the Final PDARP/PEIS, the DWH Trustees adopted a portfolio of 13 restoration types to address the diverse suite of injuries caused by the DWH oil spill and advance the Trustees' restoration goals (DWH Trustees, 2016, Figure 5.4-1). Under each restoration type, the Final PDARP/PEIS identified and analyzed various restoration approaches that would be appropriate to restore injured

[2] The LA TIG is composed of five Louisiana state Trustee agencies and four federal Trustee agencies: the Louisiana Coastal Protection and Restoration Authority (CPRA), Louisiana Department of Environmental Quality (LDEQ), Louisiana Department of Energy and Natural Resources (LDENR), Louisiana Department of Wildlife and Fisheries (LDWF), Louisiana Oil Spill Coordinator's Office (LOSCO), NOAA, DOI, USDA, and USEPA.

[3] The Open Ocean TIG is composed of the four federal Trustees: NOAA, DOI, USDA, and USEPA.

resources and their lost services. The DWH Consent Decree (USDOJ, 2016) and the Final PDARP/PEIS include funding allocations to TIGs for certain restoration types, as well as for monitoring, adaptive management, and administrative oversight. In total, these allocations include up to $8.8 billion in natural resource damage claims that will be paid over a 15-year period, with $5 billion allocated to Louisiana through the LA TIG and $1.24 billion allocated to the Open Ocean TIG.

The DWH Trustees' Final PDARP/PEIS detailed a plan to fund and implement restoration projects across the northern Gulf region, thereby providing a comprehensive programmatic restoration strategy to guide and direct ecosystem-level restoration efforts. The Final PDARP/PEIS serves as the programmatic document from which the Regionwide, Open Ocean, and Gulf-state TIGs tier subsequent restoration plans for project design and implementation.

1.2 Oil Pollution Act and National Environmental Policy Act Compliance

As an oil pollution incident, the DWH oil spill is subject to the provisions of OPA (33 United States Code [U.S.C.] Section [§] 2701 et seq.). A primary goal of OPA is to make the environment and public whole for injuries to natural resources and services resulting from incidents involving an oil discharge or substantial threat of an oil discharge. This document was prepared in accordance with the OPA NRDA regulations (15 Code of Federal Regulations [CFR] § 990).

Federal Trustees must comply with NEPA, 42 U.S.C. § 4321 et seq., when planning restoration projects. The NEPA analysis associated with this integrated OPA/NEPA document is being prepared in accordance with amendments to NEPA under the Fiscal Responsibility Act of 2023 (FRA; Pub. L. No. 118-5, 2023). The Final PDARP/PEIS was intended to be used to tier the NEPA analysis in subsequent restoration plans prepared by the TIGs (see Chapter 6 of the Final PDARP/PEIS). A tiered environmental analysis is an analysis that focuses on project-specific issues and summarizes or references (rather than repeats) the broader issues discussed in a programmatic NEPA analysis, in this case the Final PDARP/PEIS. The NEPA analysis in this Joint RP/EA #1 tiers from the Final PDARP/PEIS where applicable. Additionally, the LA and Open Ocean TIGs rely on incorporation by reference of existing NEPA analyses, management plans, studies, or other relevant material and adoption of existing NEPA analyses, where applicable, in the analysis of impacts in Chapter 4 of this Joint RP/EA #1.

The FRA amended NEPA to require that when a federal agency relies on a programmatic environmental document more than 5 years old, the federal agency must reevaluate the analysis and any underlying assumptions in the programmatic environmental document to ensure the analysis remains valid. The DWH Federal Trustees reviewed the framework of the Final PDARP/PEIS for continued relevance, and in a memorandum dated June 28, 2024,[4] affirmed the continued validity of the Final PDARP/PEIS to the overall program. The federal Trustees will evaluate whether new information or changed circumstances may affect the continued validity of the Final PDARP/PEIS at the project level during the preparation of each tiered RP/EA. Consistent with the FRA amendment to NEPA, the LA and Open Ocean TIGs have determined that the analysis in the Final PDARP/PEIS and the underlying assumptions therein in the context of the alternatives

[4] The Deepwater Horizon Trustee Analysis and Affirmation for Continued Applicability of the Final PDARP/PEIS can be found at https://www.fws.gov/doiddata/dwh-ar-documents/775/DWH-ARZ012870.pdf.

proposed in this Joint RP/EA #1 remain valid and that it continues to be applicable as a programmatic evaluation for DWH restoration planning.

DOI is the lead federal Trustee for preparing this Joint RP/EA #1 pursuant to NEPA (42 U.S.C. § 4336a(a)(1)(A)). The three other federal Trustees of the LA and Open Ocean TIGs (NOAA, USDA, and USEPA) are acting as cooperating agencies for the purposes of compliance with NEPA in the development of this Joint RP/EA #1 (42 U.S.C. § 4336a(a)(3)). Each federal cooperating agency has reviewed the analysis for adequacy in meeting the standards set forth in its own NEPA implementing procedures and intends to adopt the NEPA analysis (42 U.S.C. § 4336a(b)). Adoption of the EA would be completed via signature on the relevant NEPA decision document.

1.3 Purpose and Need

The Final PDARP/PEIS identified a need for comprehensive integrated ecosystem restoration to address extensive and complex injuries to natural resources and their services across the Gulf that occurred as a result of the DWH oil spill, consistent with OPA. Based on this need, the LA and Open Ocean TIGs have undertaken this restoration planning effort for the purpose of contributing to the compensation for and restoration of natural resources and their services injured, as described in the Final PDARP/PEIS, in the Louisiana and Open Ocean Restoration Areas. This Joint RP/EA #1 is consistent with the Final PDARP/PEIS and falls within the scope of the purpose and need identified therein.

Section 5.3 of the Final PDARP/PEIS identifies and describes five programmatic goals for restoration. These programmatic goals work independently and together to benefit injured resources and services. This Joint RP/EA #1 addresses two of these programmatic goals: *Replenish and Protect Living Coastal and Marine Resources* and *Restore and Conserve Habitat*. Together, these goals are intended to benefit injured coastal and nearshore habitats, as well as many injured species throughout their life stages by providing food, shelter, breeding, and nursery habitat.

Under each programmatic goal, the DWH Trustees identified restoration types for which the Trustees then developed more specific goals to guide restoration planning and project selection for each restoration type. As described in Table 1, this Joint RP/EA #1 addresses 17 restoration type-specific goals under 6 restoration types.

Table 1. Nexxus of Programmatic Restoration Goals, Restoration Types, and Corresponding Restoration Type Goals under the Final PDARP/PEIS that are Addressed by this Joint RP/EA #1

Restoration Goal	Restoration Type	Restoration Type Goal
Restore and Conserve Habitat	*Wetlands, Coastal, and Nearshore Habitats*	Restore a variety of interspersed and ecologically connected coastal habitats in each of the five Gulf states to maintain ecosystem diversity, with particular focus on maximizing ecological functions for the range of resources injured by the spill, such as oysters, estuarine-dependent fish species, birds, marine mammals, and nearshore benthic communities.
		Restore for injuries to habitats in the geographic areas where the injuries occurred, while considering approaches that provide resiliency and sustainability.
		While acknowledging the existing distribution of habitats throughout the Gulf of Mexico, restore habitats in appropriate combinations for any given geographic area. Consider design factors, such as connectivity, size, and distance between projects, to address injuries to the associated living coastal and marine resources and restore the ecological functions provided by those habitats.
	Habitat Projects on Federally Managed Lands	Restore federally managed habitats that were affected by the oil spill and response actions through an integrated portfolio of restoration approaches across a variety of habitats.
		Restore for injuries to federally managed lands by targeting restoration on federal lands where the injuries occurred, while considering approaches that provide resiliency and sustainability.
		Ensure consistency with land management plans for each designated federal landholding and its purpose by identifying actions that account for the ecological needs of these habitats.

Restoration Goal	Restoration Type	Restoration Type Goal
Replenish and Protect Living Coastal and Marine Resources	*Fish and Water Column Invertebrates*	Restore injured fish and invertebrate species across the range of coastal and oceanic zones by reducing direct sources of mortality.
		Increase the health of fisheries by providing fishing communities with methodologies and incentives to reduce impacts on fishery resources.
	Sea Turtles	Implement an integrated portfolio of restoration approaches to address all injured life stages (hatchling, juvenile, and adult) and species of sea turtles.
		Restore injuries by addressing primary threats to sea turtles in the marine and terrestrial environment such as bycatch in commercial and recreational fisheries, acute environmental changes (e.g., cold water temperatures), loss or degradation of nesting beach habitat (e.g., coastal armoring and artificial lighting), and other anthropogenic threats.
		Restore sea turtles in the various geographic and temporal areas within the Gulf of Mexico and Atlantic Ocean that are relevant to injured species and life stages.
		Support existing conservation efforts by ensuring consistency with recovery plans and recovery goals for each of the sea turtle species.
	Submerged Aquatic Vegetation	Restore for injuries to submerged aquatic vegetation (SAV) beds in the Chandeleur Islands chain to provide resiliency and sustainability to this unique habitat.
		Restore ecological functions of SAV beds in the Chandeleur Islands by considering these beds as a component of the Islands' integrated habitat complex.
	Birds	Restore lost birds by facilitating additional production and/or reduced mortality of injured bird species.
		Restore or protect habitats on which injured birds rely.
		Restore injured birds by species where actions would provide the greatest benefits within geographic ranges that include the Gulf of Mexico.

Source: DWH Trustees, 2016

Note: The use of the name "Gulf of Mexico" in this table is an exact quote from the Final PDARP/PEIS, which was released prior to issuance of EO 14172.

1.4 Proposed Actions

The Chandeleur Islands are a series of barrier islands in the Gulf marking the outer boundary of the Chandeleur Sound off the southeast coast of Louisiana and eastern St. Bernard and Plaquemines Parishes (see Figure 1). These islands, spanning nearly 50 miles, are a first line of defense for Louisiana's coastline against tropical cyclones and provide crucial habitat for a multitude of plant and animal species. More than 70 species of flora and fauna on the Chandeleur Islands are designated as "species of greatest conservation need", [5] some of which are not found anywhere else in Louisiana. The island complex also serves as a highly productive nursery and adult habitat for economically important fisheries species. However, more than 89 percent of the island chain has disappeared in the last century due to the combined effects of erosion and inadequate sand supply. The Chandeleur Islands habitats, including associated seagrass beds, are state and federally owned and collectively managed by the United States Fish and Wildlife Service (USFWS) via a Memorandum of Agreement with the Louisiana Department of Wildlife and Fisheries (LDWF) as the Breton National Wildlife Refuge (NWR).

To address the restoration goals and purpose and need for action described in Section 1.3, the LA and Open Ocean TIGs propose to implement two projects on and around the Chandeleur Islands using funds made available in the DWH Consent Decree: 1) construction of Habitat Restoration Alternative 5 for Chandeleur Islands Habitat Restoration, which would implement island restoration features, including beach and dune fill, marsh fill, rock breakwaters and revetment, sand reservoirs, pocket marshes, and feeder beaches; and 2) implementation of the Chandeleur Islands Fisheries Engagement and Restoration Project for Chandeleur FWCI Restoration, which would involve education, engagement, and communication with stakeholders to restore FWCI from human-use related impacts from fishing, boating, and ecotourism. Detailed information on all alternatives can be found in Chapters 2 and 3.

[5] The Louisiana Department of Wildlife and Fisheries maintains a list of Species of Greatest Conservation Need in its Louisiana Wildlife Action Plan (Holcomb et al., 2015)

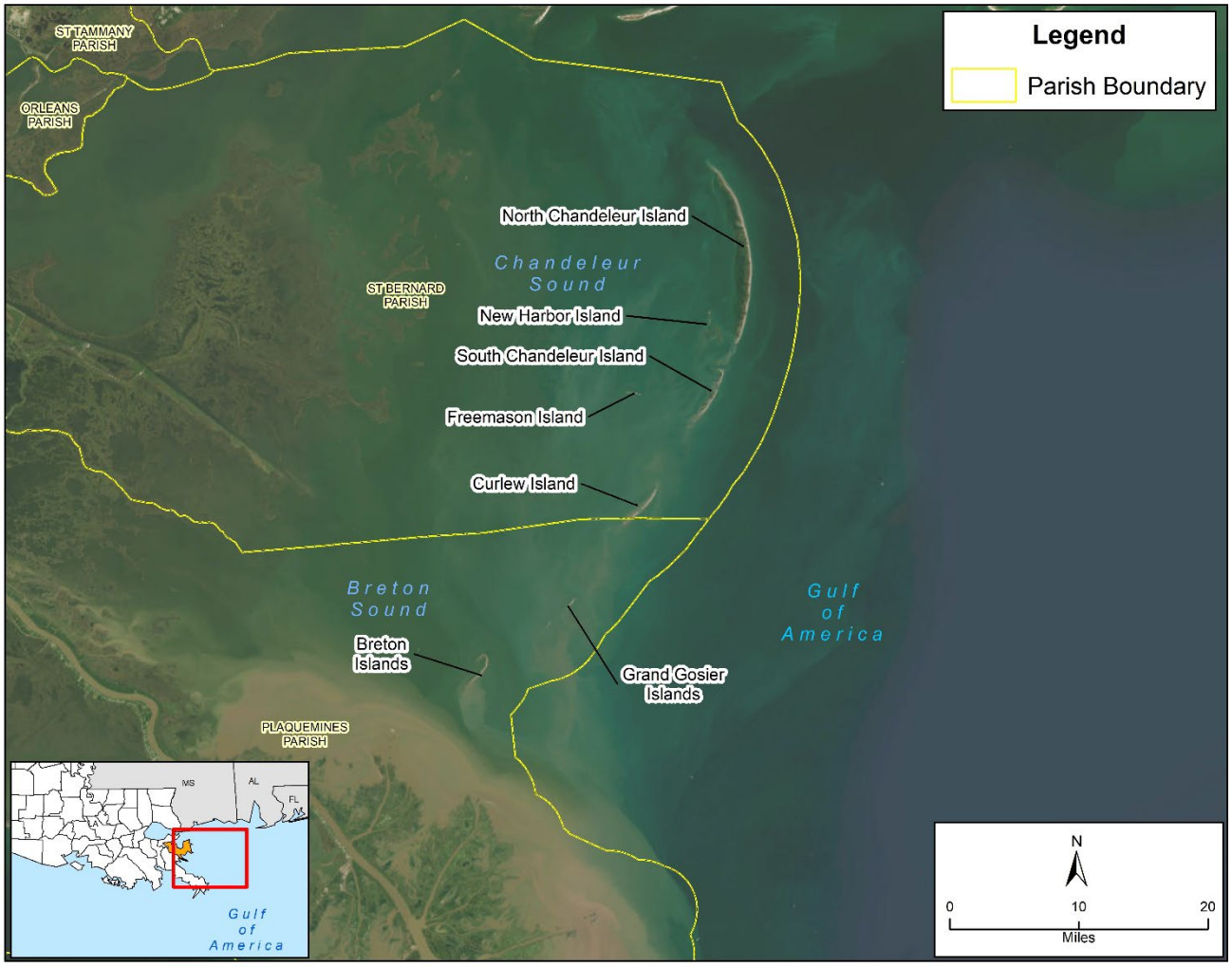

Figure 1. Chandeleur Islands

1.4.1 Chandeleur Islands Habitat Restoration Alternative 5

The LA and Open Ocean TIGs address the programmatic restoration goals to *Restore and Conserve Habitat* and *Replenish and Protect Living Coastal and Marine Resources* by proposing implementation of the Chandeleur Islands Habitat Restoration Alternative 5. Alternative 5 would implement the restoration approaches of *create, restore, and enhance barrier and coastal islands and headlands* and *restore and conserve bird nesting and foraging habitat*, among others, to increase the habitat acreage of North Chandeleur Island and New Harbor Island. North Chandeleur Island is approximately 14 miles in length with an average width of 0.5 mile. As the island progresses to the south, the beaches become narrower with broken vegetated dunes, marshes, and black mangrove (*Avicennia germinans*) stands expanding to the west side. North Chandeleur Island is the primary restoration element for shorebirds and sea turtle nesting habitats and protection of the seagrass beds. Preservation and enhancement of seagrass beds is crucial to a wide range of fish and wildlife. Enhancement of the seagrass beds is expected to benefit a wide number of birds, sea turtles, and fish. Fish use the submerged aquatic vegetation (SAV) beds as nursery habitat while sea turtles, and additional fish species utilize the seagrass beds for foraging habitat. New Harbor Island is a small, intertidal island located on the southwest side of North Chandeleur Island. It is exposed to Katrina Cut, a breach in Chandeleur Island formed as a result of Hurricane Katrina in 2005 creating North and South Chandeleur Islands. Mangroves are the dominant species on the island with few salt marsh grasses intermixed. New Harbor Island is also a primary restoration element for Brown Pelican and Egret nesting habitat.

This restoration would expand bird and sea turtle nesting habitat, addressing a primary threat (loss or degradation of nesting beach habitat) to sea turtles and restoring habitat on which birds injured by the DWH oil spill rely. Restoration of North Chandeleur Island would also provide resiliency and sustainability to the adjacent SAV beds to help restore the ecological functions of this component of the island system's integrated habitat complex. This habitat restoration would take place within the Breton NWR, which was heavily impacted by the DWH oil spill, thereby restoring for injuries to federally managed lands. Habitat creation and restoration would be accomplished by transporting sediment from a nearshore borrow area to North Chandeleur Island and New Harbor Island, and protecting existing and created habitat on New Harbor Island by constructing breakwater and revetment systems. Other planned restoration activities would include vegetation plantings, control of mammalian nuisance species such as nutria, raccoons, and rats, and monitoring of project outcomes. See Section 2.2.2.4 for a more detailed description of this alternative.

1.4.2 Chandeleur Islands Fisheries Engagement and Restoration Project

The LA and Open Ocean TIGs further address the programmatic restoration goal to *Replenish and Protect Living Coastal and Marine Resources* by proposing implementation of the Chandeleur Islands Fisheries Engagement and Restoration Project. This alternative would develop and implement an education, communication, and engagement strategy focused on recreational and commercial fishing communities that utilize the aquatic habitats of the Chandeleur Islands and Chandeleur Sound. See Section 2.2.4 for a more detailed description of this alternative.

1.5 Funding Allocation

The total LA and Open Ocean TIG settlement funding allocations are listed by restoration type in Table 2 alongside the total amounts allotted to date through other projects, and the amounts proposed for use in implementing the proposed actions. The LA and Open Ocean TIGs propose to allocate approximately $237 million toward implementation of Chandeleur Islands Habitat Restoration Alternative 5 as shown in Table 2 below. The Open Ocean TIG proposes to allocate $10 million to implement the Fisheries Engagement and Restoration Project.

The estimated cost to fully build all restoration features of Chandeleur Islands Habitat Restoration Alternative 5, approximately $350 million, is more than the combined allocations currently proposed by the LA and Open Ocean TIGs. Therefore, Chandeleur Islands Habitat Restoration Alternative 5 is intended to serve as a blueprint for a scope of activities that could include funding through additional funding streams, including funding sources outside of the DWH Consent Decree. The TIGs are supporting the Louisiana Coastal Protection and Restoration Authority (CPRA) as CPRA actively seeks additional funding streams to fully construct all project features as described for Alternative 5. The restoration features described in Chapter 2 have independent utility and therefore could be constructed individually as funding for each feature becomes available; however, it is the intent of CPRA to construct all of the restoration features of Alternative 5 to the maximum extent of available funding and fully implement the associated Monitoring and Adaptive Management Plan.

1.6 Other Alternatives Analyzed in this Joint RP/EA #1

In addition to the proposed actions described in Section 1.4.1, the LA and Open Ocean TIGs fully analyzed three additional Chandeleur Islands Habitat Restoration design alternatives and one additional Chandeleur Islands FWCI Restoration Alternative under the OPA NRDA regulations. See Sections 2.2.3 and 2.2.5 for detailed descriptions.

Table 2. NRDA Funding Allocations across Restoration Types for the Open Ocean and Louisiana Trustee Implementation Groups (TIGs)

Restoration Type	Open Ocean TIG					Louisiana TIG				
	Total Allocation	Committed Funds as of 5/19/2025	Proposed for Use		Remaining Allocation	Total Allocation	Committed Funds as of 5/19/2025	Proposed for Use		Remaining Allocation
			Chandeleur Islands Habitat Restoration	Chandeleur Islands FWCI Restoration				Chandeleur Island Habitat Restoration	Chandeleur Islands FWCI Restoration	
Wetlands, Coastal, and Nearshore Habitats	--	--	--		--	4,268,688,400	3,467,410,224	$150,000,000	--	$651,278,176
Habitat Projects on Federally Managed Lands	--	--	--		--	$50,000,000	$24,306,727	$25,693,273	--	--
Fish and Water Column Invertebrates	$400,000,000	$247,288,106	--	$10,000,000	$142,711,894	--	--	--	--	--
Sea Turtles	$55,000,000	43,389,198	--		$11,610,802	$10,000,000	$0	$4,000,000	--	$6,000,000
Submerged Aquatic Vegetation	--	--	--		--	$22,000,000	$0	$22,000,000	--	--
Birds	$70,000,000	$48,882,465	$5,000,000		$16,117,535	$220,437,300	$148,250,152	$30,000,000	--	$42,187,148

Note: Financial data current as of May 19, 2025

1.7 Natural Recovery/No Action Alternative

Under the OPA NRDA regulations, Trustees must consider a natural recovery alternative. Under the Natural Recovery/No Action Alternative, none of the action alternatives would be implemented for Chandeleur Islands Habitat or FWCI Restoration. In the Final PDARP/PEIS, the DWH Trustees analyzed the Natural Recovery/No Action Alternative programmatically (DWH Trustees, 2016, Section 3.7) and found that it would not meet the purpose and need of restoring lost natural resources and their services. That analysis is incorporated herein, in parts and by reference, and the LA and Open Ocean TIGs do not further evaluate natural recovery as a viable alternative under the OPA NRDA regulations. However, pursuant to NEPA, a No Action Alternative is described in Section 2.2.1 and analyzed in Chapter 4 of this Joint RP/EA #1 as a basis for comparison of potential environmental consequences of the action alternatives.

1.8 Coordination with Other Gulf Restoration Programs

As discussed in Section 1.5.6 of the Final PDARP/PEIS, the LA and Open Ocean TIGs are committed to coordination with other Gulf restoration programs to maximize the overall ecosystem impact of DWH NRDA restoration efforts. This coordination will ensure that funds are allocated for critical restoration projects across the affected regions of the Gulf and within Louisiana.

