

Chapter 2: Affected Environment and Environmental Setting

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2.1 Introduction

The purpose of this chapter is to describe the environment of the area(s) to be affected by the proposed projects under consideration (40 C.F.R. §1502.15). This chapter provides the overall physical, biological and socioeconomic context within which proposed projects would occur. The description of the affected environment includes areas that may be affected by presently proposed Early Restoration actions.

Although OPA NRDA regulations do not constrain the geographic location of restoration projects, the affected environment for purposes of this Final Phase IV ERP/EA is the “northern Gulf of Mexico,” which includes the U.S. portion of the Gulf extending from the southern tip of Texas eastward to the Florida Keys, following the coastline of Texas, Louisiana, Mississippi, Alabama, and Florida. Similarly, the “northern Gulf Coast” includes the coastline of Texas, Louisiana, Mississippi, Alabama, and Florida. This area is comprised of complex biological communities of interacting organisms, including humans, and their physical environment(s). The site-specific affected environment for each proposed project is described in greater detail in the project-specific chapters of this document (see Chapters 5 through 14).

Chapter 13, Sea Turtle Early Restoration Project, describes a component of the proposed project that takes place on beaches in Mexico to help protect the eggs and nests of Kemp's ridley sea turtles. Sea turtle nest detection activities have taken place on the beaches in Mexico for many years with success. The affected environment for nesting sea turtles in the northern Gulf Coast is generally the same as the affected environment for nesting sea turtles on beaches in Mexico. Therefore, the affected environment description applies to the northern Gulf Coast and the relevant beaches in Mexico.

As described in Chapter 3, the Trustees assessment of injuries caused by the Spill to natural resources and the services provided by these resources is ongoing. The spatial scope of the assessment includes the northern Gulf of Mexico region. The assessment work to date clearly demonstrates areas of extensive oiling of marsh and beach shorelines from Texas to the Florida Panhandle. Preliminary results also make clear that the oiling has had substantial adverse impacts on coastal and nearshore habitats and their biological communities. In addition, initial results from the Trustees’ assessment clearly show that oiling caused very large reductions in coastal recreation from Texas to Florida. The Trustees consider injuries caused by the Spill to be part of the affected environment for purposes of this Final Phase IV ERP/EA.

A detailed discussion of the affected environment is included in Chapter 3 of the Final Phase III ERP/PEIS and that discussion is incorporated by reference within this Final Phase IV ERP/EA. A brief summary, including the resources described in the affected environment section of the Final Phase III ERP/PEIS is provided below. Updates to the affected environment since implementation of the Final Phase III ERP/PEIS are described below in Section 2.5. In general, these updates provide additional environmental context relevant to proposed Phase IV projects or information about regulatory changes that may affect Trustee identification, analysis and/or evaluation of proposed Phase IV projects.

2.2 Physical Environment

The Gulf of Mexico is a large basin. Its greatest east-west and north-south extents are approximately 1,100 and 800 miles, respectively, with a surface area of approximately 600,000 square miles, and containing approximately 584,000 cubic miles of water. The basin is bordered by Cuba, Mexico, and the

United States (U.S.), and consists of an intertidal zone, continental shelf, continental slope, and abyssal plain. The northern Gulf of Mexico is dominated by inputs from the Mississippi River Basin (MRB), which drains 41% of the contiguous U.S. and contributes 90% of the freshwater entering the Gulf (U.S. EPA 2011). These inflows provide the nutrients and hydrological conditions that make the northern Gulf of Mexico one of the most unique natural areas in the world. The description of the physical environment of the northern Gulf includes information on the geology and substrates, hydrology and water quality, air quality, and noise characteristics of the area.

Physical resources described in the Affected Environment section of the Final Phase III ERP/PEIS are: Geology and Substrates including Upland Geology and Soil as well as Nearshore Coastal Geology and Sediment; Hydrology and Water Quality including Freshwater Environments (Groundwater, Surface Water, Mississippi River Basin, and the Gulf Intracoastal Waterway) and the Coastal Water Environment (Nearshore Coastal Environment, Marine Environment); Air Quality including Climate; and Noise.

2.3 Biological Environment

The northern Gulf of Mexico contains a range of habitats that support diverse and productive ecosystems, with both nursery and feeding grounds for ecologically and economically important species (GCERTF 2011). The biological environment of the northern Gulf of Mexico can be divided into two broad categories: habitats and living coastal and marine resources. The northern Gulf Coast contains a variety of habitats including wetlands (e.g., mudflats, salt pannes, tidal flats, forested wetlands, pine savannas, riparian forests, swamps, and mangroves), barrier islands, beaches and dunes, submerged aquatic vegetation (SAV) beds, and other habitats in the coastal environment. These habitats support thousands of marine and terrestrial species, including more than 15,000 marine species (many of which are globally significant resources), and dozens of threatened or endangered fish, reptiles, birds, and mammals (NOAA 2011 and USFWS 2012). This high level of diversity in both habitat types and species increases the productivity and stability of the Gulf Coast (Brown et al. 2011).

Biological resources described in the Affected Environment section of the Final Phase III ERP/PEIS are: Habitats and Living Coastal and Marine Resources (including Nearshore Benthic Communities, Oysters, Pelagic Microfaunal Communities, Sargassum, Finfish, Sea Turtles, Marine Mammals, Birds, and Terrestrial Wildlife).