During the restoration planning process, the LA and Open Ocean TIGs have coordinated and will continue to coordinate with other DWH oil spill and Gulf restoration programs, including the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act); the National Fish and Wildlife Foundation (NFWF) Gulf Environmental Benefit Fund (GEBF); and the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) programs. In doing so, the LA and Open Ocean TIGs have reviewed the implementation of projects in other coastal restoration programs and are striving to develop synergies with those programs to ensure the most effective use of available funds for the maximum coastal benefit.

The Chandeleur Islands Habitat Restoration Project is a rare opportunity to develop those synergies through whole ecosystem-level habitat restoration. This project would benefit three NOAA and three USFWS Endangered Species Act resources, 21 NOAA managed species, and 80 species of "greatest conservation need" in Louisiana. In addition to restoring an entire ecosystem for many species of wildlife and fisheries, the restoration of this barrier island chain would enhance community resilience to St. Bernard, Orleans, and Plaquemines Parishes from hurricanes and tropical storms by restoring their first line of defense from storm surges.

As noted in Section 1.5 of this Joint RP/EA #1, the cost to fully construct the Chandeleur Islands Habitat Restoration to the scale of the Preferred Alternative (Alternative 5, for details see Section 2.2.2.4) is more than the proposed TIG allocations. While the features of this project are scalable and would have independent utility, the project would be most successful and cost-effective, and provide more habitat longevity, if all the features are constructed to the full scale. As such, the TIGs are supporting CPRA as they actively seek additional funding streams to fully construct all project features as described for Alternative 5. The programs above could contribute to this regionally important ecosystem restoration project. To this end, CPRA has prepared a pre-proposal for the

2025 NFWF GEBF funding cycle and has applied for funding from the RESTORE Council and from NOAA's Transformational Habitat Restoration and Coastal Resilience Grants.

1.9 Public Involvement

Public input is an integral part of NEPA, OPA, and the DWH oil spill restoration planning effort. The purpose of public review is to facilitate public discussion regarding restoration project alternatives, allow the DWH Trustees to solicit and consider public comments, and ensure that the final plans consider relevant issues.

1.9.1 Louisiana's 2023 Comprehensive Master Plan for a Sustainable Coast Public Engagement

Louisiana's 2023 Comprehensive Master Plan for a Sustainable Coast (CPRA, 2023) is the fourth plan developed by the State of Louisiana to help direct and coordinate local, state, and federal efforts to design and implement large-scale restoration and risk reduction projects. The Plan identifies "Barrier Island Maintenance" as one of several types of programmatic restoration projects supported by the plan. During the development of the Plan, CPRA provided opportunities for the public to provide input, both in person and online. In addition to numerous community briefings, community engagement workgroup meetings, conferences, workshops, informal public meetings, and other outreach efforts, CPRA hosted four official public hearings after the release of the Draft 2023 Master Plan. In all, CPRA received over 200 public comments on the draft plan before finalizing in May 2023.

1.9.2 Final PDARP/PEIS and Regionwide RP/EA #1 Public Engagement

On October 1, 2010, the Trustees published a Notice of Intent (NOI) to Conduct Restoration Planning (75 Federal Register [Fed. Reg.] 60800). Since then, the DWH Trustees have sought restoration project ideas from the public through a variety of means. In addition, the DWH Trustees implemented an extensive public outreach process as part of Final PDARP/PEIS development efforts; that process and associated public comments are described more fully in Chapter 8 of the Final PDARP/PEIS.

The public, non-government organizations, government agencies, and other entities identified potential restoration project ideas for consideration during the restoration planning process leading up to the development of the Regionwide RP/EA #1, following the Regionwide TIG's issuance of a Notice of Opportunity for Public Input of Project Ideas on September 24, 2019, and a Notice of Initiation of Restoration Planning on July 1, 2020. The public was also encouraged to review and comment on the Draft Regionwide RP/EA #1 during a 45-day public comment period in 2021. Of the 1,625 submissions received, 1,602 represented slight variations on a form or 'campaign' letter that was supportive of the Regionwide RP/EA #1 and voiced support specifically for restoration on the Chandeleur Islands. Of the 23 non-form letter submissions, seven made specific mention of support for restoration on the Chandeleur Islands.

1.9.3 Public Engagement for Joint RP/EA #1

On January 16, 2024, the LA TIG posted an Opportunity for Preliminary Public Engagement,[6] which described the transition of the Chandeleur Islands Habitat Restoration Project from E&D funded from the Regionwide TIG's *Birds* restoration type allocation to construction planning under the LA TIG. During a 30-day comment period, the LA TIG invited the public to comment on the next steps of restoration planning and funding for ecosystem-level restoration on the Chandeleur Islands. The LA TIG received four comments regarding this notice, all of which offered support for the project. These comments can be found in the administrative record for this Joint RP/EA #1 (see Section 1.11 Administrative Record for more information).

On September 9, 2024, the LA and Open Ocean TIGs posted an NOI on the NOAA Gulf Spill Restoration website (at the following URL: https://www.gulfspillrestoration.noaa.gov/), informing the public that they were beginning to jointly draft a Draft Restoration Plan that would evaluate options for restoration of the Chandeleur Islands to partially address injuries to multiple resources caused by the DWH oil spill.

1.9.4 Public Review and Comment Opportunity for the Draft Joint RP/EA #1

The public is encouraged to review and comment on this draft Joint RP/EA #1, made available for public review and comment for 30 days, as specified in the public notice published in the Federal and Louisiana Registers. Repositories with either hard copies available or opportunities for viewing an electronic version can be found in Table 20. Comments may be submitted during the comment period by one of the following methods:

- *Via the internet at the following URL:* https://parkplanning.nps.gov/LAOOTIGRP1;
- *Via hard copy, to:* Coastal Protection and Restoration Authority, Attn: Maury Chatellier, 150 Terrace Ave., Baton Rouge, LA 70802; or
- *Via webinar:* registration for, and details specific to the webinar are provided in a web story posted at the following URL: http://www.gulfspillrestoration.noaa.gov/restoration-areas/louisiana.

Submissions must be postmarked no later than 30 days after the release date of the draft Joint RP/EA #1. To facilitate public comment, a public review meeting is scheduled via webinar for June 26, 2025, at 11:00 am central time. Comments will be summarized in the final Joint RP/EA #1, and all public comments will be included in their entirety in the administrative record.

1.10 Next Steps

The LA and Open Ocean TIGs will accept public comments and host a public webinar to facilitate the public review and comment process. After the close of the public comment period, the TIGs will consider all input received during the public comment period and finalize this draft Joint RP/EA

[6] https://www.gulfspillrestoration.noaa.gov/2024/01/available-public-comment-strategy-preparing-draft-chandeleur-islands-restoration-plan

#1, if appropriate. A summary of comments received and the A TIG's' responses (where applicable) will be included in the final Joint RP/EA #1.

1.11 Administrative Record

The DWH Trustees opened a publicly available administrative record for the NRDA for the DWH oil spill, including restoration planning activities, concurrently with publication of the 2010 NOI (pursuant to 15 CFR § 990.45). DOI is the federal Trustee that maintains the administrative record, which can be found online at the following URL: http://www.doi.gov/deepwaterhorizon/adminrecord. This administrative record site is also used by the LA and Open Ocean TIGs for DWH restoration planning.

Information about restoration project implementation is provided to the public through the administrative record and other outreach efforts, including online at the following URL: http://www.gulfspillrestoration.noaa.gov.

1.12 Document Organization

This Joint RP/EA #1 is organized into the sections listed below.

- *Chapter 1 Introduction* provides the background and context for this document, background and summary of the DWH settlement, purpose and need for the proposed restoration actions, and a description of past and future public involvement activities related to these actions.
- *Chapter 2 Restoration Planning Process* presents an overview of the NRDA restoration planning process, the relationship of this Joint RP/EA #1 to the Regionwide RP/EA #1 and the Final PDARP/PEIS, a summary of the injuries addressed by the restoration, and a description of the alternatives identified to address those injuries.
- *Chapter 3 Reasonable Range of Alternatives* provides an OPA analysis of the alternatives and a rationale for selection of the preferred alternatives.
- *Chapter 4 NEPA Analysis: Affected Environment and Environmental Consequences* provides a description of the affected environment and an analysis of the environmental consequences of the alternatives.
- *Chapter 5 Compliance with Other Laws and Regulations* presents additional federal laws, regulations, and Executive Orders (EOs) that may be applicable to the proposed projects.
- *Chapter 6 List of Preparers and Agencies Consulted* provides a list of individuals who substantively contributed to the development of this Joint RP/EA #1 and agencies consulted.
- *Chapter 7 List of Repositories* includes a list of facilities that received copies of the draft Joint RP/EA #1 for review by the public.
- *Chapter 8 Literature Cited* lists the literature referenced in this document.

2. RESTORATION PLANNING PROCESS

This chapter provides a summary of the injuries identified in the Final PDARP/PEIS that are addressed by alternatives analyzed in this Joint RP/EA #1. The alternatives considered are then described, with a summary of the OPA screening process completed by the LA and Open Ocean TIGs to arrive at the reasonable range of alternatives.

2.1 Summary of Injuries to be Addressed in this Joint RP/EA #1

The DWH oil spill introduced numerous contaminants into the environment. Estimated releases included 3.19 million barrels of oil and 7.7 billion standard cubic feet of natural gas discharged into the deep sea, 1.84 million gallons of chemical dispersants used in response to the spill, and an unknown volume (up to 30,000 barrels) of synthetic-based drilling mud released during the blowout and response efforts (Chapter 4 of the Final PDARP/PEIS). Each of these contaminants introduced chemicals of known and unknown toxicity into the northern Gulf. Natural weathering processes (for example, photooxidation) and intentional burning of the floating oil at sea formed additional contaminants of known and unknown toxicity.

Given their proximity to the source of the DWH oil spill (less than 100 miles from the platform), the Chandeleur Islands were some of the first coastal habitats to experience oil exposure. Based on satellite imagery, DWH oil remained on the water surface at the Chandeleur Islands from 1 to 8 days (Kenworthy et al., 2017). Less than one month after the onset of the oil release, oil was observed along a large portion of the western shoreline and marshes of the island chain (Plant and Guy, 2014; Michel et al., 2013). According to a spatial database of shoreline oiling (the Environmental Response Management Application [ERMA]; http://erma.noaa.gov/gulfofamerica), long stretches of moderately to heavily oiled Chandeleur Island shoreline were observed intermixed with less impacted shoreline during surveys conducted from early May through July 2010. Lightly oiled patches were reported by Shoreline Cleanup Assessment Technique (SCAT) surveys as late as October 2011. Overall, the area experienced the more severe categories of oiling intensity, with the majority of shoreline ranked as having 'heavier oiling' to 'heavier persistent oiling,' defined as lasting 26 weeks or longer (Nixon et al., 2016). As oil weathered and degraded, it was also observed coming ashore as tar balls. Because of their status as a wildlife refuge, minimal clean-up efforts were deployed on the islands, favoring natural processes of oil degradation and weathering for post-spill recovery.

In addition to these direct shoreline oiling impacts, research has demonstrated some of the long-term ecological impacts of the oil exposure. Five years following oil exposure, invertebrate communities still exhibited significant variation in epibenthic community composition, with reduced overall abundance at oiled sites on the Chandeleur Islands (Zerebecki et al., 2021). Plant community studies found that although the dominant grass species (Smooth cordgrass, that is, *Sporobolus alterniflorus*, previously *Spartina alterniflora*) had largely recovered after 5 years, productivity in black mangroves remained lowered, demonstrating lingering impacts on ecosystem function (Zerebecki et al., 2021).

In the nearshore environment, evidence suggests oil concentrations settled on the shallow shelf of the Chandeleur Islands, contaminating benthic sediments. In similar nearshore environments following the spill, wave energy was observed to resuspend subsurface oil, leading to repeated-

reoiling and chronic exposure to communities over time (Kenworthy et al., 2017; Michel et al., 2013; Silliman et al., 2012). Analysis of sediments and seagrass tissues showed very high concentrations of DWH polycyclic aromatic hydrocarbons following the spill, which remained slightly elevated one year following the spill (Kenworthy et al., 2017). As observed onshore, oiling was heterogeneously distributed, with some areas experiencing seagrass dieback and declining coverage while other areas avoided exposure and/or experienced gains in seagrass coverage. The small shelf wide gains in seagrass coverage over the same time period were contrasted by a net loss of 104.22 acres of coverage in areas with confirmed oil exposure. These habitats are known to be an important nursery for fishes and invertebrates (Hayes, 2021) and their loss may have compounded the effects of direct oiling of seagrass associated species.

Pursuant to OPA, the DWH Trustees initiated an injury assessment under NRDA that established the nature, degree, and extent of injuries from the DWH incident to both natural resources and the services they provide. The DWH Trustees then used the results of the injury assessment to inform restoration planning so that restoration can address the nature, degree, and extent of the injuries caused by the DWH oil spill. Chapter 4 of the Final PDARP/PEIS provides details of the injury assessment's findings, including the following:

- Wetland, coastal, and nearshore habitats of the northern Gulf, including beach, marsh, and mangrove habitat, are among the most biologically productive coastal waters in the United States, providing food, shelter, and nursery grounds for many ecologically and economically important animals that use the Gulf's open waters, including fish, shrimp, shellfish, sea turtles, birds, and mammals. Almost all types of nearshore ecosystem habitats in the northern Gulf were oiled and injured as a result of the DWH oil spill. By state, Louisiana had the majority of oiled shoreline (approximately 65 percent) and the vast majority of oiled wetland shorelines (95 percent). This extensive oiling resulted in reduced aboveground plant biomass and indirectly led to increased rates of shoreline erosion, which were further exacerbated by response activities such as mechanical and manual removal of oil from beach and marsh habitat.
- Oil exposure occurred on approximately 632 acres of sandy beach habitat on federally managed lands, of which 363 acres were also injured by response actions. The Final PDARP/PEIS also estimates that approximately 14 miles of marsh habitat and 49 acres of SAV within federally managed lands were injured by the oil spill.
- Water column resources across all levels of the food chain were injured, including open water and estuarine-dependent fish and invertebrates that were exposed to oil in various forms, including oil droplets; dissolved hydrocarbons; oil attached to particulates, such as marine snow; oil-contaminated food; and weathered oil in the surface slick. This exposure led to changes in fish trophic and community structure, reduced growth rates, impaired reproduction, and adverse health effects such as skin lesions. The DWH Trustees estimated that 2 to 5 trillion larval fish and 37 to 68 trillion invertebrates were killed in the surface waters as a result of floating oil and mixing of that oil into the upper water column. The larval loss likely translated into millions to billions of fish that would have reached a year old had they not been killed by the spill.

- Sea turtles were injured by oil and response activities in open ocean, nearshore, and shoreline environments, and the resulting mortalities spanned multiple species and life stages. The DWH Trustees estimated that between 4,900 and 7,600 large juvenile and adult sea turtles (Kemp's ridleys, loggerheads, and hard-shelled sea turtles not identified to species) and between 55,000 and 160,000 small juvenile sea turtles (Kemp's ridleys, green turtles, loggerheads, hawksbills, and hard-shelled sea turtles not identified to species) were killed by the DWH oil spill. Nearly 35,000 hatchling sea turtles (loggerheads, Kemp's ridleys, and green turtles) were injured by response activities, and thousands more Kemp's ridley and loggerhead hatchlings were lost because of the unrealized reproduction of adult sea turtles that were killed by the DWH oil spill. Additionally, the DWH Trustees determined that injury occurred to leatherback sea turtles, but that injury could not be quantified.
- SAV provides highly productive coastal habitat, including food and shelter for birds, fishes, shellfish, invertebrates, and other aquatic species. SAV was injured across the northern Gulf due to oiling and the physical effects of vessels responding to the DWH incident. The seagrass beds off the Chandeleur Islands are unique: they are the only existing marine seagrass beds in Louisiana, they are the largest, most continuous seagrass beds in the northern Gulf, and are the only seagrass beds in the United States to have many of the species found in these other locations. A total of 271 acres of seagrass, or SAV, were lost in the Chandeleur Islands due to oil exposure and oil spill response activities.
- The DWH Trustees estimated that between 51,600 and 84,500 birds died because of the DWH oil spill. Of those dead birds, breeding age adults would have produced an estimated additional 4,600 to 17,900 fledglings in 2010 and 2011. As the Final PDARP/PEIS describes, multiple factors likely led to an underestimation of mortality; therefore, the total injury was likely substantially higher. The magnitude of the injury and the number of species affected set the DWH oil spill apart as an unprecedented human-caused injury to birds in the region.

2.2 Joint RP/EA #1 Alternatives Screening

This Joint RP/EA #1 analyzes two sets of alternatives: one set of design alternatives for the Chandeleur Islands Habitat Restoration Project and one set of project alternatives for Chandeleur Islands FWCI Restoration. Section 2.2.2 describes the design alternatives for the Chandeleur Islands Habitat Restoration Project, followed by a summary of the OPA screening results for these alternatives in Section 2.2.3. Section 2.2.4 describes the project alternatives for Chandeleur Islands FWCI Restoration, followed by a summary of the OPA screening results for these alternatives in Section 2.2.5.

The Natural Recovery/No Action Alternative, which is applicable to both projects, is described in Section 2.2.1.

2.2.1 Natural Recovery/No Action Alternative (Alternative 1)

Pursuant to the OPA regulations, the Final PDARP/PEIS considered "a natural recovery alternative by which no human intervention would be taken to directly restore injured natural resources and services to baseline" (15 CFR § 990.53(b)(2)). Under a natural recovery alternative, no additional restoration would be carried out by the LA or Open Ocean TIGs, at this time, to accelerate the recovery of wetlands, coastal, and nearshore habitats; SAV; sea turtles; birds; or FWCI in the

Louisiana or Open Ocean Restoration Areas using DWH NRDA funding. The LA and Open Ocean TIGs would allow natural recovery processes to occur, which could result in one of four outcomes for injured resources: 1) gradual recovery, 2) partial recovery, 3) no recovery, or 4) further deterioration.

Due to sea-level rise and subsidence, the most likely future outcomes are no recovery and further deterioration of habitats and their associated natural resources in and around the Chandeleur Islands. As demonstrated by an empirical analysis utilizing historical rates of shoreline change, sea-level rise subsidence, wave action, and post-storm recovery, if no habitat restoration action were taken, North Chandeleur Island would potentially lose approximately 85 percent of its intertidal habitat (0.0 to +2.0 feet) and 100 percent of its supratidal habitat (+2.0 to +5.0 feet) and dune habitat over 20 years (CEC, 2024a). Injured fish species would continue to be impacted by sources of mortality including fisheries bycatch, post-release mortality, and stressors such as marine debris and habitat impacts. If recovery were to occur naturally, it would occur over a longer period of time compared to a scenario by which restoration actions were undertaken.

Given that technically feasible restoration approaches are available to compensate for interim natural resource and service losses, the DWH Trustees rejected natural recovery alternative from further OPA NRDA evaluation in the Final PDARP/PEIS. Based on this determination and incorporating that analysis by reference, the LA and Open Ocean TIGs do not further evaluate natural recovery as a viable alternative under the OPA NRDA regulations for Chandeleur Islands Habitat Restoration or Chandeleur Islands FWCI Restoration. A No Action Alternative is, however, included in Chapter 4 of this Joint RP/EA #1, pursuant to NEPA to analyze "any negative environmental impacts of not implementing the proposed agency action" (42 U.S.C. § 4332(C)(iii)).

2.2.2 Chandeleur Islands Habitat Restoration Alternatives

The Chandeleur Islands Habitat Restoration Alternatives seek to address two of the Final PDARP/PEIS programmatic goals: *Restore and Conserve Habitat* and *Replenish and Protect Living Coastal and Marine Resource*s. Together these goals are intended to benefit injured habitat and living coastal and marine resources such as SAV, birds, sea turtles, and fish.

The Chandeleur Island Habitat Restoration Alternatives under consideration in this Joint RP/EA #1 have a strong nexus to restoration of birds, sea turtles, and habitats under the related injury caused by the DWH oil spill and can reasonably be expected to benefit these resources over an extended timeframe. Under the programmatic goal to *Restore and Conserve Habitat*, the *Wetlands, Coastal and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types would be directly addressed; under the programmatic goal *Replenish and Protect Living Coastal and Marine Resources,* the *Birds*, *Sea Turtles*, and *Submerged Aquatic Vegetation* restoration types would be directly addressed (see Table 2).

Tiering from the Final PDARP/PEIS, the Regionwide TIG prepared the Regionwide RP/EA #1 to address injuries to natural resources in the Regionwide Restoration Area resulting from the DWH oil spill (Regionwide TIG, 2021). The Regionwide TIG solicited project ideas from the public for the four restoration types included in the Regionwide Restoration Area: *Birds*, *Marine Mammals*, *Oysters*, and *Sea Turtles*. The call for project ideas listed priorities for each restoration type that the Regionwide TIG established based on the injury assessment and restoration priorities outlined in

the Final PDARP/PEIS. The Regionwide TIG reviewed the Final PDARP/PEIS programmatic restoration goals and developed a set of selection criteria for screening projects to include in the reasonable range of alternatives for the Regionwide RP/EA #1.

After evaluating the reasonable range of alternatives against criteria established under the OPA NRDA regulations and analyzing the anticipated environmental consequences of these alternatives (described in detail in Chapter 4 of the Regionwide RP/EA #1), the Regionwide TIG selected 11 alternatives for implementation (described in Table ES-1 of the Regionwide RP/EA #1), including "Conservation and Enhancement of Nesting and Foraging Habitat for Birds, Component 1: Chandeleur Islands, LA" (DIVER ID 289).

The Regionwide TIG recognized that restoring beach and dune habitat would not only meet the goals of the *Birds* and *Sea Turtles* restoration types but would also provide broader benefits to marine and coastal ecosystems injured by the DWH oil spill, such as protection and enhancement of adjacent SAV beds. Similarly, integrating a diverse set of restoration approaches and techniques under a single alternative to conserve and enhance bird nesting and foraging habitat would allow the Regionwide TIG to maximize regionwide, ecosystem-scale benefits by targeting the most appropriate restoration tools to individual project sites and activities. In selecting "Conservation and Enhancement of Nesting and Foraging Habitat for Birds, Component 1: Chandeleur Islands, LA", the Regionwide TIG funded data collection and E&D efforts upon which this Joint RP/EA #1 builds, including the development of engineering design alternatives for a Chandeleur Islands Habitat Restoration Project which the LA and Open Ocean TIGs are now evaluating for potential construction funding in this Joint RP/EA #1.

The Final PDARP/PEIS provides a structure for TIGs to implement alternatives utilizing a phased approach. For example, a TIG may propose funding a planning phase (for example, collection/analysis of data critical to the restoration planning process, conducting a planning project or feasibility study, or undertaking E&D work) in a restoration plan, which would allow TIGs to develop alternatives to the extent necessary to fully consider an implementation phase in a subsequent restoration plan. A phased approach can inform restoration implementation and maximize restoration benefits. Under 15 CFR 990.54(c), planning projects are only to be undertaken when, in the judgment of the Trustees, these projects would provide the information at a reasonable cost and in a reasonable timeframe.

The Chandeleur Islands Habitat Restoration Project is a "Phase 2" project as the E&D phase of the project was funded through the Regionwide RP/EA #1.[7] As such, alternative screening for Chandeleur Islands Habitat Restoration focuses on the nuances between different designs for the same project rather than screening from a pool of potential projects.

Although the Regionwide TIG's RP/EA #1 funded the E&D for the Chandeleur Islands Habitat Restoration Project from its *Birds* restoration type allocation, the LA and Open Ocean TIGs propose the use of several restoration type allocations, as detailed above in Section 1.5, to fund this habitat

[7] The Final PDARP/PEIS also outlines provisions for TIGs to phase restoration projects across multiple restoration plans. For example, a TIG may propose funding a planning phase (e.g., initial E&D and compliance) in one plan for a conceptual project (i.e., "Phase 1"). This allows the TIG to develop information needed to fully consider a subsequent implementation phase of that project in a future restoration plan (i.e., "Phase 2").

restoration because of the project's ecosystem scale and the resulting benefits. Exposure to DWH oil and spill response activities resulted in extensive injuries to multiple habitats, species, and ecological functions in the northern Gulf including Breton NWR and the Chandeleur Islands. Restoration in the Chandeleur Islands, including beach, dune, and SAV restoration, would address several of these resource injuries and provide ecosystem-level benefits to multiple resources in line with the guidance set out in the Final PDARP/PEIS.

The Chandeleur Islands Habitat Restoration Alternatives include various restoration features focused on North Chandeleur Island, arcing from Hewes Point in the north to Katrina Cut in the south, New Harbor Island, and the seagrass beds and water bottoms adjacent to these two islands (see Figure 2.). The islands have suffered extensive damage from hurricanes, especially hurricanes Georges in 1998 and Katrina in 2005. They are also subject to subsidence, sea-level rise, and suboptimal sediment input. The islands and seagrass beds were damaged by the DWH oil spill and then benefited from the construction of spill-related mitigation sand berms. Despite the berm project, the Chandeleur Islands Project area has a high rate of habitat loss. This Joint RP/EA #1 aims to address that habitat loss by analyzing four Habitat Restoration Alternatives, described in detail in Sections 2.2.2.1 through 2.2.2.4.

Data collection and E&D efforts funded by the Regionwide TIG included identification of various potential restoration features, the combination of these features into potential design alternatives, and comparative analysis of the alternatives in terms of performance and impacts. The resulting report, *Chandeleur Island Restoration Project (PO-0199) Restoration Alternatives Analysis* (CEC, 2024a), summarizes this alternative development process (see Appendix A). Note that all design specifications (for example, acres, linear feet) discussed in this document are approximate and would continue to be refined through final E&D. As such, some of the acreages and costs cited in this Joint RP/EA #1 differ from initially estimated acreages and costs in the *Restoration Alternatives Analysis* (CEC, 2024a) and instead reflect further design refinement.

The following potential restoration features were identified in the *Restoration Alternatives Analysis* report:

- North Chandeleur Island
    - Beach and dune fill utilizing compatible sediments placed at varying elevations and widths along the existing shoreline;
    - Marsh fill behind the constructed beach and dune fill where a narrow bare sandy beach and an expansive low-lying, nearly unvegetated, sandy intertidal platform currently exist;
    - Placement of "sand reservoirs", which are stockpiles of sand that would function as future sediment supplies, dispersing sand into the system, as the island naturally migrates westward;
    - Construction of "pocket marshes," or small areas of restored marsh, in areas of degraded existing vegetation; and
    - Placement of a feeder beach to provide a sustainable source of sediment to the system through longshore transport.

Figure 2. Chandeleur Islands Habitat Restoration Project Area

- New Harbor Island
    - Fill placement on the western (landward) side of the island to protect existing mangrove habitat and restore eroded avian habitat;
    - Shoreline rock revetment along the western fill placement boundary; and
    - Detached rock breakwaters to reduce wind and wave action erosion along the eastern (Gulf-facing) shoreline.

These potential restoration features were combined to develop four Habitat Restoration Alternatives (hereafter referred to as Habitat Restoration Alternatives 2 through 5) as summarized in Table 3 and shown in Figure 3. All four alternatives involve sand fill for beach, dune, and marsh on North Chandeleur Island, but they differ in the type, elevation, and extent of sand fill placement, which affects the type and amount of habitat restored. Additionally, given New Harbor Island's role as important nesting habitat for the Brown Pelican and foraging habitat for other species, all four design alternatives include expansion and protection of the island with fill material, rock breakwaters, and a rock revetment. Overall, the restoration of the beach, dune, and marsh is also expected to enhance the environment for marine SAV resulting in increased species abundance and diversity. The four Habitat Restoration Alternatives are described below. Alternative 1, or the Natural Recovery/No Action Alternative, was described in Section 2.2.1.

Table 3. Chandeleur Island Habitat Restoration Alternatives and Associated Restoration Features

Restoration Features		Alternative 2	Alternative 3	Alternative 4	Alternative 5
North Chandeleur Island	Beach and Dune Fill	X	X	X	X
	Marsh Fill	X	X	X	X
	Sand Reservoirs	X			X
	Pocket Marsh		X		X
	Feeder Beach			X	X
New Harbor Island Fill and Shoreline Protection		X	X	X	X

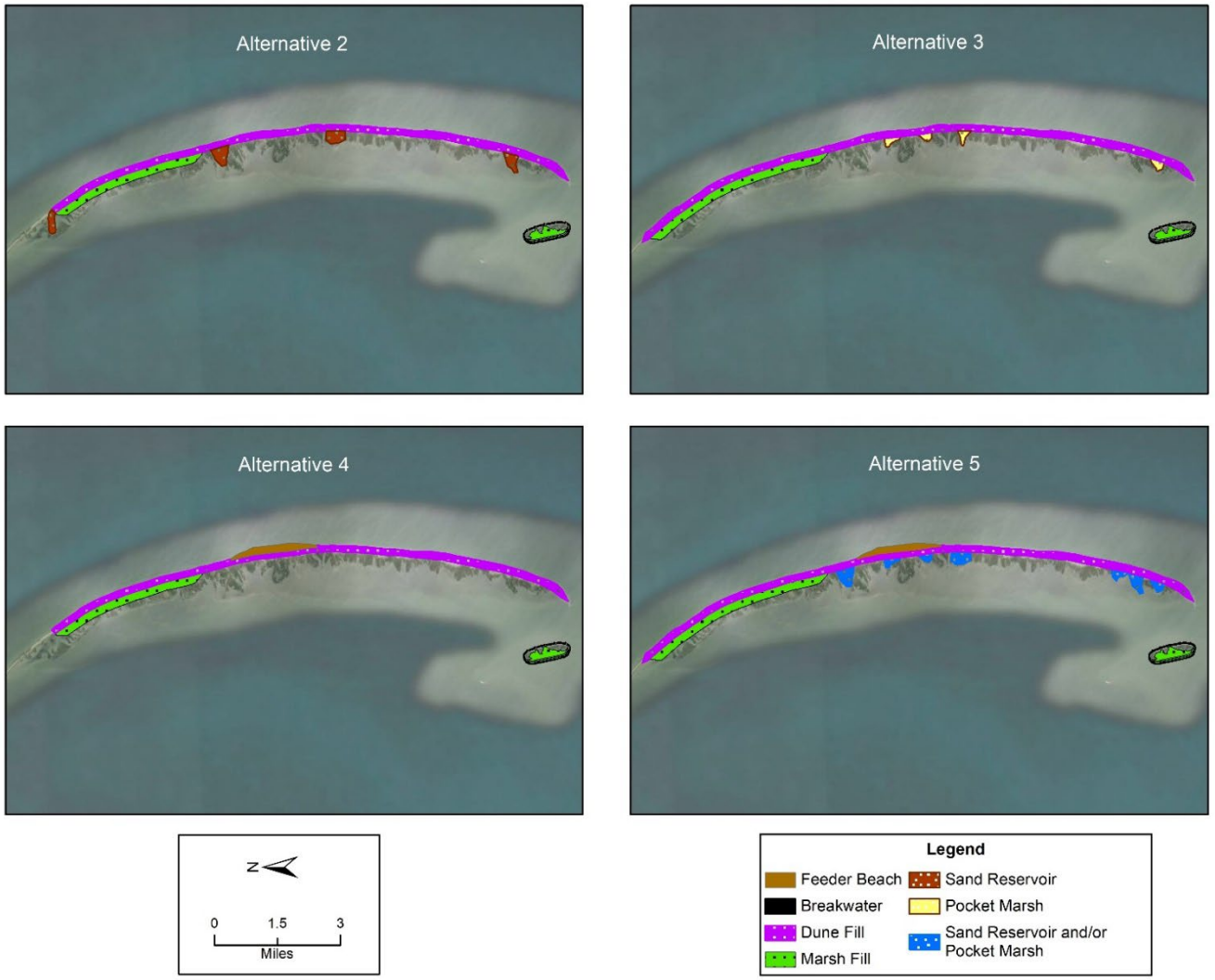

Figure 3. Overview of Four Design Alternatives for Chandeleur Islands Habitat Restoration Project

2.2.2.1 Habitat Restoration Alternative 2: Beach, Dune, Marsh, Sand Reservoirs, and New Harbor Island

North Chandeleur Island Details

Under Alternative 2, 69,000 linear feet of beach and dune fill, 21,000 linear feet of marsh fill, and four sand reservoirs would be constructed on North Chandeleur Island (see Figure 4). Beach and dune compatible fill material would be placed at varying elevations and widths along the existing shoreline. Typical beach sections would be constructed to an elevation of +4.5 feet North American Vertical Datum of 1988 (NAVD88) from the toe of the dune with a slope of 1V:200H extending seaward to an elevation of +3.2 feet NAVD88. Here the slope would increase to 1V:50H down to mean high water (MHW) at an elevation of +1.2 feet NAVD88 where the slope would increase again to 1V:30H down to existing grade. Typical dune features would be constructed to an elevation of +8.0 feet NAVD88 with side slopes of 1V:25H and a crest width of 100 feet. These elevations, slopes, and distances were used because they have been shown to lend themselves best to habitat creation and sustainability. Specifically, the beach slopes were adopted from designs developed and used for sea turtle nesting beaches in Florida (CEC, 2024b). The beach and dune profiles are comparable to those used on the North Breton Island Early Restoration Project (OBG, 2019) and comparable to the portions of North Chandeleur Island with relatively intact dunes. Sand fencing would be installed along the alignment of the dune feature. Bitter switchgrass (*Panicum amarum*) or other appropriate dunegrass would then be planted within the beach and dune fill area.

Marsh fill would be initially constructed to an elevation of +3.0 feet NAVD88 with slopes of 1V:30H down to the existing grade. The marsh fill would be constructed on the north end of North Chandeleur Island behind the constructed beach and dune fill where a narrow bare sandy beach and an expansive low-lying, nearly unvegetated, sandy intertidal platform currently exists. Marsh fill elevations were selected to provide bird foraging habitats as well as a stable platform to accept overwash sediments enhancing the longevity of the project. The marsh elevation may be refined once the settlement analysis is completed during the preliminary design phase of the project. Smooth cordgrass (*Sporobolus alterniflorus,* previously *Spartina alterniflora*) and/or other appropriate species would then be planted within the marsh fill area.

Several areas along the western (landward) side of North Chandeleur Island were identified as potential locations for sand reservoir construction, ranging in size from approximately 50 to 85 acres. The sand reservoirs would provide additional beach habitat for avian species and function as future sediment supplies, dispersing sand into the system as the island migrates westward. These sites were identified as optimal because of their degraded existing vegetation. Fill placement in these areas would provide twofold benefits: additional sediment input into the existing system over time and increased intertidal and supratidal habitat acres. The typical sand reservoir feature would be initially constructed to a target elevation of +4.0 feet NAVD88 with slopes of 1V:30H down to existing grade. The northernmost sand reservoir has a crown elevation of +4.5 feet NAVD88 with a slope of 1V:200H out to an elevation of +3.2 feet NAVD88. From +3.2 feet NAVD88 the slope would steepen to 1V:30H extending to the existing grade to mimic the proposed beach fill feature to which it is connected.

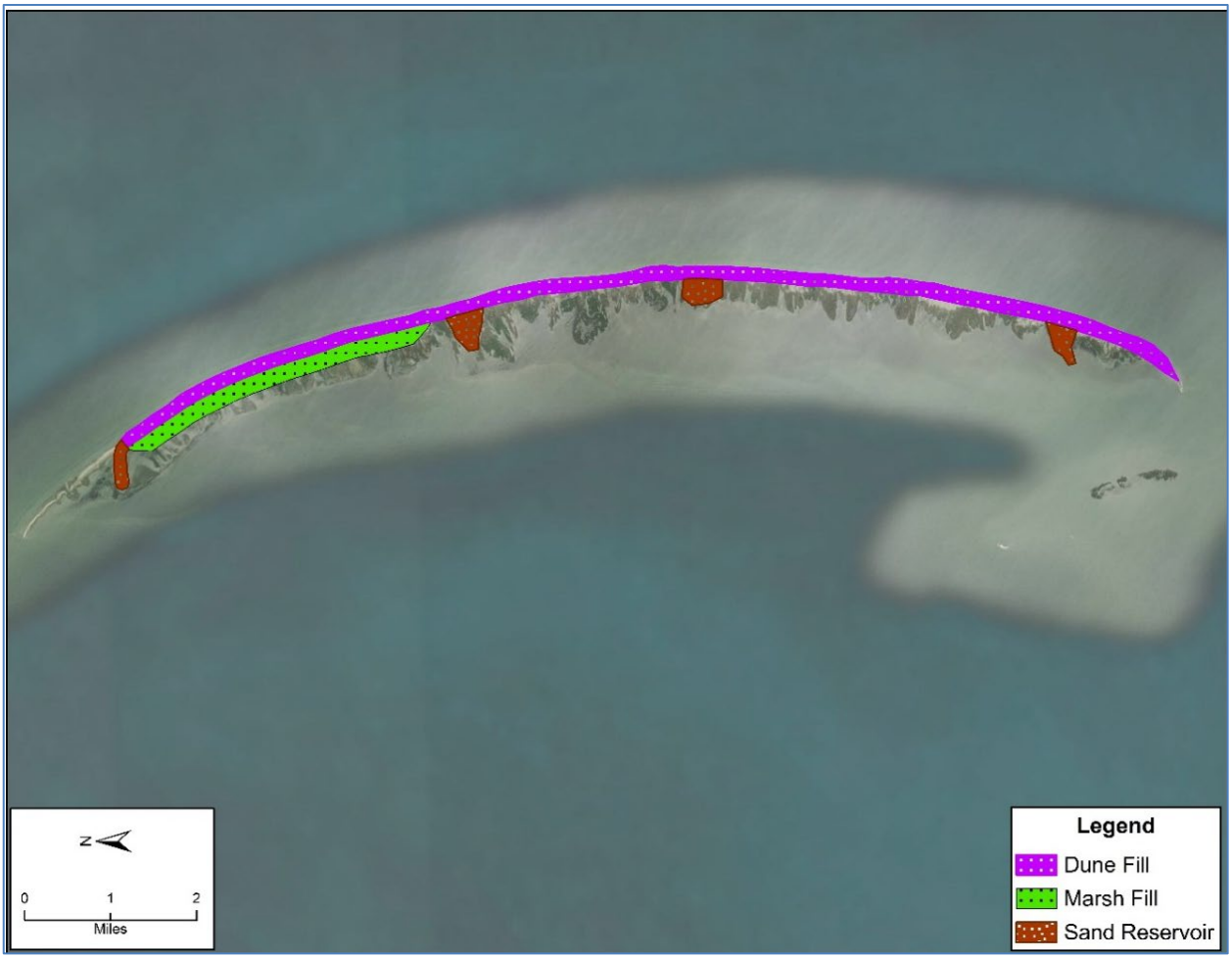

Figure 4. Habitat Restoration Alternative 2 North Chandeleur Island Restoration Features

2.2.2.2 Habitat Restoration Alternative 3: Beach, Dune, Marsh, Pocket Marshes, and New Harbor Island

North Chandeleur Island Details

Under Alternative 3, 75,000 linear feet of beach and dune fill, 27,000 linear feet of marsh fill, and four pocket marshes would be constructed on North Chandeleur Island (see Figure 5). The beach, dune, and marsh fill in Alternative 3 would be constructed as described for Alternative 2; however, the linear extent of these fill types would be greater under Alternative 3. Additionally, instead of sand reservoirs proposed under Alternative 2, Alternative 3 includes construction of four pocket marshes, ranging in size from approximately 25 to 35 acres. Several areas along the western side of the island were identified as potential locations for pocket marsh construction because of their degraded existing vegetation. The constructed elevation of pocket marsh features would be lower than marsh fill elevation; typical pocket marsh features would be constructed to an initial elevation of +2.0 feet NAVD88 with a landward slope of 1V:30H down to existing grade, with the expectation that they would settle to an intertidal elevation sooner than marsh fill, which is constructed to +3.0 feet NAVD88. As a result, pocket marshes would provide more immediate bird foraging habitat

compared to marsh fill. The marsh fill and pocket marsh elevation may be refined once the settlement analysis is completed during the preliminary design phase of the project.

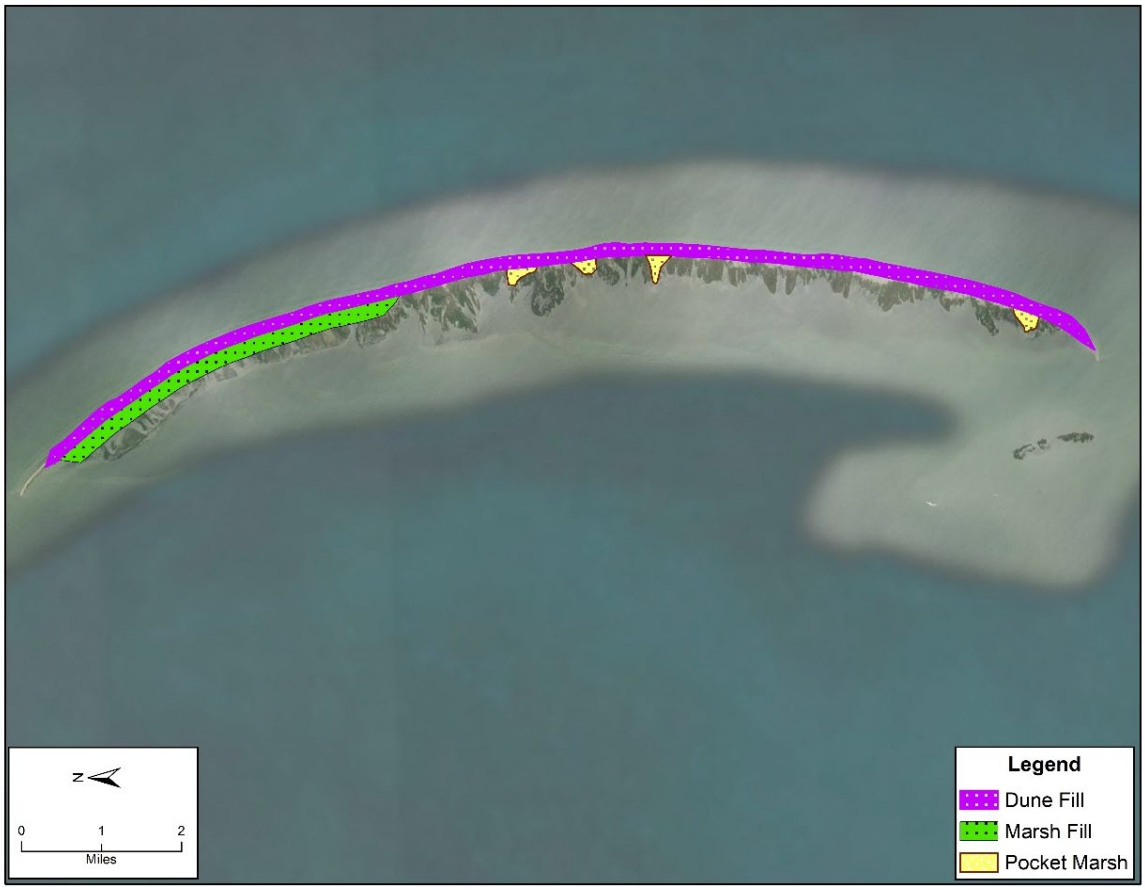

Figure 5. Habitat Restoration Alternative 3 North Chandeleur Island Restoration Features

2.2.2.3 Habitat Restoration Alternative 4: Beach, Dune, Marsh, Feeder Beach, and New Harbor Island

North Chandeleur Island Details

Under Alternative 4, 69,000 linear feet of beach and dune fill, 21,000 linear feet of marsh fill, and a feeder beach would be constructed on North Chandeleur Island (see Figure 6). The beach, dune, and marsh fill in Alternative 4 would be constructed as described for Alternative 2; however, the linear extent of these fill types would be slightly greater under Alternative 4. Additionally, instead of sand reservoirs proposed under Alternative 2, Alternative 4 would include construction of a Gulfside feeder beach.

A nodal zone, or an area from which sand is transported north and south along the face of the island, was identified near the center of the Gulf-facing shoreline of North Chandeleur Island. Placement of additional sediment near this nodal zone would take advantage of longshore transport to the north and south of this point, thereby allowing natural processes to nourish the

beach over time. The final location of this feeder beach feature would be determined during the later design stages depending upon shoreline conditions at the time of construction and to maximize benefits to island longevity. This feeder beach feature would widen the beach platform up to approximately 800 feet at its widest point at an elevation of +3.2 feet NAVD88.