2.4 Human Uses and Socioeconomics

Millions of people live, work, and recreate in the northern Gulf of Mexico region, and therefore, rely on the natural and physical resources the Gulf's environment provides. In addition to the ecological significance of its natural resources, as well as its range of habitats, the northern Gulf of Mexico ecosystem is also culturally and socioeconomically important to the people of the region and the nation. Coastal areas in the affected states¹ contain dozens of culturally important State and National Parks. In addition, the economy of the northern Gulf of Mexico is highly intertwined with its natural resources,

¹ Texas, Louisiana, Mississippi, Alabama, and Florida

which include: oil and gas deposits; commercial and recreational fisheries; waterfowl, migratory birds, and other wetland-dependent wildlife; and coastal beaches and waterways for ports, waterborne commerce, and tourism. In 2009, the total economy of the northern Gulf of Mexico region supported over 22 million jobs (17.2% of all jobs in the US), and produced over \$2 trillion in GDP (16.7% of all GDP produced in the U.S.) (NOAA 2012).

Socioeconomic resources and topics described in the Affected Environment section of the Final Phase III ERP/PEIS are: Socioeconomics and Environmental Justice, Cultural Resources, Infrastructure; Land and Marine Management (including National and State Parks, Refuges and Wildlife Management Areas, Land Trusts, and Marine Protected Areas); Tourism and Recreational Use (including Wildlife Observation, Hunting, Beach and Waterfront Recreation, Boating, Recreational Fishing, Tourism, and Museums, Cultural Resources, and Education Centers); Fisheries (including Commercial Fishing, Shellfish Fishery, and Seafood Processing and Sales); Aquaculture (including Stock Enhancement); Marine Transportation; Public Health and Safety; and Flood and Shoreline Protection.

2.5 Updates to the Affected Environment and Environmental Setting Description

Updates to the description of the affected environment necessary to analyze the potential impacts from the projects proposed in this Final Phase IV ERP/EA are described below.

2.5.1 Sea Turtles

Section 3.3.2.6 (and other sections) in the Final Phase III ERP/PEIS notes that critical habitat had been proposed for the Loggerhead sea turtle Northwest Atlantic Distinct Population Segment (DPS). Critical habitat was designated for the loggerhead on July 10, 2014 for both the marine and terrestrial environments (79 FR 39756 (July 10, 2014); 79 FR 51264 (Aug 28, 2014)). Additionally, on March 23, 2015, the green sea turtle ESA listing was proposed for revision to include 12 DPSs, 3 endangered and 8 threatened (80 FR 15271).

Appendix A.5 Sea Turtles in the Final Phase III ERP/PEIS describes the primary constituent elements (PCEs) for critical habitat as defined in the proposed designation. Upon final designation of loggerhead critical habitat, a fourth PCE for nesting habitats was added by the USFWS. The fourth PCE includes: “Natural coastal processes or artificially created or maintained habitat mimicking natural conditions.”

The USFWS added the fourth PCE in the final designation in response to concerns and confusion in the proposed rule regarding beach stabilization projects:

“This [PCE] includes artificial habitat types that mimic the natural conditions described in PCE 1 to 3 ... for beach access, nest site selection, nest construction, egg deposition and incubation, and hatchling emergence and movement to the sea. Habitat modification and loss occurs with beach stabilization activities that prevent the natural transfer and erosion and accretion of sediments along the ocean shoreline. Beach stabilization efforts that may impact loggerhead nesting include beach nourishment, beach maintenance, sediment dredging and disposal, inlet channelization, and construction of jetties and other hard structures. However, when sand placement activities result in beach habitat that mimics the natural beach habitat conditions, impacts to sea turtle nesting habitat are minimized.” (79 FR 39774)

In the previous analysis conducted in Chapter 6 in the Final Phase III ERP/PEIS, the potential impacts from the programmatic alternatives to the proposed critical habitat and proposed PCEs for sea turtles were evaluated as if the designation was final, to ensure a conservative analysis. The Trustees also did not distinguish between natural or artificial habitats (that mimic the natural conditions) because sea turtles are known to use both types of areas for nesting. Therefore, the Trustees have determined that the original analysis in Chapter 6 in the Final Phase III ERP/PEIS is still valid and no supplemental or new analysis is necessary to address the change in status from proposed to designated critical habitat.

2.5.2 Birds

Section 3.3.2.8 Birds (and other sections) in the Final Phase III ERP/PEIS describes the Red Knot as a species proposed for listing under the Endangered Species Act (ESA). This species was listed as threatened on December 11, 2014 (79 FR 73706). In previous analysis conducted under Chapter 6 in the Final Phase III ERP/PEIS, the Trustees evaluated potential impacts from the different alternatives to the Red Knot as if it were already listed to ensure a conservative analysis. Therefore, the Trustees have determined that the original analysis in Chapter 6 in the Final Phase III ERP/PEIS is still valid and no supplemental or new analysis is necessary to address the change in status from a proposed to a listed species.

2.5.3 Fisheries

The U.S. Atlantic pelagic longline (PLL) fishery has historically been comprised of distinct segments throughout the Atlantic, Gulf of Mexico, and U.S. Caribbean (including the high seas). These segments are described in more detail in the 2011 Atlantic Highly Migratory Species (HMS) Stock Assessment and Fishery Evaluation (SAFE) Report (NMFS 2011). Some vessels fish in more than one fishery segment during the course of a year (NMFS 1999). Each vessel has different range capabilities due to fuel capacity, hold capacity, size, and construction. Thus, PLL vessels home ported in the Gulf of Mexico may also fish outside the Gulf of Mexico and vessels home ported outside the Gulf of Mexico may fish in the Gulf of Mexico. Due to the various changes in the fishery (e.g., regulations, operating costs, market conditions, species availability, etc.), the fishing practices and strategies of these different segments may change over time.

2.6 References

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