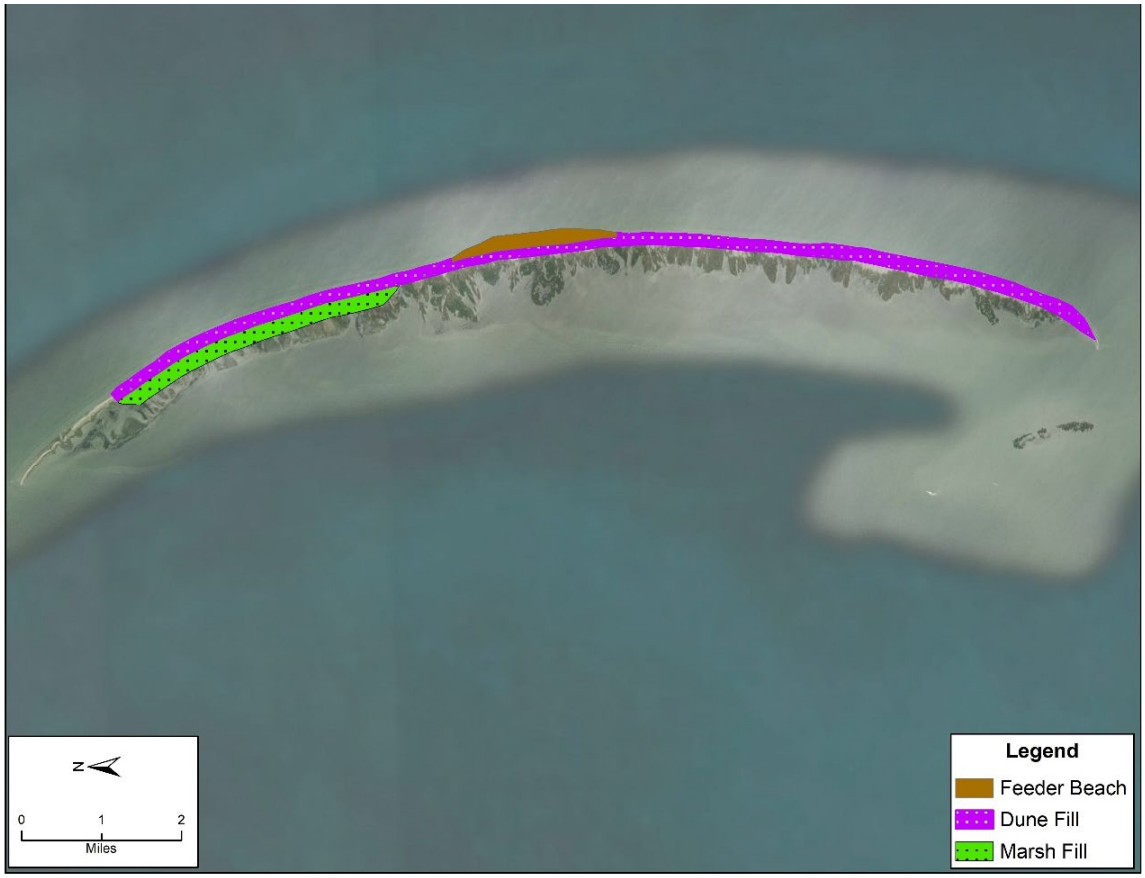

Figure 6. Habitat Restoration Alternative 4 North Chandeleur Island Restoration Features

2.2.2.4 Habitat Restoration Alternative 5: Beach, Dune, Marsh, Sand Reservoirs, Pocket Marsh, Feeder Beach, and New Harbor Island

North Chandeleur Island Details

Alternative 5 (see Figure 7) was developed by combining features from Alternatives 2 through 4. This alternative would include 75,000 linear feet of beach and dune fill, 27,000 linear feet of marsh fill sand reservoirs and/or pocket marshes, and a feeder beach. The beach, dune, and marsh fill would be constructed as described in Alternative 3. Sand reservoirs and/or marsh features, ranging in size from approximately 25 to 85 acres, as described in Alternative 2 and 3, would be built within the seven areas shown in blue in Figure 7. For the purposes of the OPA and NEPA analysis in this Joint RP/EA #1, it is assumed that this alternative would include seven sand reservoirs. The final ratio of pocket marshes to sand reservoirs would be determined in later design stages; however, the total number and location of these features would be approximately as shown in Figure 7. As

described in Alternative 4, the final location of the feeder beach would be determined during the later design stages depending upon shoreline conditions at the time of construction and to maximize benefits to island longevity.

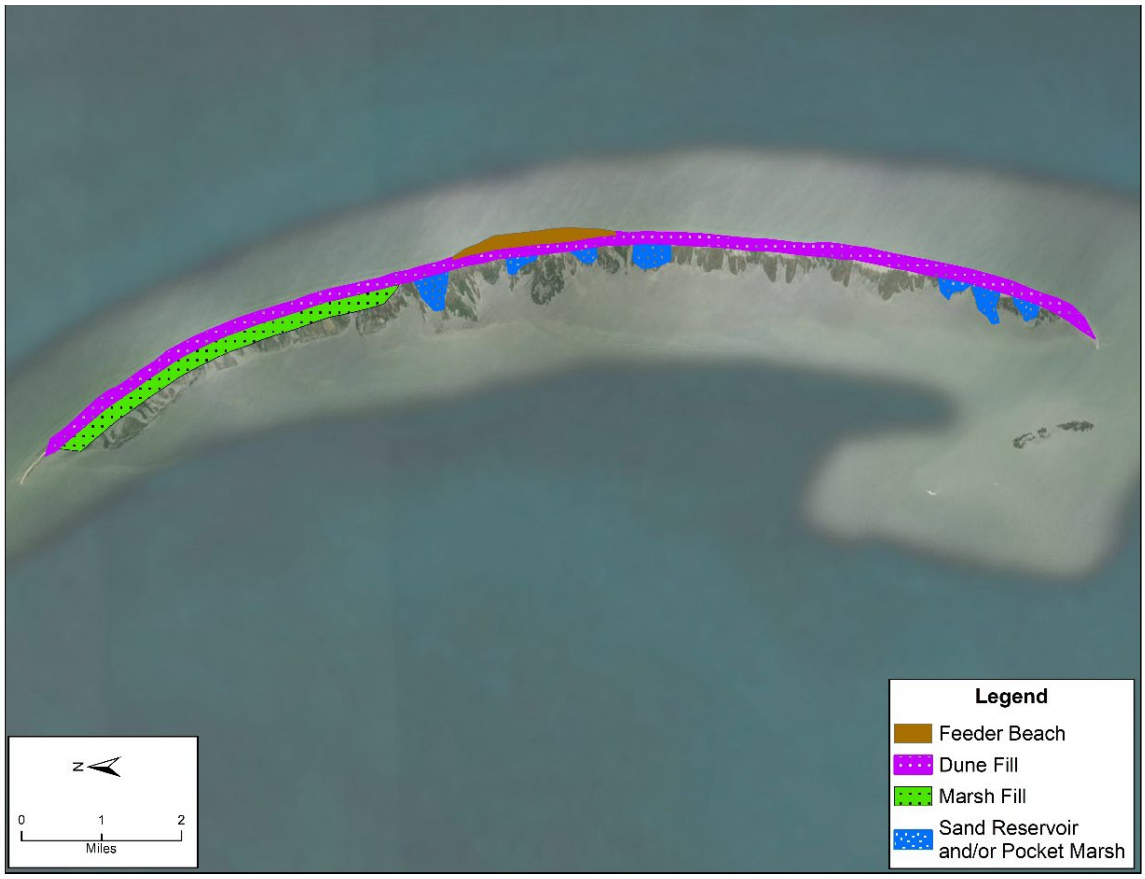

Figure 7. Habitat Restoration Alternative 5 North Chandeleur Island Restoration Features

2.2.2.5 New Harbor Island Design Features Common to all Habitat Restoration Alternatives

New Harbor Island is currently a mangrove stand of approximately 35 acres that is situated to the west of Katrina Cut. To protect existing mangrove habitat and restore eroded avian nesting habitat, a shoreline protection system would be constructed consisting of detached rock breakwaters on the eastern (Gulf-facing) side of the island and a shoreline rock revetment on the western side of the island (see Figure 8).

Approximately 250 feet from the eastern shoreline of the island, the detached rock breakwaters would be constructed to a maximum elevation of approximately +4.6 feet NAVD88 with side slopes of 1V:3H and five incorporated gaps. These detached breakwaters are intended to protect existing habitat from erosion from wind and waves while maintaining hydrologic exchange; the gaps ensure fisheries access to the tidally influenced portions of the island.

Figure 8. New Harbor Island Restoration Features

The shoreline rock revetment off the western side of the island would also be constructed to a maximum elevation of approximately +4.6 feet NAVD88 with side slopes of 1V:3H. Between the western shoreline rock revetment and the existing island shoreline, sediment would be placed to an average target elevation of approximately +3.0 feet NAVD88 with a side slope of 1V:30H to intersect with the existing grade of the island and black mangrove and/or other appropriate species would be planted, which would create approximately 145 acres of habitat for colonial nesting birds and migratory birds (see Figure 8). The breakwater and revetment elevations and slopes may be refined once the geotechnical engineering analysis is completed during the preliminary design phase of the project.

2.2.2.6 Mammalian Nuisance Species Control Measures Common to all Habitat Restoration Alternatives

Mammalian nuisance species such as nutria, raccoons, and rats, if present on North Chandeleur or New Harbor Islands, would consume beach, dune, and marsh vegetation and can reduce breeding success of shorebirds through nest predation. Control measures would be implemented under all of the design alternatives to identify and remove mammalian nuisance species. Measures may include monitoring for nuisance mammalian species and use of established lethal and non-lethal

removal methods, which may include shooting, traps, and/or nets with transport offsite to reduce populations.

2.2.2.7 Construction Components Common to all Habitat Restoration Alternatives

All design alternatives for Chandeleur Islands Habitat include several construction components necessary to restore habitat features on North Chandeleur Island and New Harbor Island. Construction components include the Hewes Point Borrow Area (HPBA) sand source, a conveyance corridor for transporting sand to the restoration area(s), offshore pump-out areas and conveyance corridors, and temporary access channels for equipment and personnel (see Figure 9). The proposed locations for temporary construction components for each design alternative are provided in Figure 9.

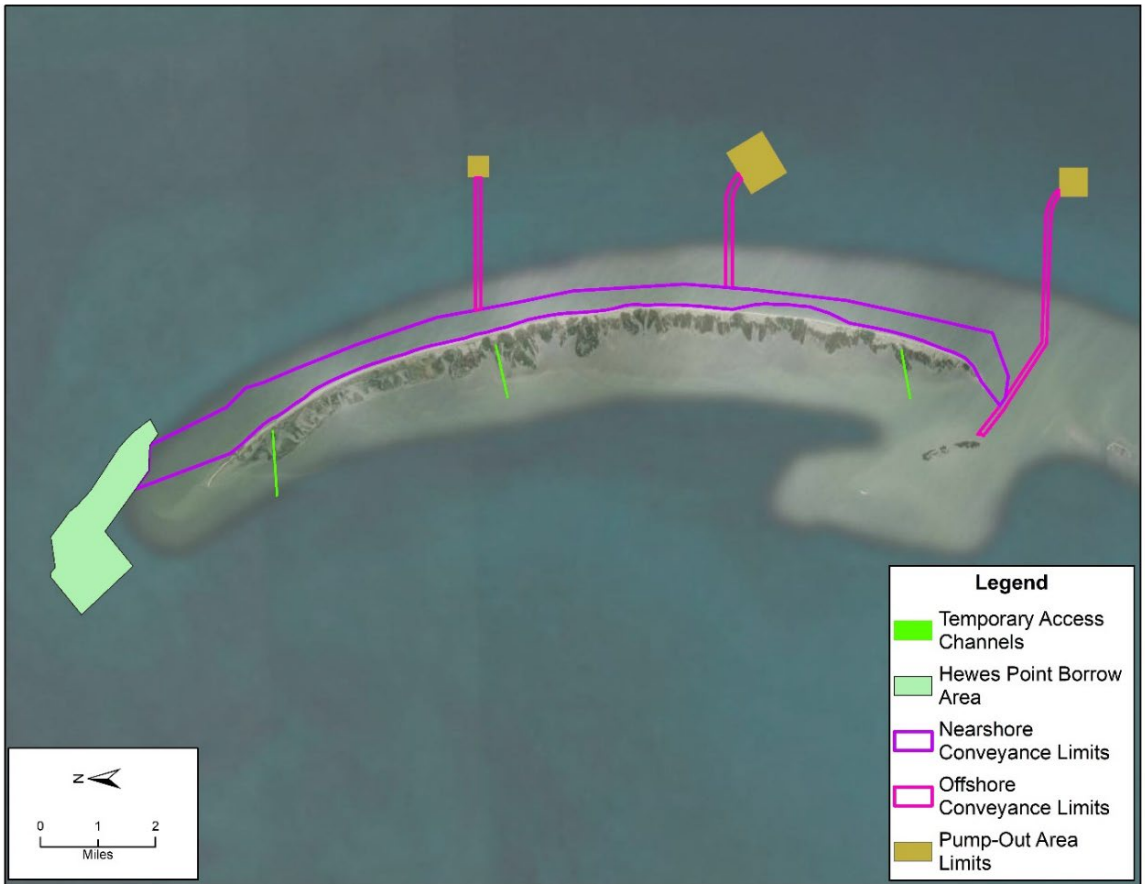

Figure 9. Construction Components Common to All Alternatives

<u>Hewes Point Borrow Area</u>

The HPBA is a submerged shoal located within a mile of the north end of North Chandeleur Island, in Louisiana state waters. The sand deposits in the HPBA are sediment collected from longshore transport from the North Chandeleur Island and are suitable for restoration purposes. Based on the prior and recently conducted investigations, the volume of restoration-compatible sediments in the

HPBA is over 44 million cubic yards (MCY) that can be efficiently and cost-effectively excavated (OSI, 2024).

Conveyance Corridors and Offshore Pump-Out Areas

Sediment would be transported to North Chandeleur Island and New Harbor Island through two potential means: 1) direct pipeline conveyance from HPBA to the islands within a nearshore corridor along the eastern shoreline of North Chandeleur Island, and 2) transport of sand from the HPBA via hopper dredge or scow barges to three offshore pump-out areas, from which the sand would be conveyed via pipeline to the islands.

The nearshore conveyance corridor for sediment conveyance from the HPBA would be located along the east coast of North Chandeleur Island, within which a dredge pipe would rest on the seafloor and be moved as needed along the shoreline. The three potential offshore pump-out areas would be located approximately 7, 10, and 16 miles southeast of the HPBA. The northern and central pump-out areas would be approximately 3 miles off the eastern shore of North Chandeleur Island, and the southernmost pump-out area would be approximately 5 miles off the eastern shore of New Harbor Island. The dredge pipe would rest on the seafloor within the offshore conveyance corridors between the pump-out areas to North Chandeleur Island and New Harbor Island.

Access Channels

Temporary access channels may be dredged to provide construction access to North Chandeleur Island for equipment and personnel. The temporary access channels would be utilized for the project duration and would be backfilled upon project completion. Three (3) locations were identified that minimized impacts on SAV, specifically turtle grass (*Thalassia testudinum*). The access channels, shown in Figure 9, are positioned on the north end, in the central area, and at the south end of North Chandeleur Island.

2.2.3 OPA NRDA Screening of Chandeleur Islands Habitat Restoration Alternatives

When screening potential Habitat Restoration Alternatives to determine the reasonable range of alternatives, The TIGs evaluated Alternatives 2 through 5 against the following six OPA NRDA regulatory evaluation standards: 1) estimated project cost; 2) the extent to which goals are met for (a) target habitat and (b) habitat supporting targeted living resources; 3) likelihood of success, that is, sustained benefits over time; 4) avoidance of collateral injury and prevention of future injury; 5) the extent to which multiple resources would benefit; and 6) the effect on public health and safety. An overview of the screening evaluation results is provided in Table 4.

Table 4. OPA Screening Evaluation of Habitat Restoration Alternatives

OPA NRDA Evaluation Standards	Evaluation
Cost to carry out the alternative	Order of Magnitude Construction Costs, ranging from $128,545 to $141,721 per acre across design alternatives, were utilized for this screening criteria. On a cost per acre basis, the costs for all four alternatives are reasonable and appropriate according to the LA and Open Ocean TIGs.
Extent to which the alternative meets the Trustees' goals	All design alternatives are consistent with the Final PDARP/PEIS and the Regionwide RP/EA #1: *Birds, Marine Mammals, Oysters, and Sea Turtles* (specifically, alternatives for the project "Conservation and Enhancement of Nesting and Foraging Habitat for Birds, Component 1: Chandeleur Islands, LA"). This Joint RP/EA #1 supports the following programmatic goals: *Restore and Conserve Habitat* and *Replenish and Protect Living Coastal and Marine Resources*. All design alternatives would benefit injured coastal and nearshore habitats as well as injured species and life stages by constructing additional habitat acreage, including beach and dune nesting habitat for birds and sea turtles. All design alternatives include restoration features that are expected to enhance the environment for SAV, resulting in enhanced SAV resilience, sustainability, and ecosystem function. All alternatives would benefit injured resources within the Breton NWR.
Likelihood of success	All design alternatives are likely to succeed because they are technically feasible and utilize proven and established restoration methods which have been implemented successfully for other projects in the region, though some alternatives would have a longer lifespan. Using model calculations, sustained gains in habitat acreage were predicted for all design alternatives throughout the 20-year analysis period.

OPA NRDA Evaluation Standards	Evaluation
Extent to which the alternative would prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative	All design alternatives would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. During implementation of any of the four design alternatives, best management practices (BMPs) would be employed during in-water and onshore construction, and in-water and onshore activities would be conducted according to any conditions arising from federal consultations and permitting to avoid and minimize potential collateral injury to natural resources. Though impacts on existing habitat are expected within each alternative's constructed footprint, substantially larger net gains in targeted habitat acreage are expected.
Extent to which the project would benefit more than one natural resource and/or service	All design alternatives would provide suitable nesting habitat for birds and sea turtles, a primary benefit of the project, while increasing overall acreages of injured beach, dune, and marsh habitat within Breton NWR. Each of the alternatives would provide benefits to SAV by adding longevity to the island footprint and providing low-energy/low-turbidity conditions that allow SAV to thrive. Habitat protection and increases are also expected to benefit a range of other supported avian species and injured fishes and crustaceans that rely upon this complex of integrated habitats.
Effect on public health and safety	The LA and Open Ocean TIGs do not anticipate impacts on public health and safety from implementing any of the design alternatives. North Chandeleur Island and New Harbor Island are uninhabited, remote, and accessible only by boat or air. During construction, all laws and regulations pertaining to worker safety would be followed. All of the Chandeleur Islands Habitat Restoration Alternatives would result in long-term benefits to public health and safety through the restoration and expansion of the island footprint and barrier island protection for the mainland.

In summary, the OPA NRDA screening evaluation demonstrates that the costs of all of the design alternatives are well documented, reasonable, and appropriate. All of the design alternatives have a strong nexus to restoration of birds, sea turtles, and habitats within Breton NWR under the related injury caused by the DWH oil spill and can reasonably be expected to benefit these resources over an extended timeframe. Under the programmatic goal to *Restore and Conserve Habitat*, this Joint RP/EA #1 would directly address the *Wetlands, Coastal and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types; under the programmatic goal of *Replenish and Protect Living Coastal and Marine Resources,* the *Birds*, *Sea Turtles*, and

Submerged Aquatic Vegetation restoration types would be directly addressed. Therefore, the LA and Open Ocean TIGs chose to carry forward all four action alternatives as the reasonable range.

These criteria were used for the screening evaluation described in this section, as well as the analysis of the reasonable range of alternatives and identification of a preferred alternative under OPA discussed in Chapter 3.

2.2.4 Chandeleur Islands FWCI Restoration Alternatives

The Chandeleur Islands FWCI Restoration Alternatives seek to further address the *Replenish and Protect Living Coastal and Marine Resources* goal and fully realize the ecosystem restoration benefits from restoring the Chandeleur Islands by improving fisheries resources. To develop a reasonable range of alternatives to improve fisheries resources as part of an ecosystem approach for Chandeleur Islands restoration, the TIGs considered FWCI restoration goals specified in the Final PDARP/PEIS, public input processes including the Open Ocean TIG's June 2023 request for project ideas to inform restoration planning for FWCI,[8] and development of the Open Ocean FWCI Strategic Plan[9] (DWH OOTIG, 2022).

In reviewing project ideas submitted in response to the Open Ocean TIG's June 2023 request for project ideas, two project themes emerged that were applicable to Chandeleur Island FWCI Restoration efforts: a need for additional fish monitoring data to inform fisheries outreach and management, and a need for targeted fishing community outreach to share best practices to restore priority fish species by reducing sources of mortality. Similarly, the Open Ocean FWCI Strategic Plan identified a need for additional data on species habitat use and identified outreach regarding best practices for reducing fish mortality as a potential action to achieve high priority FWCI restoration objectives.

The TIGs considered this input and formulated two FWCI Restoration Alternatives focused on enhancing ecosystem benefits for fishery resources within the Chandeleur Sound area of the Breton NWR (hereafter referred to as FWCI Restoration Alternatives 2 and 3), which are described in detail in Sections 2.2.4.1 and 2.2.4.2.

2.2.4.1 FWCI Restoration Alternative 2: Chandeleur Islands Fisheries Engagement and Restoration Project

This alternative proposes funding the development and implementation of the Chandeleur Islands Fisheries Engagement and Restoration Project to conduct education, engagement, communication, and voluntary fishing-related restoration activities with stakeholders to restore FWCI. DOI and NOAA would be co-implementing Trustees for the project in partnership with the Breton NWR and other state and local partners.

[8] The Open Ocean TIG's request for project ideas can be found at https://www.gulfspillrestoration.noaa.gov/2023/06/submit-your-ideas-open-ocean-restoration-area-planning

[9] A webstory summarizing the Open Ocean Trustees FWCI Strategic Plan can be found at https://www.gulfspillrestoration.noaa.gov/2022/04/open-ocean-trustees-release-restoration-strategy-fish-water-column-invertebrates

Fishing, boating, and ecotourism are important economic drivers in coastal Louisiana. This project would increase local capacity to engage with fishing communities and other stakeholders and provide information and tools to help improve the health of fish populations and their habitats. For example, sources of fish mortality include bycatch, post-release mortality, and stressors such as marine debris and habitat impacts. Outreach and education would provide ways to reduce these stressors and in turn reduce impacts on fish populations.

During its first year, this project would conduct a planning process to create a Fisheries Engagement and Restoration Plan focused on the Chandeleur Sound area of the Breton NWR. Following development of this plan, the project would transition into implementation of selected priority actions for up to 10 years. Through engagement during the planning phase and ongoing adaptive management during implementation, this project would seek to implement a range of the FWCI restoration approaches and techniques identified in the Final PDARP/PEIS (Section 5.5.6) that can best meet FWCI restoration goals.

The planning phase would engage fishing organizations, subject matter experts, and resource agencies, including Breton NWR staff, to assist in the identification and development of activities, education and outreach methods, and partnership opportunities. An education, communication, and engagement strategy focused on fishing communities would be the central component of the plan. This plan would identify activities to effectively maintain low levels of impact, or even reduce impacts on fish species, their habitats and ecosystems, while continuing to provide valuable services and opportunities to users of the Breton NWR and Chandeleur Sound. The identified activities would support sustainable fishing practices through collaborations with recreational and commercial fishery user groups.

This strategy would focus on sharing voluntary tools and techniques to:

- Reduce post-release mortality in recreational fisheries;
- Reduce bycatch in commercial fisheries;
- Prevent and reduce marine debris and vessel related pollution;
- Prevent and reduce impacts on important fishery habitats such as seagrass meadows; and
- Increase awareness and better compliance with fisheries regulations.

The plan is anticipated to include a description of current fish, fisheries and habitat conditions, a description of goals and objectives and their relationship to other ongoing restoration in the project area, implementation budget recommendations, an engagement strategy, and a review of and recommendations for monitoring and adaptive management, including opportunities for citizen science and other methods for engagement. Following development of the Fisheries Engagement and Restoration Plan, the project would transition into an implementation phase for those priority activities identified through the plan.

2.2.4.2 FWCI Restoration Alternative 3: Chandeleur Islands Fisheries Resource Monitoring and Management Project

This alternative proposes to conduct field data collection to better understand and manage fish resources within the Breton NWR and to share science and information about habitat and ecosystem-scale fisheries impacts with stakeholders through fisheries education and outreach activities.

Data collection at the habitat scale would include deployment of an acoustic positioning system (APS) on the leeward shoreline of the Chandeleur Islands in a selected study area containing multiple habitat types (for example, seagrass species, open substrate, etc.) to evaluate species habitat use at high spatial (meters) and temporal (minutes) resolution. High-resolution movement data would be paired with detailed habitat maps and environmental data to develop species-habitat relationships and achieve two primary objectives:

- Characterize use of Chandeleur Island seagrass beds for two model resident fish species (red drum, spotted seatrout); and
- Evaluate the use of seagrass beds as nursery habitat for juvenile fishes (lemon sharks, gray snapper/gag grouper).

At the ecosystem scale, objectives would be achieved through the installation and 10-year maintenance of an array of acoustic transmitters, receivers, and other equipment spanning the length of the Chandeleur Island chain to characterize connectivity among representative habitats and islands within the ecosystem. The focus would be on migratory taxa, but would also assess ecosystem-scale habitat use and connectivity for resident and nursery taxa tagged in objectives 1 and 2. By utilizing the larger Gulf-wide network of arrays owned by the Principal Investigators and other researchers (for example, iTAG[10], FACT Networks[11]) to evaluate connectivity between the Chandeleur Islands and other regions of the Gulf and/or Atlantic Ocean, this component would provide a better understanding of the connectivity of habitats across the Chandeleur Islands and the functional role of the islands within the larger Gulf Large Marine Ecosystem. Objectives include:

- Identify temporal and spatial patterns of ecosystem-scale habitat use and inter-island connectivity for migratory species that utilize the Chandeleur Islands and associated SAV habitats as foraging grounds (Gulf sturgeon, Atlantic tarpon); and
- Investigate the role and spatial impact of the Chandeleur Islands' nursery grounds to adult populations (lemon sharks, gray snapper/gag grouper).

This monitoring array would also capture data from tagged animals deployed by other monitoring programs to better understand habitat use by focal fish species in the Chandeleur Sound, and would leverage preliminary monitoring activities conducted in 2023 and 2024. This array would also complement ongoing U.S. Geological Survey sea turtle tagging research along the northern

[10] Integrated Tracking of Aquatic Animals in the Gulf, https://itagscience.com/

[11] Florida Atlantic Coast Telemetry Network, https://secoora.org/fact/

Gulf. This leveraging would allow for the identification of use patterns for a wider range of resident and migratory species that would provide critical data for resource managers and allow for a more comprehensive understanding of the functional role of Chandeleur Island habitats.

Data collected through this monitoring array would also be utilized in educational outreach efforts to the recreational and commercial fishing communities utilizing the Chandeleur Sound to raise awareness regarding fish species status and the importance of sensitive habitats in the Breton NWR and Chandeleur Sound.

2.2.5 OPA NRDA Screening of Chandeleur Islands FWCI Restoration Alternatives

FWCI Restoration Alternatives 2 and 3 were evaluated under a four-step screening process: 1) Project Eligibility; 2) PDARP/PEIS Eligibility; 3) Additional TIG Criteria; and 4) OPA Standards. An overview of the screening evaluation results is provided in Table 5.

Table 5. OPA Screening Evaluation of Chandeleur Island FWCI Restoration Alternatives

Screening Steps	Criteria	Evaluation
Step 1: Project Eligibility	**Project is an eligible activity that pertains to the FWCI restoration type**	Both alternatives were considered eligible as they pertained to the *Fish and Water Column Invertebrates* restoration type and fisheries species that were injured in the DWH oil spill.
	Project would likely not be required under local, state, or federal law	Both alternatives include activities that are not otherwise required under local, state, or federal law.
Step 2: PDARP/PEIS Eligibility	**Consistent with the programmatic goal to *Replenish and Protect Living Coastal and Marine Resources***	Both alternatives would advance the programmatic goal to *Replenish and Protect Living Coastal and Marine Resources*.
	Effectively implements the FWCI PDARP/PEIS Restoration Strategies and Restoration Approaches consistent with and incorporating the guidance provided in the PDARP/PEIS	Alternative 2 would focus on sharing voluntary tools and techniques with fishers and conducting restoration activities to reduce fish mortality. Alternative 3 would indirectly reduce fish mortality by gathering data to better understand habitat use by focal fish species in the Chandeleur Sound, which could be used in future stressor reduction efforts.

Screening Steps	Criteria	Evaluation
	Guided by an informed decision-making process, consistent with the adaptive management process described in the PDARP/PEIS	Both alternatives would be guided by an informed decision-making process. Alternative 2 would seek input from stakeholders to inform development of the engagement plan and implementation activities. Alternative 3 would be a means to fill information gaps and reduce uncertainties regarding FWCI species.
Step 3: Additional TIG Criteria	**Consistent with and targets restoration for priority species identified in the FWCI Restoration Strategy (summary) and advances the FWCI restoration objectives (in the strategy)**	Because the waters surrounding the Chandeleur Islands support priority species identified in the FWCI Restoration Strategy, the focus of both alternatives on the Chandeleur Islands would advance restoration objectives for priority injured species.
	For projects proposed as phased implementation, there is a likelihood that the implementation phase would meet screening criteria	The phased implementation of Alternative 2 would include a planning phase that would engage fishing organizations, subject matter experts, and resource agencies in plan development which would increase the likelihood that the implementation phase would meet screening criteria. This criterion does not apply to Alternative 3 since it would not have phased implementation.
	Potential for conflicts with long-term fishery management or species management plans such as threatened and endangered species recovery plans; awareness of potential regulatory or management actions that may intersect with proposed activities	Alternative 2 would work directly with Breton NWR management and state fisheries management in plan development and implementation to avoid such conflict. Data gathering associated with Alternative 3 would enhance rather than conflict with long-term fishery management or species management plans.

Screening Steps	Criteria	Evaluation
	Level of readiness for implementation including likelihood of meeting compliance and permitting requirements, availability of implementation capacity, etc., readiness of stakeholder and/or project participants (that is, fishermen)	The budgets for both alternatives would allow for adequate capacity for implementation. Alternative 2 is anticipated to have a high level of readiness for implementation following the planning phase by leveraging existing techniques and approaches used in other FWCI restoration projects. Monitoring equipment proposed for use in Alternative 3 is regularly permitted and would be deployed in cooperation with Breton NWR.
	Level of resource benefits (primary and secondary) that address the injury proportionally for example, benefits species injured in the greatest number and/or to a suite of injured species	Both alternatives would provide benefits to a suite of injured fish species through outreach to fishing communities. Alternative 3 would conduct activities for a broad suite of restoration techniques and directly provide tools to fishing communities to help restore injured species.
	Extent the proposed project addresses or includes engagement and collaboration with communities	Under Alternative 2, stakeholder engagement in development of the plan serves as early engagement and collaboration that would seek open and broad participation from fishing communities. Data gathered under Alternative 3 would inform outreach efforts to stakeholder communities.
Step 4: Initial OPA Evaluation Standards	**Cost to carry out the alternative**	The costs for both alternatives are reasonable and appropriate according to the LA and Open Ocean TIGs.
	Extent to which the alternative meets the Trustees' goals	Both alternatives support the programmatic goal of *Replenish and Protect Living Coastal and Marine Resources* by providing benefits to injured fish species.

Screening Steps	Criteria	Evaluation
	Likelihood of success	Standard and proven field data collection techniques and equipment would be utilized Alternative 2, increasing the likelihood of successful data acquisition. Alternative 3 would utilize stakeholder engagement during plan development and would increase the likelihood that identified outreach activities and methods are successful.
	Extent to which the alternative would prevent future injury as a result of the incident and avoid collateral injury as a result of implementing the alternative	Deployment of the monitoring array under Alternative 2 would utilize techniques to minimize habitat impacts, and data gathered by the array could inform future efforts to prevent future injury. Alternative 3 is intended to prevent future injury by providing information and tools to help improve the health of fish populations and their habitats, such as bycatch reduction.
	Extent to which the project would benefit more than one natural resource and/or service	Both alternatives would benefit a suite of fish species as well as sensitive habitats, such as SAV, on which they depend.
	Effect on public health and safety	Neither alternative would have negative impacts on public health and safety.

In summary, Step 1 confirmed that both alternatives were eligible as they pertained to the *Fish and Water Column Invertebrates* restoration type and fisheries species that were injured in the DWH oil spill; they both include activities that are not otherwise required under local, state, or federal law. Step 2 confirmed that both alternatives would help to address the programmatic goal to *Replenish and Protect Living Coastal and Marine Resources*, would effectively implement the FWCI PDARP/PEIS Restoration Strategies and Restoration Approaches, and would be guided by an informed decision-making process. Step 3 confirmed that both alternatives are consistent with and target restoration for priority species identified in the FWCI Restoration Strategy and advance the *Fish and Water Column Invertebrates* restoration objectives as described in the strategy. Step 4 confirmed that the costs of the alternatives are well documented, reasonable, and appropriate, help meet FWCI restoration type goals and the purpose of this Joint RP/EA, and can reasonably be

expected to benefit more than one injured resource. Therefore, the LA and Open Ocean TIGs chose to carry forward both action alternatives as the reasonable range.

2.2.6 Monitoring and Adaptive Management

As described in Chapter 5, Appendix E of the Final PDARP/PEIS, the Trustee Council has committed to a Monitoring and Adaptive Management (MAM) Framework that incorporates the best available science into planning and design of the alternative, identifies and reduces key uncertainties; tracks and evaluates progress toward restoration goals; and determines the need for corrective actions. The Trustee Council's MAM Framework provides a flexible, science-based approach to implement and monitor restoration. The LA and Open Ocean TIGs developed draft MAM plans for each of the preferred alternatives identified in this Joint RP/EA, which are included in Appendix B. These MAM plans outline the monitoring needed to evaluate the projects' progress toward meeting site-specific objectives, the appropriate corrective actions, and adaptive management where applicable. The plans are consistent with the requirements and guidelines set forth in the Final PDARP/PEIS, the Trustee Council Standard Operating Procedures (DWH Trustees, 2021), and the Trustees' MAM Manual (DWH Trustees, 2024). Monitoring goals, objectives, parameters, potential corrective actions, and monitoring schedules are included. The MAM plans are intended to be updated as needed to reflect changing conditions and to incorporate new information as it becomes available. For example, if initial data analysis indicates that the sampling design for the alternative is inadequate, or if any uncertainties are resolved or new uncertainties are identified during implementation and monitoring of the alternative, the plan may need to be revised. Updates to the MAM plans and any additional details concerning the status of monitoring activities would be made publicly available through the DWH Restoration Portal.

3. REASONABLE RANGE OF ALTERNATIVES

The OPA NRDA regulations provide that Trustees consider a reasonable range of restoration alternatives (15 CFR § 990.53(a)(2)) from which to choose their preferred alternatives. The LA and Open Ocean TIGs' screening processes, which were based on evaluations described in Sections 2.2.3 and 2.2.5, resulted in a reasonable range of alternatives.

The reasonable range of alternatives for Chandeleur Islands Habitat Restoration consists of four design alternatives, Habitat Restoration Alternatives 2 through 5. These alternatives comprise different configurations of beach, dune, and marsh fill; sand reservoirs; pocket marshes; and/or a feeder beach on North Chandeleur Island. All four alternatives also include marsh/mangrove fill and construction of rock breakwaters and a rock revetment around New Harbor Island. For more detailed descriptions of each of the Habitat Restoration Alternatives, see Section 2.2.2.

The reasonable range of alternatives for Chandeleur Islands FWCI Restoration consists of two project alternatives to benefit fish and invertebrate resources of the Chandeleur Islands and Chandeleur Sound, FWCI Alternatives 2 and 3. For more detailed descriptions of the two FWCI Restoration Alternatives, see Section 2.2.4.

In this chapter, the LA and Open Ocean TIGs present a thorough and comprehensive analysis to uniformly and objectively assess the respective alternatives for Chandeleur Islands Habitat Restoration and Chandeleur Islands FWCI Restoration using the OPA NRDA evaluation standards to select their preferred alternatives.

3.1 OPA NRDA Evaluation of the Reasonable Range of Chandeleur Islands Habitat Restoration Alternatives

Sections 3.1.1 through 3.1.4 provide an evaluation of each of the Habitat Restoration Alternatives in the reasonable range against the OPA NRDA standards. Section 3.1.5 provides a summary of how these evaluations informed the selection of a preferred Habitat Restoration Alternative.

Projected future habitat acreages, shoreline erosion, and retained fill volumes discussed in this section and Chapter 4 were derived from an empirical analysis which utilized historical rates of shoreline change, sea-level rise, subsidence, wave action, and post-storm recovery, including a simulated storm event at year 10 which caused washover, profile migration, and dune recovery (CEC, 2024a). Results indicated certain features favored retention of sediment and habitat area over time. Specifically, feeder beach and sand reservoir features were able to maintain a wide beach platform which helped to preserve the nesting zone from erosion. As landform processes unfolded, the relative amount of area created or restored could differ for sea turtle nesting habitat and bird nesting habitat due to differences in their respective elevational ranges; the larger elevational gradient occupied by birds included lower elevation habitat not suitable for sea turtles, with increased susceptibility to erosion. As sediment was redistributed over time, elevational ranges would fluctuate in area, gaining or losing sediment to neighboring elevations, while lower elevations were simultaneously eroded and lost. For some Habitat Restoration Alternatives, this resulted in a net increase in sea turtle nesting habitat over the 20-year analysis period, with concurrent declines in bird nesting habitat, despite the greater total area of the latter throughout the analysis. Additional information regarding this analysis is available in Appendix A (CEC, 2024a).

An “order of magnitude” construction cost, which is a high-level estimate of how much a project would likely cost to construct, was assessed for each Habitat Restoration Alternative and used in the evaluation of the reasonable range of alternatives. These estimates include costs such as mobilization and demobilization of construction and support equipment; construction materials; construction personnel, lodging, and transportation; sediment pipeline delivery, installation, and removal; vegetation plantings and sand fencing installation; and administration and inspection. Additional details regarding the development of these cost estimates are available in Appendix A (CEC, 2024a). As noted in Section 2.2.2, some of design specifications cited in this Joint RP/EA #1 differ from initially estimated fill volumes, acreages, and costs in Appendix A, and instead reflect further design refinement. The cost associated with proposed MAM activities are not included in the construction costs utilized to compare the Habitat Restoration Alternatives, as the cost of these MAM activities would not differ substantially between alternatives.

3.1.1 Habitat Restoration Alternative 2: Beach, Dune, Marsh, Sand Reservoirs, and New Harbor Island

Table 6. OPA NRDA Evaluation of Habitat Restoration Alternative 2

OPA NRDA Standards	Evaluation Summary
Cost-Effectiveness	The estimated order of magnitude construction cost for Habitat Restoration Alternative 2 is $282,909,000 ($133,259/ac) to place approximately 9,141,500 cubic yards (cy) of sediment fill, which is considered reasonable and appropriate on a cost per acre basis.
Goals and Objectives	Overall, Habitat Restoration Alternative 2 would help advance all of the goals identified by the Trustees for the *Sea Turtles, Birds*, and *Submerged Aquatic Vegetation* restoration types. This alternative would advance sea turtle goals by providing nesting and foraging habitat that would support multiple injured life stages (hatchlings and adults) in a geographic area relevant to multiple injured species, in a manner consistent with species recovery plans and goals (for example, loggerhead [2008] and Kemp's ridley [2011] recovery plans). This alternative would restore nesting habitat for bird species injured by the spill, facilitating population growth for those species in a globally important bird area within the Gulf, where actions would provide the greatest benefits within bird geographic ranges. The restoration of integrated beach, dune, and marsh habitat is expected to enhance the environment for SAV, resulting in enhanced SAV resilience, sustainability, and ecosystem function. By restoring habitat in the Breton NWR to support the goal *Replenish and Protect Living Coastal and Marine Resources*, this alternative would simultaneously advance goals identified for the *Wetlands, Coastal, and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types.
Likelihood of Success	Habitat Restoration Alternative 2 is likely to succeed because it is technically feasible and utilizes proven and established restoration methods which have been implemented successfully for other projects in the region. As further evidence of the likelihood of success, model calculations predict that Habitat Restoration Alternative 2 would lead to sustained gains in habitat acreages. Shoreline erosion is expected to proceed at a rate of -34 feet/year under Habitat Restoration Alternative 2, and relative gains or losses in habitat acreage would fluctuate over time. Over a 20-year analysis period, Habitat Restoration Alternative 2 is expected to retain approximately 67 percent of its original constructed fill volume and approximately 4,014 acres of existing and constructed habitat, including approximately 953 acres of bird nesting habitat and 50 acres of turtle nesting habitat on North Chandeleur Island. SAV habitat is expected to be protected and sustained in proportion to predicted island longevity, that is, the total amount of barrier island habitat area retained over time.

OPA NRDA Standards	Evaluation Summary
Avoidance of Collateral Injury	During implementation of Habitat Restoration Alternative 2, BMPs would be employed, and activities would be conducted according to any conditions arising from federal consultations and permitting to avoid and minimize potential collateral injury to natural resources. The island restoration features of Habitat Restoration Alternative 2 would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. In areas where fill material is placed, Habitat Restoration Alternative 2 is expected to impact approximately 443 acres of existing habitat comprising upland (17 acres), intertidal (253 acres), mangrove (45 acres), and SAV (128 acres) vegetation types (CEC, 2024a). However, impacts on existing habitat would be offset by substantially larger gains in targeted habitat expected for Habitat Restoration Alternative 2 (and in the case of SAV, enhanced protection and resilience of existing habitat).
Benefits	Under Habitat Restoration Alternative 2, beach, dune, and marsh fill would create approximately 1,237 acres of beach and dune habitat along with approximately 468 acres of marsh habitat. The four sand reservoirs would create approximately 273 acres of additional beach habitat. The New Harbor Island fill would create approximately 145 acres of marsh/mangrove habitat. In total, Habitat Restoration Alternative 2 would construct approximately 2,123 acres of habitat. This alternative is expected to benefit multiple natural resources by creating additional nesting habitat for different groups of living coastal and marine resources, including approximately 1,784 acres of bird nesting habitat and approximately 200 acres of turtle nesting habitat on North Chandeleur Island. Placement of the sand, dune, and marsh fill would also protect and enhance approximately 5,115 acres of existing SAV on the western side of North Chandeleur Island (that is, the total existing acreage minus the acreage impacted by fill placement).
Health and Safety	The LA and Open Ocean TIGs do not anticipate impacts on public health and safety from implementing Habitat Restoration Alternative 2. North Chandeleur Island and New Harbor Island are uninhabited, remote, and accessible only by boat or air. During construction, all laws and regulations pertaining to worker safety would be followed. Habitat Restoration Alternative 2 would result in long-term benefits to public health and safety through the restoration and expansion of the island footprint and barrier island protection for the mainland.

3.1.2 Habitat Restoration Alternative 3: Beach, Dune, Marsh, Pocket Marshes, and New Harbor Island

Table 7. OPA NRDA Evaluation of Habitat Restoration Alternative 3

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	The estimated order of magnitude construction cost for Habitat Restoration Alternative 3 is $280,742,000 ($128,545/ac) to place approximately 9,074,100 cy of sediment fill, which is **a lower cost per acre compared to Habitat Restoration Alternative 2**, and is considered reasonable and appropriate on a cost per acre.
Goals and Objectives	Overall, Habitat Restoration Alternative 3 would help advance all of the goals identified by the Trustees for the *Sea Turtles, Birds*, and *Submerged Aquatic Vegetation* restoration types. This alternative would advance sea turtle goals by providing nesting and foraging habitat that would support multiple injured life stages (hatchlings and adults) in a geographic area relevant to multiple injured species, in a manner consistent with species recovery plans and goals (for example, loggerhead [2008] and Kemp's ridley [2011] recovery plans). This alternative would restore nesting habitat for bird species injured by the spill, facilitating population growth for those species in a globally important bird area within the Gulf, where actions would provide the greatest benefits within bird geographic ranges. The restoration of integrated beach, dune, and marsh habitat is expected to enhance the environment for SAV, resulting in enhanced SAV resilience, sustainability, and ecosystem function. By restoring habitat in the Breton NWR to support the goal *Replenish and Protect Living Coastal and Marine Resources*, this alternative would simultaneously advance goals identified for the *Wetlands, Coastal, and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types.

OPA NRDA Standards	Evaluation Summary
Likelihood of Success	Habitat Restoration Alternative 3 is likely to succeed because it is technically feasible and utilizes proven and established restoration methods which have been implemented successfully for other projects in the region. As further evidence, model calculations predict that Habitat Restoration Alternative 3 would lead to sustained gains in habitat acreages. Shoreline erosion is expected to proceed at a rate of -34 feet/year under Habitat Restoration Alternative 3, and relative gains or losses in habitat acreage would fluctuate over time. Over a 20-year analysis period, Habitat Restoration Alternative 3 is expected to retain 52 percent of its original constructed fill volume and approximately 4,015 acres of existing and constructed habitat, including approximately 1,029 acres of bird nesting habitat and 52 acres of sea turtle nesting habitat on North Chandeleur Island, and **representing a slight increase in area compared to Habitat Restoration Alternative 2 despite its lower sediment retention rate**. Based on its ability to sustain gains in nesting habitat over time, Habitat Restoration Alternative 3 has a comparable likelihood of overall Project success compared to Habitat Restoration Alternative 2. SAV habitat is expected to be protected and sustained in proportion to predicted island longevity, that is, the total amount of barrier island habitat area retained over time.
Avoidance of Collateral Injury	During implementation of Habitat Restoration Alternative 3, BMPs would be employed, and activities would be conducted according to any conditions arising from federal consultations and permitting to avoid and minimize potential collateral injury to natural resources. The island restoration features of Habitat Restoration Alternative 3 would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. In areas where fill material is placed under Habitat Restoration Alternative 3, presently established habitat would be impacted, but **the total impact is less than for Habitat Restoration Alternative 2**. In total, Habitat Restoration Alternative 3 is expected to impact approximately 407 acres of existing habitat comprising upland (18 acres), intertidal (219 acres), mangrove (22 acres), and SAV (148 acres) vegetation types (CEC, 2024a). However, impacts on existing habitat would be offset by substantially larger gains in targeted habitat expected under Habitat Restoration Alternative 3 (and in the case of SAV, enhanced protection and resilience of existing habitat).

OPA NRDA Standards	Evaluation Summary
Benefits	Under Habitat Restoration Alternative 3, beach, dune, and marsh fill would create approximately 1,341 acres of beach and dune habitat along with approximately 592 acres of marsh habitat, representing increases in acreage over Habitat Restoration Alternative 2. Sand reservoirs would not be used to create additional beach habitat on North Chandeleur Island. Instead, pocket marshes would be used to create approximately 106 acres of additional marsh habitat. As with Habitat Restoration Alternative 2, the New Harbor Island fill would create approximately 145 acres of marsh/mangrove habitat. In total, Habitat Restoration Alternative 3 would construct approximately 2,184 acres of habitat—**providing greater total acreage compared to Habitat Restoration Alternatives 2 and 4**. Habitat Restoration Alternative 3 is expected to benefit multiple natural resources by creating approximately 1,840 acres of bird nesting habitat and 205 acres of turtle nesting habitat on North Chandeleur Island. Placement of the sand, dune, and marsh fill would also protect and enhance approximately 5,095 acres of existing SAV on the western side of North Chandeleur Island (that is, the total existing acreage minus the acreage impacted by fill placement).
Health and Safety	The LA and Open Ocean TIGs do not anticipate impacts on public health and safety from implementing Habitat Restoration Alternative 3. North Chandeleur Island and New Harbor Island are uninhabited, remote, and accessible only by boat or air. During construction, all laws and regulations pertaining to worker safety would be followed. Habitat Restoration Alternative 3 would result in long-term benefits to public health and safety through the restoration and expansion of the island footprint and barrier island protection for the mainland.

3.1.3 Habitat Restoration Alternative 4: Beach, Dune, Marsh, Feeder Beach, and New Harbor Island

Table 8. OPA NRDA Evaluation of Habitat Restoration Alternative 4

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	The estimated order of magnitude construction cost for Habitat Restoration Alternative 4 is $284,860,000 ($141,721/ac) to place approximately 9,182,400 cy of sediment fill, which is considered reasonable and appropriate on a cost per acre basis, but **represents a higher cost per acre than Habitat Restoration Alternatives 2 and 3**.
Goals and Objectives	Overall, Habitat Restoration Alternative 4 would help advance all of the goals identified by the Trustees for the *Sea Turtles, Birds*, and *Submerged Aquatic Vegetation* restoration types. This alternative would advance sea turtle goals by providing nesting and foraging habitat that would support multiple injured life stages (hatchlings and adults) in a geographic area relevant to multiple injured species, in a manner consistent with species recovery plans and goals (for example, loggerhead [2008] and Kemp's ridley [2011] recovery plans). This alternative would restore nesting habitat for bird species injured by the spill, facilitating population growth for those species in a globally important bird area within the Gulf, where actions would provide the greatest benefits within bird geographic ranges. Overall, the restoration of integrated beach, dune, and marsh habitat is expected to enhance the environment for SAV, resulting in enhanced SAV resilience, sustainability, and ecosystem function. By restoring habitat in the Breton NWR to support the goal *Replenish and Protect Living Coastal and Marine Resources*, this alternative would simultaneously advance goals identified for the *Wetlands, Coastal, and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types.

OPA NRDA Standards	Evaluation Summary
Likelihood of Success	Habitat Restoration Alternative 4 is likely to succeed because it is technically feasible and utilizes proven and established restoration methods which have been implemented successfully for other projects in the region. As further evidence, model calculations predict that Habitat Restoration Alternative 4 would lead to sustained gains in habitat acreages. Shoreline erosion is expected to proceed at a rate of -34 feet/year under Habitat Restoration Alternative 4, and relative gains or losses in habitat acreage would fluctuate over time. Over a 20-year analysis period, Habitat Restoration Alternative 4 is expected to retain approximately 52 percent of its original constructed fill volume and approximately 4,412 acres of existing and constructed habitat, including approximately 1,248 acres of bird nesting habitat and 230 acres of sea turtle nesting habitat on North Chandeleur Island, and **representing a substantial increase in area compared to Habitat Restoration Alternatives 2 or 3 despite its lower sediment retention rate**. Based on its ability to sustain gains in nesting habitat over time, **Alternative 4 has a comparable if not higher likelihood of overall Project success compared to the previous action alternatives**. SAV habitat is expected to be protected and sustained in proportion to predicted island longevity, that is, the total amount of barrier island habitat area retained over time.
Avoidance of Collateral Injury	During implementation of Habitat Restoration Alternative 4, BMPs would be employed, and activities would be conducted according to any conditions arising from federal consultations and permitting to avoid and minimize potential collateral injury to natural resources. The island restoration features of Habitat Restoration Alternative 4 would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. In areas where fill material is placed under Habitat Restoration Alternative 4, presently established habitat would be impacted, but **the total impact is less than for Alternatives 2 or 3**. In total, Habitat Restoration Alternative 4 would impact approximately 318 acres of existing habitat comprising upland (16 acres), intertidal (169 acres), mangrove (21 acres), and SAV (112 acres) vegetation types (CEC, 2024a). However, impacts on existing habitat would be offset by substantially larger gains in targeted habitat expected under Habitat Restoration Alternative 4 (and in the case of SAV, enhanced protection and resilience of existing habitat).

OPA NRDA Standards	Evaluation Summary
Benefits	With the addition of the feeder beach as a restoration feature under Habitat Restoration Alternative 4, beach, dune, and marsh fill would create approximately 1,397 acres of beach and dune habitat along with approximately 468 acres of marsh habitat — **representing more beach/dune habitat creation than Habitat Restoration Alternative 3, but less marsh habitat creation**. Sand reservoirs and pocket marshes would not be used to create additional beach and marsh habitat on North Chandeleur Island. As with the other action alternatives, the New Harbor Island fill would create approximately 145 acres of marsh/mangrove habitat. In total, Habitat Restoration Alternative 4 would construct approximately 2,010 of habitat—**providing less total acreage compared to Habitat Restoration Alternatives 2,3 and 5**. Habitat Restoration Alternative 4 is expected to benefit multiple natural resources by creating approximately 1,650 acres of bird nesting habitat and approximately 164 acres of turtle nesting habitat on North Chandeleur Island. Placement of the sand, dune, and marsh fill would protect and enhance approximately 5,131 acres of existing SAV on the western side of North Chandeleur Island (that is, the total existing acreage minus the acreage impacted by fill placement).
Health and Safety	The LA and Open Ocean TIGs do not anticipate impacts on public health and safety from implementing Habitat Restoration Alternative 4. North Chandeleur Island and New Harbor Island are uninhabited, remote, and accessible only by boat or air. During construction, all laws and regulations pertaining to worker safety would be followed. Habitat Restoration Alternative 4 would result in long-term benefits to public health and safety through the restoration and expansion of the island footprint and barrier island protection for the mainland.

3.1.4 Habitat Restoration Alternative 5: Beach, Dune, Marsh, Sand Reservoirs, Pocket Marsh, Feeder Beach, and New Harbor Island

Table 9. OPA NRDA Evaluation of Habitat Restoration Alternative 5

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	The estimated order of magnitude construction cost for Habitat Restoration Alternative 5 is $350,348,000 ($135,741/ac) to place approximately 11,914,510 cy of sediment fill, which is **more per acre than Habitat Restoration Alternative 2 and 3 and less per acre than Habitat Restoration Alternative 4**, but considered reasonable and appropriate on a cost per acre basis.
Goals and Objectives	Overall, Habitat Restoration Alternative 4 would help advance all of the goals identified by the Trustees for the *Sea Turtles, Birds*, and *Submerged Aquatic Vegetation* restoration types. This alternative would advance sea turtle goals by providing nesting and foraging habitat that would support multiple injured life stages (hatchlings and adults) in a geographic area relevant to multiple injured species, in a manner consistent with species recovery plans and goals (for example, loggerhead [2008] and Kemp's ridley [2011] recovery plans). This alternative would restore nesting habitat for bird species injured by the spill, facilitating population growth for those species in a globally important bird area within the Gulf, where actions would provide the greatest benefits within bird geographic ranges. Overall, the restoration of integrated beach, dune, and marsh habitat is expected to enhance the environment for SAV, resulting in enhanced SAV resilience, sustainability, and ecosystem function. By restoring habitat in the Breton NWR to support the goal *Replenish and Protect Living Coastal and Marine Resources*, this alternative would simultaneously advance goals identified for the *Wetlands, Coastal, and Nearshore Habitats* and *Habitat Projects on Federally Managed Lands* restoration types.

OPA NRDA Standards	Evaluation Summary
Likelihood of Success	Habitat Restoration Alternative 5 is likely to succeed because it is technically feasible and utilizes proven and established restoration methods which have been implemented successfully for other projects in the region. As further evidence, model calculations predict that Habitat Restoration Alternative 5 would lead to sustained gains in habitat acreages. Shoreline erosion is expected to proceed at a rate of -34 feet/year under Habitat Restoration Alternative 5, and relative gains or losses in habitat acreage would fluctuate over time. Over a 20-year analysis period, Habitat Restoration Alternative 5 is expected to retain approximately 58 percent of its original constructed fill volume and approximately 4,419 acres of existing and constructed habitat, including approximately 1,565 acres of bird nesting habitat and 234 acres of sea turtle nesting habitat on North Chandeleur Island, **and representing the highest area retained of any alternative as well as the second highest sediment retention rate**. SAV habitat is expected to be protected and sustained in proportion to predicted island longevity, that is, the total amount of barrier island habitat area retained over time. Based on its ability to sustain gains in nesting habitat and SAV protection over time, **Alternative 5 has the highest likelihood of overall Project success compared to the other alternatives considered**.
Avoidance of Collateral Injury	During implementation of Habitat Restoration Alternative 5, BMPs would be employed, and activities would be conducted according to any conditions arising from federal consultations and permitting to avoid and minimize potential collateral injury to natural resources. The island restoration features of Habitat Restoration Alternative 5 would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. In areas where fill material is placed under Habitat Restoration Alternative 5, **more presently established habitat would be impacted than under the other alternatives**. In total, Alternative 5 would impact approximately 540 acres of existing habitat comprising upland (19 acres), intertidal (315 acres), mangrove (47 acres), and SAV (159 acres) vegetation types (CEC, 2024a). However, impacts on existing habitat would be offset by substantially larger gains in targeted habitat expected under Habitat Restoration Alternative 5 (and in the case of SAV, enhanced protection and resilience of existing habitat).

OPA NRDA Standards	Evaluation Summary
Benefits	The combination of beach, dune, marsh, sand reservoirs, pocket marsh, and feeder beach features under Habitat Restoration Alternative 5 would create approximately 1,841 acres of beach and dune habitat along with approximately 595 acres of marsh habitat on North Chandeleur Island—**representing more beach/dune habitat creation than the other alternatives**. As with the other action alternatives, the New Harbor Island fill would create approximately 145 acres of marsh/mangrove habitat. In total, Habitat Restoration Alternative 5 would construct approximately 2,581 acres habitat. Habitat Restoration Alternative 5 is expected to benefit multiple natural resources by creating approximately 2,326 acres of bird nesting habitat in addition to approximately 179 acres of turtle nesting habitat on North Chandeleur Island. Placement of the sand, dune, and marsh fill would protect and enhance approximately 5,084 acres of existing SAV on the western side of North Chandeleur Island (that is, the total existing acreage minus the acreage impacted by fill placement). **Habitat Restoration Alternative 5 would thus achieve the greatest amount of constructed habitat, including substantially more nesting habitat than the other alternatives**.
Health and Safety	The LA and Open Ocean TIGs do not anticipate impacts on public health and safety from implementing Habitat Restoration Alternative 5. North Chandeleur Island and New Harbor Island are uninhabited, remote, and accessible only by boat or air. During construction, all laws and regulations pertaining to worker safety would be followed. Habitat Restoration Alternative 2 would result in long-term benefits to public health and safety through the restoration and expansion of the island footprint and barrier island protection for the mainland.

3.1.5 Chandeleur Islands Habitat Restoration Preferred Alternative and Summary Rationale

The LA and Open Ocean TIGs applied the OPA NRDA evaluation standards to the reasonable range of alternatives to identify a preferred alternative for Chandeleur Islands Habitat Restoration. Based on the results of this analysis (presented in Sections 3.1.1 through 3.1.4 and summarized in Table 10 below) and informed by the NEPA analysis presented in Chapter 4, the LA and Open Ocean TIGs have determined that Habitat Restoration Alternative 5 is the Preferred Alternative for Chandeleur Islands Habitat Restoration.

The LA and Open Ocean TIGs identified Habitat Restoration Alternative 5 as preferred over Habitat Restoration Alternatives 2 through 4 because it was the most beneficial design alternative evaluated and best meets the purpose and need for the Project. Benefits under Alternative 5 include greater amounts of habitat creation, including habitats supporting targeted living and marine resources.

Habitat Restoration Alternative 5 would provide more initially constructed beach/dune and marsh habitat combined than any other design alternative, which would provide more nesting habitat for birds and sea turtles immediately following construction (see the comparison of all Habitat Restoration Alternatives in Table 10), fulfilling the DWH Trustees' programmatic restoration goals to *Restore and Conserve Habitat* and *Replenish and Protect Living Coastal and Marine Resources*. Although habitat creation would replace some areas of existing upland, intertidal, mangrove, and SAV habitat in the Project area, these losses are offset by the considerably larger relative gains in targeted habitat types—gains which would help to sustain all habitat types into the future by buffering against coastal erosion. By maximizing gains in habitat, Habitat Restoration Alternative 5 would also provide the most protection to existing SAV beds sheltered west of North Chandeleur Island.

Over a 20-year analysis period, as coastal processes continue to shape the Chandeleur Islands, Habitat Restoration Alternative 5 would provide the greatest sustained gains in beach/dune and marsh habitat acreage compared to the other design alternatives (see Table 10). Even accounting for its initial cost per constructed acre (see Table 10), Habitat Restoration Alternative 5 is among the most cost-effective of the design alternatives when its long-term benefits to living resources are considered, retaining comparatively large acreages of bird and sea turtle habitat 20 years post-construction per dollar spent (see Table 11).

Table 10. Estimated Constructed Habitat Acres and Estimated Construction Costs for Chandeleur Islands (Habitat Restoration Alternatives)

	Beach/Dune (acres)	Marsh (acres)	Total acres	Cost
Habitat Restoration Alternative 2	1,510	613	2,123	$282,909,000 ($133,259/ac)
Habitat Restoration Alternative 3	1,341	843	2,184	$280,742,000 ($128,545/ac)
Habitat Restoration Alternative 4	1,397	613	2,010	$284,860,000 ($141,721/ac)
Habitat Restoration Alternative 5	1,841	740	2,581	$350,348,000 ($135,741/ac)

Notes:

1. Alternative 1 represents the No Action Alternative and is not included.
2. All Habitat Restoration Alternatives include beach, dune, marsh, and New Harbor Island fill.
3. Marsh acres in this table include 145 acres of marsh/mangrove habitat constructed at New Harbor Island.

Alternative 5 is shown to have fewer acres of constructed sea turtle nesting habitat in Target Year (TY)-0 than Alternatives 2 and 3 (see Table 11) due to the feeder beach in Alternative 5 creating an initial beach platform that would be wider than the typical maximum sea turtle crawl distance between the shoreline and higher elevation nesting habitat. However, the width of the feeder beach would decrease over time, decreasing the crawl distance between the shoreline and suitable nesting habitat, allowing increased access to constructed sea turtle habitat while preserving the sea turtle nesting zone along the length of the island from erosion, maintaining greater sea turtle nesting habitat over time than Alternatives 2 and 3. Alternative 5 is also projected to have the highest acreage of bird nesting habitat at initial construction and 20 years post-construction of all of the action alternatives. Alternative 5 offers some of the highest value in terms of total habitat expected to be retained in terms of acreage and retained fill volume (see Table 12), balancing realized gains with the ability to sustain beach nourishment via ongoing natural processes of cross-shore and longshore sediment transport. Because SAV habitat is expected to be enhanced and sustained in proportion to the protection provided by neighboring barrier island habitat, the higher predicted island longevity under Habitat Restoration Alternative 5 is also expected to result in the greatest long-term benefits to SAV habitat.

Table 11. Bird and Sea Turtle Nesting Habitat (Existing and Constructed) Retained on North Chandeleur Island Over Time

	TY-0 Bird Habitat (acres)	TY-20 Bird Habitat (acres)	TY-0 Sea Turtle Habitat (acres)	TY-20 Sea Turtle Habitat (acres)
Habitat Restoration Alternative 2	1,902	953	200	50
Habitat Restoration Alternative 3	1,967	1,029	205	52
Habitat Restoration Alternative 4	1,803	1,248	164	230
Habitat Restoration Alternative 5	2,215	1,565	179	234

TY = Target Year

Notes:

1. Bird habitat refers to habitat with an elevation greater than +2.0 feet and sea turtle habitat refers to habitat with an elevation between +4.0 and +5.5 feet

Table 12. Fill Volume and Habitat Retained Over Time

	Construction Fill Volume (cy)	Fill Volume Retained (%)	TY-0 Total Habitat (acres)	TY-20 Total Habitat (acres)	Habitat Area Retained (%)
Habitat Restoration Alternative 2	9,141,500	67%	5,194	4,014	77%
Habitat Restoration Alternative 3	9,074,100,	52%	5,198	4,015	77%
Habitat Restoration Alternative 4	9,182,400	52%	5,297	4,412	83%
Habitat Restoration Alternative 5	11,914,510	58%	5,307	4,419	83%

TY = Target Year

Notes:

1. Total habitat refers to acreage at or above elevation -1.5 feet

The long-term persistence of North Chandeleur Island and New Harbor Island, bolstered by the implementation of Habitat Restoration Alternative 5, would further serve to buffer the coast against impacts from storms and wind-wave forces. By enhancing the long-term resilience of a critical barrier island, Habitat Restoration Alternative 5 not only safeguards the habitats and living resources restored by the Project but also reinforces the health and productivity of interconnected estuarine and marine systems and the coastal communities they support.

Table 13. Summary of OPA NRDA Evaluation of Chandeleur Islands Habitat Restoration Alternatives

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	With an estimated order of magnitude construction cost of $350,348,000, Habitat Restoration Alternative 5 is expected to cost more per acre restored ($135,741/ac) than Habitat Restoration Alternatives 2 and 3 ($133,259 and $128,545/ac, respectively) and less than Habitat Restoration Alternative 4 ($141,721/ac), but would achieve the greatest total habitat restoration upon construction. When its long-term benefits to living resources are considered, Habitat Restoration Alternative 5 is among the most cost-effective of the design alternatives per dollar spent.
Goals and Objectives	Habitat Restoration Alternative 5 would provide more initially constructed beach/dune and marsh habitat combined than any other design alternative, which would provide more nesting habitat for birds and sea turtles immediately following construction, and in doing so, would provide greater protection to SAV habitat on the western side of North Chandeleur Island.
Likelihood of Success	Based on its predicted ability to sustain gains in nesting habitat and SAV protection over time, Habitat Restoration Alternative 5 has the highest likelihood of success compared to the other alternatives considered. Over a 20-year analysis period, Habitat Restoration Alternative 5 is expected to retain the highest area of target habitats at the second highest sediment retention rate, retaining approximately 58 percent of its original constructed fill volume and approximately 4,419 acres of existing and constructed habitat, including approximately 1,565 acres of bird nesting habitat and 234 acres of sea turtle nesting habitat on North Chandeleur Island. Because SAV habitat is expected to be protected and sustained in proportion to island longevity, Habitat Restoration Alternative 5 is also predicted to provide the greatest long-term protection and enhancement benefits to SAV habitat. Estimated habitat retention totals for the other alternatives ranged from 4,014 to 4,412 acres at year 20, and were expected to maintain substantially less bird and sea turtle habitat as well as less protection for SAV habitat than Habitat Restoration Alternative 5.
Avoidance of Collateral Injury	All design alternatives would utilize sediment from a nearby borrow area to increase beach, dune, and marsh elevations to help prevent future loss of SAV habitat and bird and sea turtle nesting habitat and conversion to open water. In areas where fill material is placed during construction of Habitat Restoration Alternative 5, more existing habitat would be impacted than under the other alternatives; however, impacts on existing habitat would be offset by substantially larger gains in targeted habitat expected under Habitat Restoration Alternative 5 (and in the case of SAV, enhanced protection and resilience of existing habitat).

OPA NRDA Standards	Evaluation Summary
Benefits	Habitat Restoration Alternative 5 would provide the most suitable nesting habitat for birds and sea turtles, a primary benefit of the Project, as well as the greatest increases in acreages of injured beach, dune, and marsh habitat. It would provide greater benefits to SAV than the other alternatives by maximizing the longevity of the island footprint and the provision of low-energy/low-turbidity conditions that allow SAV to thrive. The restoration and enhancement of target habitats are also expected to benefit a range of other supported avian species and injured fishes and crustaceans that rely upon the integrated habitat complex of the Chandeleur Islands and Breton NWR.
Health and Safety	Habitat Restoration Alternative 5 is expected to result in the greatest long-term benefits to public health and safety by maximizing the restoration and expansion of the island footprint and barrier island protection for the mainland.

3.2 OPA NRDA Evaluation of the Reasonable Range of Chandeleur Islands FWCI Restoration Alternatives

Sections 3.2.1 and 3.2.2 provide an evaluation of each of the FWCI Restoration Alternatives in the reasonable range against the OPA NRDA standards. Section 3.2.3 provides a summary of how these evaluations informed the selection of a preferred FWCI Restoration Alternative.

3.2.1 FWCI Restoration Alternative 2: Chandeleur Islands Fisheries Engagement and Restoration Project

Table 14. OPA NRDA Evaluation of FWCI Restoration Alternative 2

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	The cost for FWCI Restoration Alternative 2 is reasonable and appropriate according to the LA and Open Ocean TIGs. At a cost of $10,000,000, implementation of the engagement plan would directly benefit injured species by reducing threats and mortality.
Goals and Objectives	FWCI Restoration Alternative 2 supports the programmatic goal of *Replenish and Protect Living Coastal and Marine Resources* by providing benefits to injured fish species. Several priority fish species would benefit from the implementation phase. Open Ocean TIG goals and objectives would be met to a high degree through FWCI Restoration Alternative 2's focus on reducing threats and providing tools and techniques to fishing communities.
Likelihood of Success	FWCI Restoration Alternative 2 would leverage stakeholder engagement during plan development to increase the likelihood that identified outreach activities and methods are successful in reducing future injury to species. Species would directly benefit from reduced stressors.
Avoidance of Collateral Injury	FWCI Restoration Alternative 2 would identify and implement activities that effectively avoid or minimize impacts and potential collateral injury to natural resources. FWCI Restoration Alternative 2 is intended to prevent future injury by providing information and tools to help improve the health of fish populations and their habitats, such as bycatch reduction, thereby improving overall resilience of the resource.
Benefits	FWCI Restoration Alternative 2 would benefit a suite of fish species as well as sensitive habitats, such as SAV, on which they depend. Implementation of activities would maintain low levels or reduce levels of impact on fish species, their habitats and ecosystems, while also benefiting users of the Breton NWR and Chandeleur Sound.
Public Health and Safety	FWCI Restoration Alternative 2 would have no negative impacts on public health and safety.

3.2.2 *FWCI Restoration Alternative 3: Chandeleur Islands Fisheries Resource Monitoring and Management Project*

Table 15. OPA NRDA Evaluation of FWCI Restoration Alternative 3

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	The cost for FWCI Restoration Alternative 3 is reasonable and appropriate according to the LA and Open Ocean TIGs. At a cost of $16,500,000, data gathered through monitoring would provide a secondary benefit to injured species through its use in raising awareness of species status and the importance of sensitive habitats.
Goals and Objectives	FWCI Restoration Alternative 3 supports the programmatic goal of *Replenish and Protect Living Coastal and Marine Resources* by providing benefits to injured fish species. Several priority fish species would indirectly benefit from use of monitoring data and efforts to raise awareness regarding fish species status and the importance of sensitive habitats.
Likelihood of Success	FWCI Restoration Alternative 3 would use standard and proven field data collection techniques and equipment, increasing the likelihood of successful data acquisition.
Avoidance of Collateral Injury	Deployment of the monitoring array under FWCI Restoration Alternative 3 would use techniques to minimize habitat impacts, and data gathered by the array could inform future efforts to prevent future injury. Outreach regarding species status and importance of sensitive habitats may indirectly lead to priority species threat reduction if it motivates fishers to seek tools and techniques to reduce stressors.
Benefits	Monitoring data gathered through implementation of FWCI Restoration Alternative 3 would provide a better understanding of connectivity and would provide a better understanding of the connectivity of habitats across the Chandeleur Islands and the functional role of the islands within the larger Gulf ecosystem.
Public Health and Safety	FWCI Restoration Alternative 3 would have no negative impacts on public health and safety.

3.2.3 *Chandeleur Islands FWCI Restoration Preferred Alternative and Summary Rationale*

The LA and Open Ocean TIGs applied the OPA NRDA evaluation standards to the reasonable range of alternatives to identify a preferred alternative for Chandeleur Islands FWCI Restoration. Based on the results of this analysis (presented in Sections 3.2.1 and 3.2.2 and summarized in Table 16 below) and informed by the NEPA analysis presented in Chapter 4, the LA and Open Ocean TIGs

determined that FWCI Restoration Alternative 2, Chandeleur Islands Fisheries Engagement and Restoration, is the Preferred Alternative for Chandeleur Islands FWCI Restoration.

FWCI Restoration Alternative 2 is more likely to advance the FWCI Restoration goals of the PDARP/PEIS and the objectives of the Open Ocean FWCI Restoration Strategy than FWCI Restoration Alternative 3, as the activities associated with FWCI Restoration Alternative 2 would focus on implementing voluntary fisheries related activities for the priority species identified in the FWCI Restoration Strategy that would more directly benefit priority fish species.

FWCI Restoration Alternative 2 would result in more primary benefits to injured species, as the engagement activities would promote sustainable fishing practices for injured species that reduce bycatch in commercial fisheries and reduce post-release mortality in recreational fisheries, among other benefits. FWCI Restoration Alternative 3 would result in secondary, rather than primary, benefits by providing monitoring data that could inform future management or restoration actions that are not within the scope of this Project.

FWCI Restoration Alternative 2 is more likely to meet the FWCI goal of increasing the health of fisheries by providing fishing communities with methodologies and incentives to reduce impacts on fishery resources. The outreach to fishing communities regarding sustainable fishing practices would also better meet the FWCI goal of restoring injured fish and invertebrate species across the range of coastal and oceanic zones by reducing direct sources of mortality. While FWCI Restoration Alternative 3 would provide data regarding species status and habitat use which could inform future actions to meet these two FWCI goals, the action taken under FWCI Restoration Alternative 2 would provide more direct benefits to injured species by reducing potential sources of mortality reduction and would therefore meet the Trustees' goals and objectives to a greater extent.

Table 16. Summary of OPA NRDA Evaluation of Chandeleur Islands FWCI Restoration Alternatives

OPA NRDA Standards	Evaluation Summary
Cost-effectiveness	While the costs for both alternatives are reasonable and appropriate, FWCI Restoration Alternative 2 would provide more direct benefit to injured species at a lower cost than FWCI Restoration Alternative 3.
Goals and Objectives	By focusing engagement activities on providing tools and techniques to fishing communities to reduce threats and stressors to priority species identified in the FWCI Restoration Strategy, FWCI Restoration Alternative 2 is more likely to advance the FWCI restoration goals of the PDARP/PEIS and the objectives of the Open Ocean FWCI Restoration Strategy than FWCI Restoration Alternative 3. By providing more direct benefit to injured species, FWCI Restoration Alternative 2 would meet the Trustees' goals and objectives to a greater extent than FWCI Restoration Alternative 3.
Likelihood of Success	While both FWCI alternatives were considered to have a high likelihood of success in reaching their respective goals, FWCI Restoration Alternative 2 would have a higher likelihood of success in reducing injury to fish through direct benefits from engaging the fisheries community with tools to reduce threats and mortality. The use of stakeholder engagement during plan development under FWCI Restoration Alternative 2 would also increase the likelihood of success for subsequent outreach activities.
Avoidance of Collateral Injury	While both FWCI alternatives would avoid collateral injury during implementation and would provide information to help prevent future injury, FWCI Restoration Alternative 2 would be more likely to improve overall resilience of injured species through direct benefits, rather than the indirect benefits afforded by FWCI Restoration Alternative 3.
Benefits	FWCI Restoration Alternative 2 would result in more primary benefits to injured species, while also benefiting users of the Breton NWR and Chandeleur Sound. FWCI Restoration Alternative 3 would result in secondary, rather than primary, benefits.
Public Health and Safety	Neither alternative would have negative impacts on public health and safety.

4. NEPA ANALYSIS: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 Overview of the NEPA Approach

The NEPA analysis presented in this document comparatively evaluates the environmental effects of the alternatives under consideration, including effects on physical, biological, and socioeconomic resources. This integrated OPA/NEPA document is being prepared under amendments to NEPA authorized in the Fiscal Responsibility Act of 2023. The NEPA conclusions presented herein are informed by the NEPA Supporting Documentation Report in Appendix D.

The NEPA analysis describes anticipated adverse and beneficial impacts of the preferred and non-preferred alternatives. Together, these constitute the reasonable range of alternatives for this Joint RP/EA #1. A No Action Alternative is also analyzed. See Chapter 2 for full details on each alternative. The NEPA Supporting Documentation Report provided in Appendix D is consistent with the Final PDARP/PEIS, which is incorporated by reference, and tiers where applicable. Appendix D is organized by (D.1) analyzing physical, biological, and socioeconomic resources for impacts across all alternatives, (D.2) presenting a summary of the environmental consequences of each of the alternatives, and (D.3) consideration of reasonably foreseeable environmental impacts.

The NEPA Supporting Documentation Report provided in Appendix D and the conclusions provided in this chapter address direct, indirect, and reasonably foreseeable environmental effects. For purposes of this document, impacts are assessed in accordance with the approach taken in Chapter 6 of the Final PDARP/PEIS. In this document, the terms “impacts,” “effects,” and “consequences” are used interchangeably. Direct impacts are caused by the action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable.

The guidelines for NEPA impact determinations in Table 6.3.2 of the Final PDARP/PEIS, as described below and in more detail in Appendix C, were used to assess the magnitude of impacts. To determine whether an action has the potential to result in significant impacts, the context and intensity of the action must be considered. Context refers to the area of impacts (for example, local, statewide) and their duration (for example, whether they are short-term or long-term impacts). An impact lasting for a finite period and of short duration relative to the proposed restoration project and the environmental resource is considered short term. In general, the impacts of construction and associated activities undertaken to implement a restoration project are expected to be short-term, and the impacts that persist beyond construction are expected to be long term. However, these can be defined differently depending on the resource being analyzed, as detailed in Appendix C.

Intensity refers to the severity of an impact and could include the timing of the action (for example, more intense impacts would occur during wildlife breeding/rearing). Intensity is also described in terms of whether the impact would be beneficial or adverse. Impacts are characterized as minor, moderate, or major, and short term or long term and are generally defined as follows:

- Minor: Minor impacts are generally those that might be detectable but, in their context, may nonetheless not be measurable because any changes they cause are so slight as to be impossible to define.
- Moderate: Moderate impacts are those that are more detectable and, typically, more quantifiable or measurable than minor impacts.
- Major: Major impacts are those that, in their context and due to their severity, have the potential to meet the thresholds for significance set forth in Table 6.3.2 of the Final PDARP/PEIS and, thus, warrant heightened attention and examination for potential benefit of mitigation.

A beneficial impact is one that creates a positive outcome in the manmade or natural environment. Because restoration conducted is intended to result in significant, major benefits to injured resources, evaluation of the intensity of the benefits to resource categories is not described. For resource areas where there is no expected effect from Project activities, a "no impact" conclusion is made. "Adverse" is used in this document only to describe the federal Trustees' evaluation under NEPA. That term is defined and applied differently in consultations conducted pursuant to the Endangered Species Act (ESA) and other protected resource statutes. Accordingly, in the protected resources sections, there may be adverse impacts identified under NEPA; however, this does not necessarily mean that an action would be likely to "adversely affect" the same species because that term is defined and applied under protected resources statutes.

4.2 Consistency with the PDARP/PEIS

The NEPA analysis in this Joint RP/EA #1 tiers from the PDARP/PEIS, where applicable. To ensure compliance with the FRA (42 U.S.C. § 4336b) in the preparation of this Joint RP/EA #1, the DWH Federal Trustees reevaluated the PDARP/PEIS analysis and its underlying assumptions and confirm its continued validity. Specifically, the federal Trustees compared their assessment of each project's anticipated impacts on each resource analyzed with the impact intensity definitions (short- or long-term, minor, moderate, or major) found in Table 6.3-2 of the PDARP/PEIS (and in this Joint RP/EA #1 as Appendix C), the impacts that the PDARP/PEIS forecasted for preliminary phases of restoration planning (Section 6.4.14, DWH Trustees, 2016), and the restoration approaches and techniques to protect and conserve wetlands, coastal, and nearshore habitats, federally managed lands, FWCI, sea turtles, SAV, and birds (Sections 6.4.1, 6.4.2, 6.4.5, 6.4.7, 6.4.8, and 6.4.10 respectively, DWH Trustees 2016) proposed in this Joint RP/EA #1 (for example, creating and restoring barrier islands, beaches, SAV, nesting and foraging habitat).

For preliminary restoration planning activities such as desktop-based data analyses, including the FWCI restoration projects, Section 6.4.14 of the PDARP/PEIS found that some activities would cause direct, short-term, minor, adverse impacts on physical and biological resources through associated fieldwork, but that those disturbances would be temporary and localized to the project site. The PDARP/PEIS found that the Restoration Approaches relevant to the projects proposed in this Joint RP/EA #1 would be likely to cause the following environmental consequences:

- Physical Resources: Depending on the project type, there could be short-term, minor to major, adverse impacts and long-term benefits to geology, substrates, hydrology, water

quality, air quality, and noise during project implementation. Short-term, minor impacts on geology and substrates and noise may occur as a result of construction. However, many short-term, adverse impacts would be minimized by implementing best practices. Long-term, minor, adverse impacts on existing substrates could occur as dredged material is placed, but there would also be long-term benefits to geology and substrates from the increased storm resilience.

- Biological Resources: Depending on the techniques implemented, short-term, minor to moderate, adverse impacts and long-term benefits to biological resources may be anticipated during project implementation. For example, long-term moderate, adverse impacts may occur due to final placement of sediment in the footprint where existing habitats would be covered by additional sediment. However, the increased areal extent and improvement of beach habitat for foraging birds, nesting bird colonies, and sea turtle nesting would also occur, resulting in long-term benefit. Restored barrier and coastal islands and headlands could benefit interior freshwater wetland habitats, back-bay seagrass, and coastal and riparian areas by reducing erosion, scouring, and subsequent water quality impacts of storm surge events.
- Socioeconomic Resources: Project activities could result in minor, short-term, adverse economic impacts and long-term economic benefits related to restoration efforts. For example, adverse impacts on tourism and recreation resulting from reduced fishing opportunities in the vicinity of construction would be expected to be short-term and minor to moderate. Over the long term, these projects could provide wildlife enthusiasts with increased wildlife viewing opportunities. Long-term benefits for the public are anticipated as a result of these restoration approaches. Creating, enhancing, or restoring barrier islands could result in minor (temporary disturbance) to moderate (disturbance without loss of cultural information) impacts on cultural and historic resources due to construction activities such as dredging, addition of sediments or borrow materials, and/or removal of sediments.

The DWH Trustees for the LA and Open Ocean TIGs find that the resource impacts as forecasted in the PDARP/PEIS are consistent with the impacts anticipated from the projects analyzed in this Joint RP/EA #1, and thus, the TIGs affirm the applicability of the PDARP/PEIS' NEPA analysis to this Joint RP/EA #1. Additional analyses regarding the specific activities proposed in this Joint RP/EA #1 are below and in the NEPA Supporting Documentation Report (see Appendix D).

4.3 Activities that Do Not Require Further NEPA Analysis

This section summarizes impacts from project activities that are fully analyzed in the Final PDARP/PEIS and require no additional NEPA analysis. As discussed in Section 6.4.14 of the Final PDARP/PEIS, projects may include planning activities such as E&D, acquiring permits, and data-related tasks such as gathering, compiling, and evaluating information. In some cases, these activities are the project output, with implementation analyzed in a future restoration plan; in other cases, these activities are part of scoping for a project that would be implemented as part of this Joint RP/EA #1. Planning activities are intended to improve understanding of natural resources, site characteristics, and project design details, and in turn, inform and maximize efficacy of restoration efforts. The Open Ocean TIG proposes two FWCI Restoration projects in this Joint

RP/EA #1 that are comprised of planning activities. The complete project descriptions for these alternatives are provided in Section 2.2.4.

The following alternatives include planning activities only, and as such, are not analyzed further in Appendix D. Section 3.2 provides a summary of impacts from the activities which comprise these two FWCI restoration alternatives.

- *FWCI Restoration Alternative 2: Chandeleur Islands Fisheries Engagement and Restoration Project:* planning, education, engagement, outreach and communication with fishing communities and other stakeholders.
- *FWCI Restoration Alternative 3: Chandeleur Islands Fisheries Resource Monitoring and Management Project:* field data collection, equipment installation, education, and outreach.

4.3.1 Environmental Consequences for the FWCI Restoration Alternatives

The planning activities included in FWCI Restoration Alternatives 2 and 3 are expected to improve fisheries resources. Implementation of these restoration activities is anticipated to result in long-term benefits on biological and socioeconomic resources.

Geology and substrates and water quality could experience short-term, minor, adverse impacts from ground disturbance resulting from field work during equipment installation and data collection under FWCI Restoration Alternative 3; the noise environment could experience short-term, minor, adverse impacts from increased human activity during implementation of planning activities under both alternatives. Air quality could experience short-term, minor, adverse impacts from vehicle and vessel emissions during implementation of both alternatives. Activities such as data compilation and desktop analysis are typically conducted from existing facilities and without impact on the environment.

Temporary, adverse impacts on habitats, wildlife, and protected species could include short-term, minor disturbance from human presence during equipment installation and field data collection under FWCI Restoration Alternative 3. All biological resources (including marine and estuarine fauna) would experience indirect benefits from the potential implementation of restoration activities informed during planning and associated fisheries resources benefits under both alternatives.

Socioeconomics, tourism and recreational use, fisheries, and aquaculture would experience indirect benefits from the potential implementation of restoration activities and associated fisheries resources benefits under both alternatives.

After review, the TIGs determined that the environmental consequences that may occur as a result of planning activities under FWCI Restoration Alternatives 2 and 3 fall within the range of impacts described in Section 6.4.14 of the Final PDARP/PEIS. As such, no additional analysis of the environmental consequences of these activities is necessary at present. As planning progresses and specific project activities are identified, if the impacts from planned activities would not be consistent with those described in this Joint RP/EA #1, the TIGs would undertake additional environmental review, consistent with NEPA and other environmental compliance requirements.

Any necessary additional NEPA analysis would be prepared by the Implementing Trustee(s) or appropriate federal agency and included in the Administrative Record and DIVER once completed.

4.4 Summary of Environmental Consequences for the Habitat Restoration Plan Alternatives

The analysis of environmental consequences for each Habitat Restoration alternative in this Joint RP/EA #1 can be found in the NEPA Supporting Documentation Report in Appendix D. Table 17 below summarizes the direct and indirect impacts of each Habitat Restoration action alternative and the No Action Alternative. The environmental analysis demonstrates that there would primarily be short- and long-term, minor, but also some moderate, adverse impacts as well as environmental benefits from implementation of the Habitat Restoration alternatives.

In general, implementation of the Habitat Restoration action alternatives would result in a range of short-term, minor to moderate, adverse impacts on physical resources including geology and substrates, hydrology and water quality, air quality, and noise during construction. There would be some long-term, minor, adverse effects on geology and substrates associated with localized soil disturbances during construction, and on hydrology and water quality associated with increased avian fecal matter during restoration implementation. However, all of the Habitat Restoration action alternatives would result in long-term, beneficial impacts on these physical resources from reduced erosion, reduced turbidity, increased marsh vegetation, higher elevation, and increased island longevity.

Biological resources would primarily experience a range of short-term, minor to moderate, adverse impacts from vegetation and habitat disturbance, and terrestrial wildlife and aquatic fauna displacement and/or disturbance during construction (for example, presence of workers, equipment, vessels lighting, turbidity, and noise). Some alternatives would have long-term, minor to moderate, adverse impacts on biological resources, primarily to habitats because of habitat alterations and disturbance. However, biological resources would also experience long-term benefits from increased habitat, reduction in susceptibility to habitat loss, and increase in island longevity, improved water quality, and hydrologic restoration. Adverse impacts would be minimized by following mitigation measures, best management practices (BMPs), and other guidance developed during the permitting process, environmental reviews, consultation process, and other relevant regulatory requirements. See Table 18 in Chapter 5 for the environmental compliance status of each alternative.

Table 17. Summary of the Direct and Indirect Impacts of the Reasonable Range of Habitat Restoration Alternatives

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Physical Resources					
Geology and Substrates	Long-term, major, adverse impacts from continued erosion, land loss, and inundation.	Short-term and long-term, minor to moderate, adverse impacts from localized soil disturbances during construction. Long-term, beneficial impacts from an expansion of the island's footprint, higher elevation, and reduced erosion after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from localized soil disturbances during construction. Long-term, beneficial impacts from an expansion of the island's footprint, higher elevation, and reduced erosion after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from localized soil disturbances during construction. Long-term, beneficial impacts from an expansion of the island's footprint, higher elevation, and reduced erosion after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from localized soil disturbances during construction. Long-term, beneficial impacts from an expansion of the island's footprint, higher elevation, and reduced erosion after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Hydrology and Water Quality	Long-term, moderate, adverse impacts from continued land loss, inundation, and increased salinities.	Short-term, minor to moderate, adverse impacts from increases in suspended sediment and turbidity and changes in dissolved oxygen, nutrients, temperature, and salinity during construction. Long-term, minor, adverse impacts from increased avian fecal matter and long-term, beneficial impacts from reduced erosion, reduced turbidity, growth of filter feeders, and increased island longevity after restoration implementation.	Short-term, minor to moderate, adverse impacts from increases in suspended sediment and turbidity and changes in dissolved oxygen, nutrients, temperature, and salinity during construction. Long-term, minor, adverse impacts from increased avian fecal matter and long-term, beneficial impacts from reduced erosion, reduced turbidity, growth of filter feeders, and increased island longevity after restoration implementation.	Short-term, minor to moderate, adverse impacts from increases in suspended sediment and turbidity and changes in dissolved oxygen, nutrients, temperature, and salinity during construction. Long-term, minor, adverse impacts from increased avian fecal matter and long-term, beneficial impacts from reduced erosion, reduced turbidity, growth of filter feeders, and increased island longevity after restoration implementation.	Short-term, minor to moderate, adverse impacts from increases in suspended sediment and turbidity and changes in dissolved oxygen, nutrients, temperature, and salinity during construction. Long-term, minor, adverse impacts from increased avian fecal matter and long-term, beneficial impacts from reduced erosion, reduced turbidity, growth of filter feeders, and increased island longevity after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Air Quality	No effect from No Action	Short-term, minor, adverse impacts from equipment dust and exhaust and combustion emissions during construction. Long-term beneficial impacts from an increase in marsh vegetation after restoration implementation.	Short-term, minor, adverse impacts from equipment dust and exhaust and combustion emissions during construction. Long-term beneficial impacts from an increase in marsh vegetation after restoration implementation.	Short-term, minor, adverse impacts from equipment dust and exhaust and combustion emissions during construction. Long-term beneficial impacts from an increase in marsh vegetation after restoration implementation.	Short-term, minor, adverse impacts from equipment dust and exhaust and combustion emissions during construction. Long-term beneficial impacts from an increase in marsh vegetation after restoration implementation.
Noise	No effect from No Action	Short-term, minor, adverse impacts from operation of vessels, equipment, and earthwork activities during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from operation of vessels, equipment, and earthwork activities during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from operation of vessels, equipment, and earthwork activities during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from operation of vessels, equipment, and earthwork activities during construction. No effect after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Biological Resources					
Habitats	Long-term, major, adverse impacts from continued land and habitat loss.	Short-term and long-term, minor to moderate, adverse impacts from vegetation and habitat disturbance (including SAV), during construction. Long-term, beneficial impacts from the increase in total available barrier island habitat and reduction in susceptibility to habitat loss after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from vegetation and habitat disturbance (including SAV), during construction. Long-term, beneficial impacts from the increase in total available barrier island habitat and reduction in susceptibility to habitat loss after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from vegetation and habitat disturbance (including SAV), during construction. Long-term, beneficial impacts from the increase in total available barrier island habitat and reduction in susceptibility to habitat loss after restoration implementation.	Short-term and long-term, minor to moderate, adverse impacts from vegetation and habitat disturbance (including SAV), during construction. Long-term, beneficial impacts from the increase in total available barrier island habitat and reduction in susceptibility to habitat loss after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Terrestrial Wildlife Species	Long-term, moderate to major, adverse impacts from continued coastal processes, overwash, and erosion contributing to habitat loss over time.	Short-term, moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, lighting, workers and equipment during construction. Long-term, beneficial impacts from increase in available habitat for nesting, foraging, and loafing after restoration implementation.	Short-term, moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, lighting, workers and equipment during construction. Long-term, beneficial impacts from increase in available habitat for nesting, foraging, and loafing after restoration implementation.	Short-term, moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, lighting, workers and equipment during construction. Long-term, beneficial impacts from increase in available habitat for nesting, foraging, and loafing after restoration implementation.	Short-term, moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, lighting, workers and equipment during construction. Long-term, beneficial impacts from increase in available habitat for nesting, foraging, and loafing after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Marine and Estuarine Fauna	Long-term, major, adverse impacts from continued coastal processes, overwash, and erosion contributing to habitat loss over time.	Short-term to long-term minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment, and changes in water quality during construction. Long-term, beneficial impacts from increase in available high-quality aquatic habitat and increase in island longevity after restoration implementation.	Short-term to long-term minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment, and changes in water quality during construction. Long-term, beneficial impacts from increase in available high-quality aquatic habitat and increase in island longevity after restoration implementation.	Short-term to long-term minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment, and changes in water quality during construction. Long-term, beneficial impacts from increase in available high-quality aquatic habitat and increase in island longevity after restoration implementation.	Short-term to long-term minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment, and changes in water quality during construction. Long-term, beneficial impacts from increase in available high-quality aquatic habitat and increase in island longevity after restoration implementation.

Protected Species	T&E Long-term, major, adverse impacts from continued coastal processes, overwash, and erosion contributing to habitat loss over time. Marine Mammals Long-term, minor to moderate, adverse impacts from continued coastal processes, overwash, and erosion contributing to habitat loss over time and less high-quality foraging	T&E Short-term to long-term, minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment and during construction. Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation. Marine Mammals Short-term to long-term, minor, adverse impacts from disturbance due to noise, workers, vessels and equipment and entrapment during construction.	T&E Short-term to long-term, minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment during construction. Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation. Marine Mammals Short-term to long-term, minor, adverse impacts from disturbance due to noise, workers, vessels and equipment and entrapment during construction.	T&E Short-term to long-term, minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment during construction. Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation. Marine Mammals Short-term to long-term, minor, adverse impacts from disturbance due to noise, workers, vessels and equipment and entrapment during construction.	T&E Short-term to long-term, minor to moderate, adverse impacts from displacement and disturbance due to habitat disturbance, noise, vessels and equipment during construction. Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation. Marine Mammals Short-term to long-term, minor, adverse impacts from disturbance due to noise, workers, vessels and equipment and entrapment during construction.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
	habitat.	Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation.	Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation.	Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation.	Long-term, beneficial impacts from increase in available high-quality habitat and increase in island longevity after restoration implementation.
Socioeconomic Resources					
Socioeconomics	Long-term, minor adverse impacts from continued degradation and loss of natural resources	Short-term, beneficial impacts from construction spending and workforce hiring during construction. Long-term, beneficial impacts from increased recreational and commercial activity and buffering of coastal communities from flooding after restoration implementation.	Short-term, beneficial impacts from construction spending and workforce hiring during construction. Long-term, beneficial impacts from increased recreational and commercial activity and buffering of coastal communities from flooding after restoration implementation.	Short-term, beneficial impacts from construction spending and workforce hiring during construction. Long-term, beneficial impacts from increased recreational and commercial activity and buffering of coastal communities from flooding after restoration implementation.	Short-term, beneficial impacts from construction spending and workforce hiring during construction. Long-term, beneficial impacts from increased recreational and commercial activity and buffering of coastal communities from flooding after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Cultural Resources	No effect from No Action	No effect due to no cultural resources being located in the area.	No effect due to no cultural resources being located in the area.	No effect due to no cultural resources being located in the area.	No effect due to no cultural resources being located in the area.
Infrastructure	No effect from No Action	No effect on infrastructure on the Islands during construction. Long-term, beneficial impacts from increased protection of offshore lodges due to stabilization of the island after restoration implementation.	No effect on infrastructure on the Islands during construction. Long-term, beneficial impacts from increased protection of offshore lodges due to stabilization of the island after restoration implementation.	No effect on infrastructure on the Islands during construction. Long-term, beneficial impacts from increased protection of offshore lodges due to stabilization of the island after restoration implementation.	No effect on infrastructure on the Islands during construction. Long-term, beneficial impacts from increased protection of offshore lodges due to stabilization of the island after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Land and Marine Management	No effect from No Action	Short-term, minor, adverse impacts from temporary restricted access during construction. Long-term beneficial impacts by meeting Comprehensive Conservation Plan (CCP) and Habitat Management Plan (HMP) objectives of habitat restoration and conservation and protection of fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from temporary restricted access during construction. Long-term beneficial impacts by meeting CCP and HMP objectives of habitat restoration and conservation and protection of fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from temporary restricted access during construction. Long-term beneficial impacts by meeting CCP and HMP objectives of habitat restoration and conservation and protection of fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from temporary restricted access during construction. Long-term beneficial impacts by meeting CCP and HMP objectives of habitat restoration and conservation and protection of fish and wildlife species after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Tourism and Recreational Use	Long-term, minor, adverse impacts from continued habitat degradation and loss.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, temporary disturbance of fish and wildlife habitat, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species and stabilization of the island after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, temporary disturbance of fish and wildlife habitat, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species and stabilization of the island after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, temporary disturbance of fish and wildlife habitat, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species and stabilization of the island after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, temporary disturbance of fish and wildlife habitat, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species and stabilization of the island after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Aesthetics and Visual Resources	Long-term, minor, adverse impacts from continued habitat degradation and loss.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species after restoration implementation.	Short-term, minor, adverse impacts from the presence of construction equipment and personnel, and the increase in vessel traffic during construction. Long-term, beneficial impacts from improved habitat for fish and wildlife species after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Public Health and Safety	Long-term, minor, adverse, impacts from continued coastal erosion and land loss increasing the risk of flooding, wave action, saltwater intrusion, storm surge, and tidal current further inland.	No effect during construction. Long-term, beneficial impacts from increase in island longevity and storm risk reduction for coastal communities after restoration implementation.	No effect during construction. Long-term, beneficial impacts from increase in island longevity and storm risk reduction for coastal communities after restoration implementation.	No effect during construction. Long-term, beneficial impacts from increase in island longevity and storm risk reduction for coastal communities after restoration implementation.	No effect during construction. Long-term, beneficial impacts from increase in island longevity and storm risk reduction for coastal communities after restoration implementation.

Resource	Alt. 1 (No Action)	Alt. 5 (Preferred Alternative)	Alt. 2	Alt. 3	Alt. 4
Fisheries and Aquaculture	Long-term, minor, adverse impacts from continued degradation and loss of high-quality fish habitat.	Short-term, minor, adverse impacts from temporary decline in fish and mobile aquatic species due to relocation during construction. Long-term, beneficial impacts from increase in total quantity of available habitat after restoration implementation.	Short-term, minor, adverse impacts from temporary decline in fish and mobile aquatic species due to relocation during construction. Long-term, beneficial impacts from increase in total quantity of available habitat after restoration implementation.	Short-term, minor, adverse impacts from temporary decline in fish and mobile aquatic species due to relocation during construction. Long-term, beneficial impacts from increase in total quantity of available habitat after restoration implementation.	Short-term, minor, adverse impacts from temporary decline in fish and mobile aquatic species due to relocation during construction. Long-term, beneficial impacts from increase in total quantity of available habitat after restoration implementation.
Marine Transportation	No effect from No Action	Short-term, minor, adverse impacts from temporary diversion of marine traffic during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from temporary diversion of marine traffic during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from temporary diversion of marine traffic during construction. No effect after restoration implementation.	Short-term, minor, adverse impacts from temporary diversion of marine traffic during construction. No effect after restoration implementation.

5. COMPLIANCE WITH OTHER LAWS AND REGULATIONS

In addition to the requirements of OPA and NEPA, other laws may apply to the Preferred Alternative in this Joint RP/EA #1. The LA and Open Ocean TIGs ensure compliance with applicable laws or EOs, including those listed below. Details on each of these laws or EOs can be found in Chapter 6 of the Final PDARP/PEIS. Legal authorities applicable to restoration alternative development were fully described in the context of the DWH restoration planning in the Final PDARP/PEIS, Section 6.9 Compliance with Other Applicable Authorities and Appendix 6.D Other Laws and EOs. That material is incorporated by reference here.

5.1 Federal Laws

Additional federal laws, regulations, and EOs that may be applicable include but are not limited to:

- Endangered Species Act (16 U.S.C. § 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended (16 U.S.C. § 1801 et seq.)
- Marine Mammal Protection Act (16 U.S.C. § 1361 et seq.)
- Coastal Zone Management Act (16 U.S.C. § 1451 et seq.)
- National Historic Preservation Act (16 U.S.C. § 470 et seq.)
- Coastal Barrier Resources Act (16 U.S.C. § 3501 et seq.)
- Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.)
- Bald and Golden Eagle Protection Act (16 U.S.C. § 668 et seq.)
- Clean Air Act (42 U.S.C. § 7401 et seq.)
- Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. § 1251 et seq.)
- Rivers and Harbors Act (33 U.S.C. § 401 et seq.)
- Marine Protection, Research, and Sanctuaries Act (16 U.S.C. § 1431 et seq. and 33 U.S.C. § 1401 et seq.)
- Estuary Protection Act (16 U.S.C. §§ 1221–1226)
- Archaeological Resource Protection Act (16 U.S.C. §§ 470aa–470mm)
- National Marine Sanctuaries Act (16 U.S.C. § 1431 et seq.)
- Farmland Protection Policy Act (7 U.S.C. §§ 4201–4209)
- EO 11988: Floodplain Management (May 24, 1977), as amended
- EO 11990: Protection of Wetlands (May 24, 1977), as amended
- EO 12962: Recreational Fisheries (June 7, 1995), as amended
- EO 13007: Indian Sacred Sites

- EO 13045: Protection of Children from Environmental Health Risks and Safety Risks (Apr. 23, 1997), as amended
- EO 13112: Safeguarding the Nation from the Impacts of Invasive Species (Feb. 3, 1999), as amended
- EO 13175: Consultation and Coordination with Indian Tribal Governments (Nov. 6, 2000)
- EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (Jan. 10, 2001)
- EO 14172: Restoring Names That Honor American Greatness (Feb. 9, 2025)

5.2 State and Local Laws

The LA TIG would confirm compliance with all applicable state and local laws and other applicable federal laws and regulations relevant to the State of Louisiana. An unexclusive list of potential additional laws and regulations are listed below:

- Archeological Finds on State Lands (Louisiana Revised Statutes [La. Rev. Stat.] 41:1605)
- Coastal Wetlands Conservation and Restoration Authority (La. Rev. Stat. 49:213.1)
- Coastal Wetlands Conservation and Restoration Plan (La. Rev. Stat. 49:213.6)
- Louisiana State and Local Coastal Resources Management Act (La. Rev. Stat. 49:214.21 – 214.42)
- Louisiana Oil Spill Prevention and Response Act (La. Rev. Stat. 30:2451 et seq.)
- Management of State Lands (La. Rev. Stat. 41:1701.1 et seq.)
- Louisiana Coastal Resources Program (Louisiana Administrative Code [La. Admin. Code] 43:700 et seq.)
- Louisiana Surface Water Quality Standards (La. Admin. Code 33.IX, Chapter 11)
- Management of Archaeological and Historic Sites (La. Rev. Stat. 41:1605)
- Oyster Lease Relocation Program (La. Admin. Code 43:I, 850-859, Subchapter B)
- Louisiana Scenic Rivers Program (La. Rev. Stat. 56:1856)

5.3 Summary and Next Steps

The LA and Open Ocean TIGs would ensure compliance reviews and/or approvals under all applicable state and local laws and other applicable federal laws and regulations that are relevant to any selected alternatives are complete before implementation. Implementing Trustees are required to implement alternative-specific mitigation measures, including BMPs, that are identified in this Joint RP/EA #1 and in the completed consultations/permits and biological evaluation forms. Implementing Trustees would provide oversight with regard to ensuring no unanticipated effects to listed species and habitats occur, including ensuring that BMPs are implemented and continue to function as intended. Table 18 reflects the status of the LA and Open Ocean TIGs' regulatory compliance progress as of May 1, 2025.

Table 18. Current Status of Federal Regulatory Compliance for Preferred Alternatives

Regulatory Requirements	Status	
	Chandeleur Islands Habitat Restoration Alternative 5	**Chandeleur Islands Fisheries Engagement and Restoration**
Bald and Golden Eagle Protection Act	Not Applicable	Not Applicable
Coastal Barrier Resources Act	Chandeleur Islands are classified as Otherwise Protected Area (LA-03P); consultation not required	
Coastal Zone Management Act	In Progress	In Progress
ESA Section 7 (NMFS)	In Progress	In Progress
ESA Section 7 (USFWS)	In Progress	In Progress
Essential Fish Habitat (NMFS)	In Progress	In Progress
Marine Mammal Protection Act (MMPA) (NMFS)	In Progress	In Progress
Marine Mammal Protection Act (USFWS)	In Progress	In Progress
Migratory Bird Treaty Act	In Progress	In Progress
Section 404 of Clean Water Act / Section 10 of Rivers and Harbors Act (USACE)	In Progress	In Progress
Section 106 of the National Historic Preservation Act	In Progress	In Progress

6. LIST OF PREPARERS AND AGENCIES CONSULTED

Table 19. List of Preparers and Agencies Consulted

Agency/Firm	Name	Position
CPRA	Maury Chatellier	DWH Oil Spill Program Administrator
CPRA	Todd Baker	Coastal Resources Scientist Manager
CPRA	Erin Vidrine	Coastal Resource Scientist
CPRA	Casey Wright	Coastal Resource Scientist
CPRA	Elizabeth Davoli	Coastal Resources Scientist Manager
CPRA	Todd Folse	Coastal Resources Scientist Manager
CPRA	Darin Lee	Coastal Resources Scientist
DOI	Amy Mathis	Restoration Planner/NEPA Coordinator
DOI	Michael Barron	Wildlife Biologist – Compliance Coordinator
DOI	Jonathan Kleinman	Resource Coordinator
DOI	Erin Plitsch	Fish and Wildlife Biologist
DOI	Lisa Stevens	Attorney-Advisor
DOI	Erin Chandler	Fish and Wildlife Biologist
DOI	Barret Fortier	Senior Wildlife Biologist
DOI	Sarah Clardy	LA TIG Representative
EPA	Douglas Jacobson	LA TIG Representative
EPA	Timothy Landers	Life Scientist
EPA	Kaitlyn Brucker	Biologist
NOAA	Laurie Rounds	Marine Habitat Resource Specialist
NOAA	Ramona Schreiber	Marine Habitat Resource Specialist
NOAA	David Reeves	Marine Habitat Resource Specialist
NOAA	Sara Wissman	DWH Sea Turtle Restoration Coordinator
NOAA	James Reinhardt	DWH FWCI Restoration Coordinator
NOAA	Craig Gothreaux	Fish Biologist
NOAA	Eric Weissberger	Marine Habitat Resource Specialist
NOAA	Mel Landry	Restoration Area Lead
NOAA	Christy Fellas	Biologist

Agency/Firm	Name	Position
USDA	Benjamin Battle	Gulf Coast Forest Restoration Program Manager
USDA	Jon Morton	Biologist
LDWF	Matthew Weigel	Biologist Director
Coastal Engineering Consultants, Inc.	Steve Dartez	Managing Engineer
Fields Environmental Consulting	Lee Walker	Senior Project Manager
Research Planning Inc	Pam Latham	Senior Scientist
Research Planning Inc	Brittany Bernick	Project Scientist
GEC	Nicole Forsyth	Project Manager
Edge Engineering and Science	Jennifer McCoy	Project Scientist
Edge Engineering and Science	Louise Holley	Project Scientist
Edge Engineering and Science	Lauren Imme	Project Scientist
Edge Engineering and Science	Emily Oxsheer	Scientific/Technical Writer
Edge Engineering and Science	Kimberly Sechrist	Project Scientist
Edge Engineering and Science	Jennifer Ward	Project Scientist
Edge Engineering and Science	Ramsey Redman	GIS Analyst
Edge Engineering and Science	Jacqueline Layton	Technical Editor
Anchor QEA	Francisco Gonzalez	Project Scientist
Anchor QEA	Justin Hall	Project Scientist
GSRC	Bretton Sommers	Project Scientist

7. LIST OF REPOSITORIES

Table 20. List of Repositories

Repository	Address	City	State	Zip Code
St. Tammany Parish Library	310 W. 21st Avenue	Covington	LA	70433
Terrebonne Parish Library	151 Library Drive	Houma	LA	70360
New Orleans Public Library, Louisiana Division	219 Loyola Avenue	New Orleans	LA	70112
East Baton Rouge Parish Library	7711 Goodwood Boulevard	Baton Rouge	LA	70806
Jefferson Parish Library, East Bank Regional Library	4747 W. Napoleon Avenue	Metairie	LA	70001
Jefferson Parish Library, West Bank Regional Library	2751 Manhattan Boulevard	Harvey	LA	70058
Plaquemines Parish Library	8442 Highway 23	Belle Chasse	LA	70037
St. Bernard Parish Library	2600 Palmisano Boulevard	Chalmette	LA	70043
St. Martin Parish Library	201 Porter Street	St. Martinville	LA	70582
Alex P. Allain Library	206 Iberia Street	Franklin	LA	70538
Vermilion Parish Library	405 E. St. Victor Street	Abbeville	LA	70510
Martha Sowell Utley Memorial Library	314 St. Mary Street	Thibodaux	LA	70301
South Lafourche Public Library	16241 E. Main Street	Cut Off	LA	70345
Calcasieu Parish Public Library Central Branch	301 W. Claude Street	Lake Charles	LA	70605
Iberia Parish Library	445 E. Main Street	New Iberia	LA	70560
Mark Shirley, LSU AgCenter	1105 West Port Street	Abbeville	LA	70510
Dauphin Island Sea Laboratory, Admin Building	101 Bienville Boulevard	Dauphin Island	AL	36528
Thomas B. Norton Public Library	221 West 19th Avenue	Gulf Shores	AL	36542
Mobile Public Library, West Regional Library	5555 Grelot Road	Mobile	AL	36606

Repository	Address	City	State	Zip Code
Bayou La Batre Public Library	12747 Padgett Switch Road	Irvington	AL	36544
Okaloosa County Library	185 Miracle Strip Parkway, SE	Ft. Walton	FL	32548
Escambia Southwest Branch Library	12248 Gulf Beach Highway	Pensacola	FL	32507
Walton County Library, Coastal Branch	437 Greenway Trail	Santa Rosa Beach	FL	32459
Bay County Public Library	898 W. 11th Street	Panama City	FL	32401
Gulf County Public Library	110 Library Drive	Port St. Joe	FL	32456
Homosassa Public Library	4100 S. Grandmarch Avenue	Homosassa	FL	34446
Pinellas Public Library	1330 Cleveland Street	Clearwater	FL	33755
Jacaranda Public Library	4143 Woodmere Park Boulevard	Venice	FL	34293
Riverdale Branch Library	2421 Buckingham Road	Fort Myers	FL	33905
Archie Carr National Wildlife Refuge Barrier Island Visitor Center	4055 Wildlife Way	Vero Beach	FL	32963

8. LITERATURE CITED

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